

# CORNUCOPIA II

*A Source Book of Edible Plants*



**CORNUCOPIA II**

A SOURCE BOOK OF EDIBLE PLANTS

by  
Stephen Facciola

**KAMPONG PUBLICATIONS**

Vista, 1998

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## Preface

Food resources concern everybody. They have concerned me in a particular way for the last 18 years while I have been compiling the Oxford Companion to Food, a million-word work which seeks to describe all foodstuffs, of more than purely local use, in the world.

Looking back over this protracted effort from the vantage point of 1998, now that the book has been delivered and is due for publication just before the end of the present millennium, I can mentally divide up the 18 years in various ways: slow start/final sprint; bouts of travel/stay-at-home periods; able to accommodate my reference material in one room/two rooms/three rooms / and, recently, not even in five rooms; working solo/with a collaborator; and so on. In this range of divisions, one of the most significant would be that between the pre-Cornucopia years and those which came after my acquisition of the book.

Of all the 4,500 books with which I have worked, there are just 21 which sit in a special little bookcase beside the computer, ready to be consulted at any moment. Of the 21, none has been consulted more often (thousands of times, not just hundreds) or to better effect than Cornucopia. For anyone who is writing seriously about food, whether by country, region, continent or globally, it falls fair and square into the 'must have' category.

After all, plant foods are fundamentally what keep the population of the world going. And the need for knowledge about them and for the ability to identify them, whether at the level of genus, species or cultivar, has been increasing exponentially. Food producers, wholesalers and retailers, restaurateurs, food writers of every kind and domestic cooks--all benefit from knowing more about what is available, what is threatened by extinction, what may usefully be rescued from oblivion, and so forth. The terrain charted by Stephen Facciola, already immense when he was composing the first edition of his magnum opus, has been growing more extensive with every passing year, as progress is made in the complex art of taxonomy, in the development of new cultivars and hybrids, and in the appearance of new suppliers and new sources of information.

So the appearance of Cornucopia II, with its wealth of new features and its more user-friendly design, must be a cause for not merely satisfaction and ripples of applause but for standing ovations and prolonged cheers!

The cheers, of course, will come from a wide range of people, not just those directly concerned with producing, marketing, preparing, cooking or writing about food. Who shall count the beneficiaries, actual and potential?

The late Dr. Robert Bond of San Diego was a good friend, who is greatly missed by all who knew him and who profited from his extensive knowledge of herbs, in both their botanical and culinary aspects. It was he who first told me about Cornucopia and he who, with the generosity of spirit which animated both him and his wife Suzanne, had a copy sent to me. I remember that when it arrived I read with awe the long list, in the Introduction, of categories of readers for whose benefit it had been compiled. It would be no exaggeration to say that this is a reference tool for all who are concerned with the future of the human race and of our planet. I shall not cease to marvel at the fact that this book is, essentially, the product of one person.

‘And still they gazed and still the wonder grew  
That one small head could carry all he knew.’

Oliver Goldsmith was writing in a completely different context (one might almost say 'another world') when he penned these lines; and no doubt it is a computer, rather than Stephen's brain, which can actually accommodate and instantly recall all the knowledge in this book. But that in no way diminishes the feat, or the relevance of Goldsmith's couplet. As I see it, the computer serves as an extension of the human brain, not a replacement. It is like an extra drive, of almost infinite capacity yet capable of nothing unless controlled by a person—in this instance a person with a prodigious gift for organization and an inspiring degree of diligence and enthusiasm. Let the new version of his work be acclaimed as the uniquely rich resource and dazzling achievement which it is.

Alan Davidson  
Chelsea, London  
September 1998

### Preface to the first edition

In your hands is one of the most remarkable efforts to come out of the struggle to preserve the genetic diversity of our planet. It is not a dry policy statement preaching of far-away places and unlikely schemes, nor is it an impenetrable tract full of untraceable Latin names and fascinating but useless details. Rather Steve Facciola has put together an easy-to-understand, easy-to-use compendium of the diversity of food plants available today to consumer, gardener, and scientist. It includes thousands of cultivars of hundreds of crop species, as well as many mushrooms and microorganisms. It can serve as both a reference for information on plants, and a guide to actually finding, growing, and using them. As far as I know, it is unique.

No one can say exactly how many plant species there are, but scientists seem to constantly raise their estimates. Yet of the several hundred thousand that are known, at least 20,000 have usefully edible parts, such as seeds, tubers, fruits or leaves. Although humans have tasted them all at one time or another, only three or four thousand have ever been used on a regular basis.

Over tens of thousands of years, these few plants have been mankind's bulwark against starvation. Moreover, during the past 5,000 years or so certain specimens of certain species have been slowly molded to fit human requirements...they have become "domesticated". During the last two centuries, a burst of breeding and crop development has yielded thousands of selected cultivars, collectively suited to meet almost any climate, soil type, or disease or pest threat. This seemingly vast cornucopia of food resources represents one of the best of all human efforts, and is our greatest treasure—more valuable than all the industrial development that has grown in parallel with it.

Indeed, the contribution crop-developers have made to history is seldom if ever mentioned in history books, and yet their effects have been more profound (and much more beneficial in most cases) than all the politics and politicians that now fill the pages of those books. It has recently been pointed out, for example, that development of the potato in Europe probably made possible the Industrial Revolution because it provided the Europeans with food security for the first time, and that in turn allowed millions to leave the land to work in the factories.

Nonetheless, with all mankind's efforts to develop crops, the selection of target species has been very narrow. Fewer than 150 species have been brought into what most people would consider substantial "agriculture". And far fewer than that have been raised to a point where they approach their potential. Most of the world's food is being produced from a mere twenty or so, grossly overworked, species. Indeed, the preponderance of human food comes from only four: wheat, rice, corn, and potatoes. It is a dangerously small larder for feeding a whole planet.

Thus, although our modern food supply is one of the most remarkable of human achievements and new technologies promise even greater harvests in the future, there exist thousands of wondrous resources of which we have taken little advantage. Yet ironically, just as we realize the importance of this underexploited heritage, it is being threatened. In the last twenty years, for example, hundreds of varieties of plants have been lost—not only from the rainforests but also from our gardens.

All this is why Steve Facciola's effort is so important. It is a guide not only to your grandparents' favorite garden veggies, but to exotic delights now scarcely known even to botanists. In total, his book records the more than 3,000 species available in the U.S. and abroad. For over a hundred crops, detailed varietal descriptions of culture and taste are given. The sources listed are not only for seeds, but also for different types of nursery stock, for specialty produce and food products and for unusual items such as mushroom spawn and starter cultures.

This book should appeal to anyone interested in our plant heritage, in what to grow next summer, or in what to do with that strange fruit in the market. For everyone from browser to botanist, the utility of this effort is obvious.

Noel Vietmeyer  
National Academy of Sciences  
Washington, D.C.  
October, 1990

## Introduction

There are approximately fifteen thousand species of plants recorded in the literature as having been used as food by man. One hundred fifty or more of these have been cultivated on a commercial scale and innumerable cultivars of the more important crops have been developed. Yet today, most of the world is fed by approximately twenty crops including wheat, rice, maize, millet, sorghum, potato, sweet potato, cassava, peas, beans, peanuts, coconuts and bananas. And of the estimated eight thousand cultivars of apples that have been described, only a handful are available in supermarkets.

Our knowledge of the remaining edible plants represents thousands of years of trial and error by our ancestors and should be more greatly utilized. Many of these plants have desirable traits or properties that have not been exploited and may have some yet to be discovered. In addition, only a small percentage of cultivars is being grown commercially compared to a generation or two ago. While some newer cultivars provide valuable traits such as resistance to pests and diseases, many older traditional cultivars also have great merit and should be preserved and made more available. Breeding is overly focused on developing strains of industry standards, such as Red Delicious apples, rather than creating truly unique cultivars like Butterblossom squash or Saturn peach.

In recent years, however, an increased awareness has created expanded markets for new and unusual foods, heirloom cultivars, and foods grown without the use of chemical fertilizers and toxic pesticides and herbicides. More of these are becoming available all the time. The purpose of this book is to provide a guide to those having the most current interest and potential future value. As much diversity as possible is included without being redundant. Species were selected to provide a broad range of the more than sixty different usage categories including edible fruits, seeds, leaves, roots, stems, flavorings, flowers, oils, beverages, tea and coffee substitutes and sugars and sugar substitutes. Cultivar selection has focused on traditional and well-adapted favorites, family heirlooms, gourmet and specialty market items, and the most promising of the newest releases. Sources for both seeds and nursery stock are provided as well as specialty produce and specialty food products.

Approximately three thousand species have been selected including the higher plants in addition to organisms once classified as plants but now treated in separate kingdoms. These include algae, fungi and bacteria.

Over one hundred and ten major crops have been chosen for detailed cultivar listings representing the most popular fruits, vegetables, nuts, herbs, grains and mushrooms. Also included are fruit and nut tree rootstocks, salad mixes, sprouting seeds and starter cultures.

Taxonomic nomenclature of families, genera and species follows that of Tanaka and Kunkel, the most recent works on edible plants of the world, as much as possible. Some older names that are used in the trade are retained. Others that have been maintained in the trade for an unreasonable time are rejected. Classification of cultivars is modified after Lewis and Hortus Third.

Cornucopia is intended to be an authoritative reference book as well as a useful tool. It has been written for gardeners, small-scale and alternative farmers, researchers dealing with new food crops, cooks, economic botanists, genetic preservations, natural foods enthusiasts, nutritionists, those in the specialty and gourmet foods business, and colleges and universities. References have been selected to provide a balance between technical and popular works.

## How to use this book

*CORNUCOPIA II* is divided into three primary chapters—Part I: Botanical Listings, Part II: Major Crops and Part III: Suppliers.

Included in Part I are listings of approximately 3,000 species of plants, fungi, algae and bacteria. The listings are presented alphabetically by their botanical or Latin names (sometimes referred to as scientific names), first by family, then genus, and finally by species. Family names always end with the suffix “ACEAE”. Botanical synonyms, represented by the symbol - are placed alphabetically within each family. A listing in Part I can have up to seven different sections which are described below:

1. - Genus and species.
2. - The most widely used vernacular name or names, presented in italicized text.
3. - A default code enclosed within braces {} that indicates the type of plant material or product offered by the suppliers. For example, an {S} code would indicate that seeds are being offered. For a complete list of codes and what they represent see Appendix D. Three different codes are used to indicate that fresh produce or a food product is being sold: {PR}, {PD}, and {DF}. A {PR} code is used for fresh produce such as fresh fruits or vegetables. A {PD} code indicates a food product, for example a canned or bottled product, and {DF} is used for dried foods such as seeds and nuts and also for botanicals (dried herbs and spices). An underlined {PR}, {PD}, or {DF} code is used when a plant has more than one usage and an explanation is needed. In these instances see the explanation given after *Sells the following products*: in the supplier’s listing. For example, when you see the listing J73{PD} look up J73 in the Suppliers chapter and then see the explanation after *Sells the following products*:
4. - A description of how the plant is used, the parts of the plant that are consumed, and the food products that are made from the plant.
5. - The geographical distribution of the plant and whether the plant is cultivated.
6. - Bibliographical citations annotated with codes enclosed in brackets []. The codes refer to categories of additional information that can be found in the references cited. For example, an [Re] following a citation indicates that the reference contains recipes for the plant. For a complete list of codes and what they represent see Appendix D.
7. - The suppliers’ codes. A code enclosed in braces {} may be attached to a supplier’s code. In these instances the attached code overrides the default code. For example, in the sample listing below, K67{PL} signifies that the supplier K67 is selling plants not seeds as indicated by the default code {S}. Keep in mind that when a {PL} code overrides a {GR} code it indicates that seedlings and not the generally more desirable grafted trees are being offered.

A sample listing from Part I follows with arrows pointing to each of the seven sections described above:

**1. Genus, Species**   **2. Vernacular name**   **3. Default Code**   **4. Usage**

Prunus spinosa - *Sloe, Blackthorn* {S}. Ripe fruits are sometimes eaten raw, especially after having been mellowed by frost. They are also made into jellies, syrup, conserves, and *kissel* or used as a flavoring for *sloe gin* and other liqueurs. In France, the unripe fruit is pickled like olives. Leaves are used as an adulterant of tea. The flowers are edible and are sometimes candied. Eurasia. MABEY [Re], MICHAEL [Re]; K67{PL}, L2, M35M{PL}

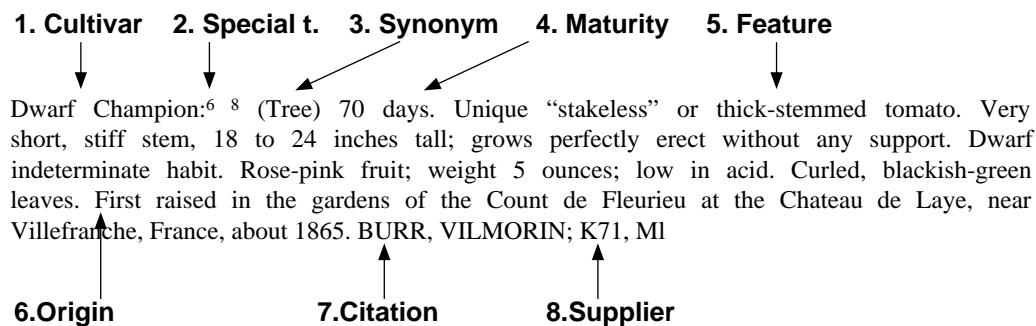
**5. Distribution**   **6. Citation, Annotation**   **7. Supplier, Attached Code**

Over 110 crops have been selected for Part II representing the most important and popular fruits, vegetables, nuts, herbs, grains and mushrooms. Within each crop’s listing are the most interesting and useful cultivars (cultivated varieties), listed alphabetically under various subheadings. The subheadings are used to group the cultivars into horticultural classes. For example, apples are grouped under cider apples, cooking apples, crab apples and dessert apples, then by whether they are harvested in spring, summer or fall. Cultivars of less important crops

are listed directly under their botanical listings in Part I. A listing in Part II can have up to eight different sections which are described below:

1. - Cultivar name.
2. - Special types. These are additional categories that do not merit major subheadings. For example, pink-fleshed apples or apples high in Vitamin C. Superscripted numbers (<sup>1,2</sup>) are used for special types. To find out what each superscripted number refers to see CODES FOR SPECIAL TYPES at the end of each crop's listings.
3. - Synonyms, if any, for the cultivar name.
4. - Days to maturity. Mostly used for vegetable crops to indicate the time from planting of seeds to harvest.
5. - A description of the cultivar's most important features.
6. - The origin of the cultivar.
7. - Bibliographical citations annotated with codes enclosed in brackets [], as used in Part I.
8. - The suppliers' codes, as used in Part I.

A sample listing from Part II follows with arrows pointing to each of the eight sections described above:

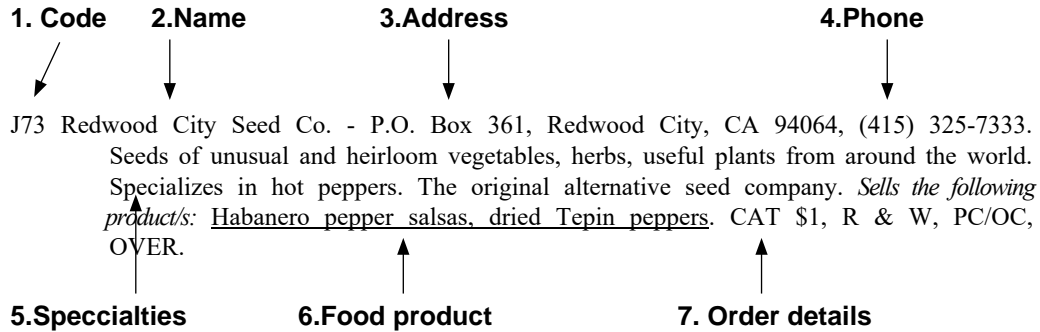


Included in Part III are listings for more than 1370 firms and institutions whose catalogs have been surveyed, including approximately 1175 from the United States and Canada, 100 from overseas, and 100 non-commercial sources (botanical gardens, arboreta, research stations, etc.). Each company has a unique code that is used to indicate what products they list. In the listings for Parts I & II retail company codes are presented in normal text, wholesale companies in italics, and non-commercial sources in bolded text. A listing in Part III can have up to seven different sections which are described below:

1. - Unique code used for each company or institution.
2. - Name of the company or institution.
3. - Address of the company or institution.
4. - Phone number of the company or institution.
5. - A description of the most important specialties offered by the company or institution.
6. - Food products offered by the company, presented in underlined text after the phrase *Sells the following product/s:* For more details see above.
7. - Order details such as catalog price, retail or wholesale status, currencies accepted, overseas shipments, minimum order, and whether a company produces an English language catalog. For a complete list of abbreviations used in this section and what they represent see Appendix D.



A sample listing from Part III follows with arrows pointing to each of the seven sections described above:



To order an item look up a company's listing in the suppliers' chapter using the unique codes. Every effort has been made to find commercial suppliers. Only when none could be found were sources such as botanical gardens and research stations used. Many rare and valuable species are apparently only available from such sources. It should be noted however that many of these institutions have limited facilities or budgets and cannot respond to the general public. Primarily material is exchanged with other institutions on a reciprocal basis. Private individuals who have a sufficiently large collection may also make arrangements for trade.

Many of the best cultivars are similarly unavailable through the trade. Organizations such as the California Rare Fruit Growers, North American Fruit Explorers, Rare Fruit Council International, and Seed Savers Exchange are invaluable sources of such material and welcome new members. They do not sell seeds or plants however. It is best to write them and ask for a membership application and then follow their normal procedures of exchange.

### Author's notes

Several new usage categories have been added to this edition of *Cornucopia* including food wrappers, honey plants, smoke flavorings, popping seeds, wood flavorings, bitters, food tonics, fat replacers, and milk substitutes. See Appendix A for further details. The coconut-oil scents category has been dropped because it was determined that the coconut oil in question was used for rubbing on the body not for edible purposes. The hypertrophies category has been combined with the galls.

While tonics are generally thought of as medicinal, many are used in such a way that they should be considered food. Good examples are the various Chinese tonics eaten regularly in soups and rice porridge or with meat. Other Chinese tonics are consumed frequently in the form of teas and tonic wines. Ayurvedic tonic herbs of India are also often combined with other foods such as boiled warm milk, ghee, oil, raw sugar and honey. Bitter tonics are most often used in the West, generally as digestive aids but sometimes also as flavoring. The overriding consideration is that the tonics are not taken merely to cure or allay illness but for their nourishing properties which promote general well-being, rejuvenate the body, strengthen the immune system and prevent illness.

Honey plants were omitted from the first edition but after further consideration have been included in *Cornucopia II*. Although honey is produced by bees, a small amount of nectar or honeydew finds its way into the honey and actually contributes to its flavor. Each honey will have a different flavor, depending on the blossoms that the bees were visiting. There are tens of thousands of these plants that are visited by honey bees but not all are desirable for commercial honey production. Those that are not may be called bee plants and are not included here. Those that produce the most desirable and best tasting honey and are sought as bee forage are true honey plants and the ones that have been chosen for listing.

Originally, *Cornucopia* was intended as a reference and source book for gardeners, farmers, botanists and others working with plants. However, during the compilation of the first edition a decision was made to include sources of food products since these products were included in the descriptions of how the plants were used. The response from chefs, food writers and others in the culinary world has been very favorable, therefore for this edition many additional suppliers of produce and food products have been listed.

During the compilation of *Cornucopia II* it has been noted that many more cultivars developed for home gardeners are now available through seed and nursery catalogs. Vegetables and fruits that have been selected for outstanding flavor, unique color, shape or fragrance, special culinary qualities, or superior nutritional content are more numerous than in past years. Others may have thin skins and tender flesh, the ability to ripen over an extended period, are easy to harvest, or can be grown by those with limited space, all traits that are favored by the backyard gardener and market farmer. This is a trend that should be encouraged. Look for these special types throughout *Cornucopia*, especially in the Major Crops section. The codes used for the special types are now listed at the end of each crop's listings. See *How to use this book* for more details.

The author welcomes any comments, suggestions, corrections or additions from readers, especially in regard to new suppliers or previously unknown usage.

Steve Facciola  
Vista, California  
August, 1998

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**For Joseph and Clotilda Facciola**

**In Memory of Michael and Francis Facciola**





## BOTANICAL LISTINGS

### ALPHABETICAL LISTING OF PLANT FAMILIES

#### ACANTHACEAE

*Beloperone californica* - *Chuparosa*, *Pisily* {PL}. The red flowers, which resemble cucumber in flavor, may be eaten raw or cooked. Diegueno Indians are known to have sucked the flower for its nectar, as desert hikers do today. Southwestern North America, Mexico. BEAN, L., CLARKE, KIRK; G60, 198M

*Peristrophe speciosa* - *Purple rice plant*, *Shrimp plant*, *La cam*, *La gum* {PL}. In Thailand and Vietnam, the leaves are employed as a colorant for festive rice dishes. They are first boiled in water to yield a purple liquid in which the rice is cooked. The liquid is also used to color cooked eggs, cookies, and a glutinous rice and coconut milk dessert which is served with a fried peanut, sugar and salt mixture. Southeast Asia. TUCKER 1995; M82, R77

*Rungia klossii* - *Moku*, *Tani*, *Kenkaba*, *Aimbe* {S}. Leaves and stems are eaten raw in salads, cooked as a potherb, or used as a flavoring. They contain iron, vitamin C, and Beta-carotene. The biennial herb is harvested three to four months after planting and continues bearing for up to two years. Papua New Guinea. HACKETT [Cu], MAY, R.; X14

#### ACERACEAE

*Acer circinatum* - *Vine maple* {PL}. The sap is made into sugar and maple syrup. Pacific Coast of North America. GIBBONS 1979; A2{S}, D95, E15{S}, E87, 147{S}, J26, K38{S}, K63G{S}, M51M, NO

*Acer ginnala* - *Amur maple* {PL}. Young leaves are used as a tea substitute. Japan, China. TANAKA; A80M, C9M{S}, C33, E7M{S}, E87, G16, G66, H49, 128, K38{S}, K63G{S}

*Acer grandidentatum* - *Big-tooth maple* {PL}. The sap is boiled down to produce maple syrup. Western North America. KIRK; B94{S}, D95, E67T, G66, G89M, K37M, K63G{S}, L55J{S}

*Acer macrophyllum* - *Oregon maple*, *Big-leaved maple* {S}. The sweet sap can be used for maple syrup and sugar manufacture. Yellow flower-clusters are sweet with nectar and may be eaten right from the tree. Produces a rare, exotic honey with a very aromatic aroma and flavor. Pacific Coast of North America. DOMICO, GIBBONS 1979, PELLETT; B92{PL}, B94, C60D{PD}» D96, E15, G59M, G60{PL}, G66, H47{PD}, K38, K63G, N0{PL}, 093

*Acer negundo* - *Negundo aceroides*

*Acer nigrum* - *Black maple*, *Black sugar-maple* {S}. The sap is used for maple sugar and maple syrup. Closely related to *A. saccharum* and one of the principal producers of commercial maple syrup. Eastern North America. LAWRENCE, MEDSGER; D95{PL}, E7M, G21M{PL}, G66, K37M{PL}, K63G, K89, K89{PL}

*Acer pensylvanicum* - *Striped maple*, *Moosewood* {S}. Although a small tree it is an abundant producer of very sweet sap which yields more sugar per gallon than larger maples. It is said to have a better flavor than other maples. Eastern North America. GIBBONS

1966a; D95{PL}, G66, H8{PL}, K38, K63G, K89{PL}, M7M{PL}, N7T{PL}, N71M, N84, P49

*Acer pseudoplatanus* - *Sycamore maple*, *Plane-tree maple* {S}. In Europe a wine is made from the sap which also yields maple syrup. The leaves are used as a wrapping for *Cab rales*, a blue-veined cheese of Spain. Children in England suck the wings of the growing keys to obtain the sweet exudation that accumulates on them. Eurasia. HEDRICK 1919, ROBINSON, R. 1995; B9M{PL}, F85J{PD}, G47J{PD}, G66, K38, K63G, L13P{PD}, N71M, 093, P5, P49, R78

*Acer rubrum* - *Red maple*, *Swamp maple* {PL}. The French Canadians make sugar from the sap which is called *plaine*. Good, dark maple syrup is also produced from this tree although the yield is comparatively small. The wood is a source of cooking planks which impart a distinctive, pleasant, woody flavor to foods cooked on them. Before cooking on the planks, they are oiled, charred or moistened with water, each of these methods creating a different flavor. Eastern North America. FERNALD, HEDRICK 1919, LAWRENCE; A80M, C9M{S}, D45, D95, E33M, G21M, H49, 14, J16, K38{S}, K63G{S}, L15G{PD}, N7T

*Acer saccharinum* - *Silver maple*, *River maple*, *White maple* {PL}. The sap is considered by some to be sweeter and whiter than that of the sugar maple. It is boiled down to make sugar and syrup. Has less than half the sugar density of sugar maple, so considerably more boiling is required. Eastern North America. FERNALD, LAWRENCE, MEDSGER; A82, C9M{S}, C33, D45, F51, G66{S}, H49, 14, 19M, K38{S}, K63G{S}, L27M

*Acer saccharophorum* - \**Acer saccharum*

*Acer saccharum* - *Sugar maple* {PL}. Leading producer of maple syrup and sugar. Maple butter or honey and maple cream are different forms of maple sugar. The Indians cooked the dewinged seeds in butter and milk. The sap can be used in place of water to brew herbal teas made from sassafras and spicebush. It is also made into vinegar. Maple wax or *sugar-on-snow* is a delicious, chewy product made by boiling the sap beyond the syrup point until it reaches the consistency of molasses, then pouring it on fresh snow. Sugar maple wood is preferred over that of other species of maple for smoking meat and other foods. It adds a sweet, smoky flavor somewhat reminiscent of maple syrup, and also darkens the meat. Eastern North America. BJORKMAN, FERNALD, GIBBONS 1962 [He], LAWRENCE, MESSINA, NEARING [Cu, Re], ROOT 1980a, THOMPSON, B. [Cu, Re]; A82, B74, C9M{S}, C21M{PD}, C37M{PD}, D45, D95, E63K{PD}, G66{S}, G73{PD}, 14, I42G{PD}, J3{PD}, J21H{PD}, K38{S}, K63G{S}, L15G{PD}, L27M, M85{PD}, N7T, etc.

#### CULTIVARS

Ohio Supersweet: The sugar content of sugar-maple sap usually varies between 2 and 3 %. The supersweet strains produce sap with double the sugar content or around 4.2%. As a result, only half the fuel is needed in the syrup manufacturing process. The original trees were collected in the 1950's by Howard Kriebel for the Wooster

Agricultural Experiment Station. LAWRENCE, LOGSDON 1981; I59J

*Acer saccharum* ssp. *nigrum* -\**Acer nigrum*

Negundo aceroides - *Bcx-elder*, *Ash-leaved maple* {S}. Highly valued as a producer of maple syrup and sugar. Groves have been planted in Illinois and other areas. The sugar from the sap of this tree is said to be whiter than that produced by other maples, but notably thin. North America. FERNALD, HEDRICK 1919, LAWRENCE; G60{PL}, G66{PL}, K38, K63G, M69M{PL}, N71M, 053M, 093, P5, R78

ACTINIDIACEAE

*Actinidia arguta* - *Hardy kiwi*, *Tara vine*, *Bower berry* {S}. The small, emerald green fruits are eaten out of hand, dried, or made into jam, jellies and wine. They are considered to be sweeter than the common kiwi fruit. The vine is rich in sap, which is drinkable. Young leafy shoots are eaten. Dried leaves are sold in Korean markets for use in seasoned vegetable dishes. Eastern Asia, cultivated. PEMBERTON, TANAKA, THOMSON 1988 [Cu]; B32{PL}, E13G{PR}, H4{PL}, H53M{SC}, K38, K63G, P38, R78, R47. (for cultivars see Kiwi, page 402)

*Actinidia arguta* var. *cordifolia* - *Hardy kiwi* {PL}. The smooth green fruits are the size of a grape, have very sweet flesh, and are eaten out of hand. Considered one of the best tasting of the hardy kiwis. A variety that is adapted to growing in low chill areas. China. KUNKEL, THOMSON 1988; F16, H53M{S}, H53M{SC}, I49M, J51P{SC}. (see also Kiwi, page 402)

CULTIVARS {GR}

Mevers: Round-shouldered, green fruit; non-bitter skin; very sweet flesh, about 28% brix, excellent flavor; ripens very early, late August or early September in southern California. Highly productive. Relatively low chilling requirement. D37, E13G{PR}, H53M, I66T

*Actinidia callosa* - *Mei-soh-khan* {PL}. The ripe fruits are somewhat acid in flavor and may be eaten raw, or dried for use in pastries. China, Japan. KUNKEL, TANAKA; H53M{SC}, M16

*Actinidia chinensis* - *Chinese softhair kiwi* {SC}. The fruits are eaten raw or cooked. They often have distinctive colored flesh such as yellow, orange or red. Eastern Asia, cultivated. J51P. (for culti vars see Kiwi, page 402)

*Actinidia cordifolia* -> *Actinidia arguta* var. *cordifolia*

*Actinidia coriacea* - *Chinese egg-gooseberry* {PL}. The small, egg-shaped fruits are eaten. They have brownish skin with white dots and are very juicy. China. SIMMONS 1972; H4

CULTIVARS {GR}

Katie: Choice, female selection that bears numerous 3/4 inch, ovoid, brown fruits of top quality. Attractive, ornamental red flowers and handsome foliage. H4

*Actinidia deliciosa* - *Kiwi fruit*, *Chinese gooseberry*, *Yang-Cao* {S}. Fuzzy, subacid fruits are rich in vitamin C and may be eaten raw or cooked. When firm-ripe they are tart-sweet and used in salad dressings or other dishes where tartness is desired. When soft-ripe they are sweeter and are eaten out of hand, or used in fruit salads, ice cream, pies, cakes and other desserts. *Pavlova* cake, consisting of kiwis, meringue and whipped cream, is the national dessert of New Zealand. China, cultivated. BEUTEL [Re], MORTON 1987a, SALE [Cu], SCHNEIDER 1986 [Cu], THOMSON 1988 [Cu, Pro]; A79M, B32{PL}, C9M, D3M{DF}, E13G{PR}, F97M{DF}, G92{DF}, H4, N40{DF}, N40{PD}, N84, 053M, P38, R47. (for culti vars see Kiwi, page 402)

*Actinidia eriantha* - *Velvet vine* {S}. The fruits are eaten fresh or dried. They are completely covered with a long, white fuzz which gives them a very distinct appearance. Also very high in vitamin C, up to one per cent or more. Considered by some Chinese to have the

best flavor of all *Actinidia* fruits. China. H53M, H53M{SC}, J51P{SC}, P38

*Actinidia kolomikta* - *Hardy kiwi*, *Arctic beauty kiwi*, *Kishmish*, *Manchurian gooseberry* {PL}. The fruit is eaten fresh, dried, or preserved in salt. Young leaves are parboiled and eaten in soups, cooked and seasoned and used as a potherb, or preserved in salt. China, Japan, cultivated. TANAKA, THOMSON 1988 [Cu]; C9, C34, E63, E87, G73{S}, H4, H53M{SC}, H65, I83M, J61M, K63G{S}, M75, M77, N84{S}. (for cultivars see Kiwi, page 402)

*Actinidia melanandra* - *Red kiwi* {S}. The fruit is one inch long, egg-shaped, reddish in color, and can be eaten out of hand. A good pollinator for *A. arguta* var. *cordifolia*. Eastern Asia. THOMSON 1988; A79M, G73, H4{PL}, H53M{SC}, N84, P38. (see also Kiwi, page 402)

CULTIVARS

1064-79: Fruit ovoid, glabrous, smooth; about 1 inch long and 1 inch across; brown with a white patina. Self-fertile. Lance shaped leaves with a white underside. J51P{SC}

*Actinidia polygama* - *Silver vine*, *Matatabi* {S}. Young leaves are eaten raw with vinegared miso, or roasted and mixed with tea. Ripe fruits are smooth-skinned, bright orange in color, and are eaten raw, made into a liqueur, or dried for later use. Unripe fruits are pickled in salt. Eastern Asia. TANAKA, THOMSON 1988; A26, D95{PL}, F73D{PL}, G66, H4{PL}, H53M{SC}, J51P{SC}, K63G, N84, 053M

CULTIVARS {GR}

418-77B: Self-fertile clone with small, yellow fruit. Highly decorative vine with shiyy, ovate leaves, some colored white on the upper surface. A very vigorous grower. Hardy into Zone 4 and parts of Zone 3. H4

*Actinidia purpurea* - *Purple Chinese gooseberry* {PL}. Ripe fruits are smooth-skinned, sweet, purple inside and out, and are eaten out of hand. They are said to have a cherry-like flavor. China. TANAKA; A79M{S}, B74, D56M{S}, G66{S}, G73{S}, H4, H53M{SC}, I49P, J51P{SC}, K63G, M16, N40M, N84{S}. (for cultivars see Kiwi, page 402)

*Saurauia nepaulensis* - *Gogina* {S}. The yellowish fruits, the size of a cherry, are consumed with sugar by the natives of Kampuchea and Vietnam. Also used to adulterate honey. Himalayan region, Southeast Asia. UPHOF, WATT; Z25M

ADIANTACEAE

*Adiantum capillus-veneris* - *Maidenhair fern* {PL}. In the Arran Islands the fronds are dried and used as a tea substitute. The flavoring *capillaire* was once popular in England. The fern was simmered in water for several hours, and the liquid was then made into a thick syrup with sugar and orange water. *Capillaire* was then mixed with fruit juice and water to form soft drinks. Northern temperate region. HEDRICK 1919, MABEY; D61, D95, G0{DF}, H4, I98M, M42, M77M, M98, N7D{DF}, N37M, N84{S}

AGAVACEAE

*Agave americana* - *Century plant*, *Maguey* {S}. *Agamiel*, the sap from the flowering stem is sweet and can be drunk. It is also fermented into a whitish, viscous, slightly acidic alcoholic beverage called *pulque*. Kickapoo Indians bake the tender, asparagus-like flower stalks on hot stones. The resulting product is called *quite*. The bulbous leaf base is sweet and is eaten after roasting. Central America. HEDRICK 1919, LATORRE 1977b, STEINKRAUS; A69, H4{PL}, H52{PL}, I28{PL}, I57{PL}, K47M, P5, P17M, Q41, Q46, R88

*Agave angustifolia* - *Mescal agave* {PL}. The principal species of agave used in the manufacture of *mescal*, a tan-colored, sour alcoholic beverage produced by distilling the liquid that forms when the cooked and mashed stem bases of the plant, called *cabezas*, are allowed to ferment. Before distillation the *cabezas* are roasted over hot coals in underground pits covered with maguey leaves, which

contribute a smoky flavor to the mescal. Mescal of lower quality is commonly sweetened and flavored with tropical fruits, citrus, herbs or almonds. Flavored mezcals are known as *cremas de mescal*. Tropical America, cultivated. HUTSON 1995, NOBEL, STEINKRAUS; F80, H4, N84{S}, P5

*Agave atrovirens* - *Maguey manso* {PL}. *Pulque* and *mescal* are produced from the sap and the crushed stem bases, respectively. *Pulque* can be used in making bread or distilled into a brandy-like beverage called *aca pulque*. The cuticle or *corteza* is peeled from young leaves of the central spike and used as a translucent wrapping for the Mexican dish called *mixiote*, which is prepared for Christmas and Easter and other festive occasions. The flower stalk is roasted and eaten. Southwestern North America to Mexico. NOBEL, QUINTANA 1994 [Re], TANAKA; AOM

*Agave bovicornuta* - *Cow horn agave* {PL}. The young flowers, harvested from side branches of tall inflorescences, are cooked lightly then dipped in egg batter and fried. Mexico. NOBEL; AOM, G91M, H52, N84

*Agave deserti* - *Desert agave* {PL}. Flowers and flower buds are eaten. Young flower stalks are baked in earth ovens until they form a sweet, starchy cake called *mescal* said to taste like bananas and pineapple. The leaf bases are similarly prepared. *Pulque* is made from the sap. Nectar from the flowers was consumed directly by the Indians. Southwestern North America. CLARKE [Re], TANAKA, TATE; AOM, A61, A61{S}, A69{S}, C98M, F85{S}, G91M, I98M, I98M{S}, L13{S}, N51, Q41{S}, R88{S}

*Agave parryi* - *Parry's century plant* {S}. Young flower stalks are roasted and eaten. The bases of the stems, called *mescal heads* or *cabezas*, are baked in pits to produce a sweet vegetable that is eaten in the manner of an artichoke heart. Roasted leaves are eaten like artichoke bracts—the edible part being scraped off with the teeth, leaving the fibrous part behind. Nectar from the flowering stalk can be made into a sweet syrup. Southwestern North America. MC-GREGOR, MEDSGER, NOBEL; A69, F44M{PL}, F80, F85, H52{PL}, I28{PL}, I33, J25M, J25M{PL}, L13, N84, Q41, R88, T25M

#### *Agave quotifera* - *Agave salmiana*

*Agave salmiana* - *Maguey ceniso* {PL}. One of the principal species used for manufacturing *pulque*, which is produced from *aguamiel*, a sweet liquid that accumulates in hollowed-out stems of mature plants. *Aguamiel* can also be fermented into vinegar. The cuticle of the young, inner leaves is used as a wrapping for the Mexican delicacy *mixiote*, which is eaten on festive occasions, especially Christmas and Easter. The cuticle wrapping adds a subtle flavor to the dish which is steam-cooked and consists of chicken or other meats, chopped cactus stems (*nopalitos*), other vegetables and spices. Flower stalks are cut for *quiote*, which is sold in the streets and is chewed by the natives like sugar cane. Southwestern North America. NOBEL, QUINTANA 1986 [Re], UPHOF; B86

*Agave shawii* - *Shaw's agave* {PL}. The sweet nectar from the base of the flowers can be used directly. An endangered species. California. CLARKE, TANAKA; AOM, F85{S}, I98M, N51

*Agave sisalana* - *Sisal hemp* {S}. The heart of the new shoots is eaten in Java. An alcoholic beverage can be distilled from the sap of the flower stalk. In Venezuela, the roots are used in the production of *Cocuy*, a liqueur. Mexico, cultivated elsewhere. CAMPBELL-PLATT, TANAKA; I33, N84, P38, Q41

*Agave stricta* - *Hedgehog agave* {S}. In parts of Mexico the young flowers are removed from the side branches of tall inflorescences and are often lightly cooked and then dipped into an egg batter for frying. Mexico. NOBEL; AOM{PL}, A69, G94{PL}, H4{PL}, K47M, N84, Q41, R88, T25M

*Agave tequilana* - *Tequila agave*, *Chino azul* {PL}. Cultivated in Tequila, Jalisco for the production of the alcoholic beverages *mescal* and *tequila*, which are distilled from the roasted bases of the plants,

called *cabezas* or *pims*. The cultivar 'Azul' or *blue agave* is preferred for tequila manufacture which has four principal styles—*tequila añejo* (aged), *tequila blanco* (white, silver), *tequila abocado* (gold), and *tequila reposado* (reposed). Tequila is the principal ingredient, along with the orange liqueur *Cointreau*, of the classic cocktail known as *margarita*. In contemporary cuisine tequila is added to salsas, marinades, soups, pestos, tortas, frijoles, meat and fish dishes, cakes, pies, and custards. *Agave nectar*, a concentrated syrup made from the sap, is becoming popular with home brewers as an adjunct, especially for tequila-flavored meads. Mexico, cultivated. HUTSON 1995 [Cul, Re], NOBEL, UPHOF; A79M, F65{PD}, F73D{S}, G94

*Agave utahensis* - *Utah aloe* {PL}. The centers of the plants consisting of the buds, short stalks, and leaf bases are placed in stone lined pits and baked until they form a sweet cake. They can be dried for future use or soaked in water to produce a flavorful beverage. Roots and flower stalks are also edible. Western North America. GIBBONS 1973, HARRINGTON, H.; B84, F89M, G18, H52, H52{S}, I33{S}, I47M, I98M, N51, N84{S}, Q41{S}, R88{S}

*Dasyliion texanum* - *Texas sotol* {PL}. Central part of the bud containing a sugary pulp, was roasted in mescal pits and used as food by the Indians. It was also made into a beverage, *sotol*. Texas. UPHOF; A19, A69{S}, H4, N51, Q41{S}, R88{S}

*Dasyliion wheeleri* - *Wheeler sotol* {S}. Central bud was roasted in mescal pits and consumed by the Indians. *Sotol* was also made from this plant. Southwestern North America. UPHOF; AOM {PL}, A69, C98M{PL}, F63M, H4{PL}, I28{PL}, I33, I47, L13, N51{PL}, 093, Q41, R88

*Hesperoyucca whipplei* - *Chaparral yucca* {S}. Stalks are eaten raw or roasted in a pit. Flowers are boiled and eaten. Seeds are ground into flour. Southwestern North America. TANAKA; AOM{PL}, C9M, D56M, G60{PL}, H71, I98M, I98M{PL}, N84, 053M, P5, P17M, Q41

*Polianthes tuberosa* - *Tuberosa* {PL}. In Java the flowers are eaten by the Chinese in vegetable soup. They are added to the substrate in the manufacture of *kecap*, an Indonesian soy sauce. Also the source of *tuberosa*-flower water. Cultivated. MACNICOL [Re], STEINKRAUS, TANAKA; A79M, D24, E33, H4, H37M, I91, J27, M37M, M77, N84

*Samuela carnerosana* - *Palma barreta* {S}. The young flower clusters are eaten boiled or roasted. Mexico. TATE, UPHOF; A69, F85, H4{PL}, N51{PL}, R88

*Yucca aloifolia* - *Spanish bayonet*, *Spanish dagger* {S}. Crisp flower petals are eaten raw in salads. Flowers are dipped in egg batter and fried. After peeling, the flower stalk is boiled and eaten. Florida, Caribbean. MORTON 1977; C9M, F85, H4{PL}, H71, I33, K38, 053M, 093, P5, Q15G, Q32, R88

#### *Yucca arborescens* - \* *Yucca brevifolia*

*Yucca baccata* - *Banana yucca*, *Datil* {S}. Fleshy fruits are sweet and can be used in pies. The pulp is scraped out and dried for later use or boiled down to a paste, molded into cakes and then dried. They are later eaten as sweetmeats. Flowers and tender flower stalks are also eaten. Southwestern North America. CLARKE, GIBBONS 1966a, HARRINGTON, H., TATE; A69, C9M, D92M, E61{PL}, G66, I33, I47, J25M, J25M{PL}, K38, K63G, L13, P5, P17M, R88, etc.

*Yucca brevifolia* - *Joshua tree* {S}. The flower clusters, before the buds open, can be parboiled in salt water to remove the bitterness, drained, and cooked again and served like cauliflower. Opened buds, which are rich in sugar, are roasted and eaten as candy. Roots are eaten raw, boiled, or roasted. Seeds are also edible. Southwestern North America. TANAKA, TATE; A69, C9M, C98, F80, G60{PL}, G66, I33, I98M, I98M{PL}, K63G, L13, 053M, P17M, R88

#### *Yucca carnerosana* - *Samuela carnerosana*

*Yucca elata* - *Soap-tree yucca* {S}. The flowers are eaten raw or in preserves. Fruits are edible raw or cooked. An extract of the roots is used to produce foam in beverages. Southwestern North America. KUNKEL, MACNICOL, UPHOF; A69, C9M, C98, C98M, F63M, 133, J25M, J25M{PL}, K63G, 053M, Q41, R88

*Yucca elephantipes* - *Spanish dagger, Izote* {S}. After removing the bitter anthers and ovaries, the flowers are dipped in egg batter and fried. Rich in vitamin C and niacin, they are also added to salads, soups, and stews. The tender stem tips stripped of their leaves, called *cogollo de izote*, are eaten in El Salvador. Central America. UPHOF, WILLIAMS, L.; C9M, H4{PL}, I57{PL}, N84, P17M, Q32, Q41

*Yucca filamentosa* - *Adam's needle, Eve's thread* {PL}. Large, fleshy fruits are eaten. Flowers make a tasty and attractive addition to salads. Southwestern North America. GIBBONS 1979, HEDRICK 1919; A79M{S}, B32, C9M{S}, E33M, F80{S}, F89, G66{S}, H4, H49, 133{S}, 053M{S}

*Yucca glauca* - *Soapweed yucca* {PL}. Immature fruits are peeled, boiled, and served with butter and seasonings. The young flower stalk is cooked and the whitish inner portion eaten. Flowers and flower buds are eaten raw in salads or cooked as a potherb. North America. GIBBONS 1966a, HARRINGTON, H., KINDSCHER; C9, C9M{S}, D92M{S}, F51, F80{S}, H4, H49, 133{S}, I47{S}, J25M, L13{S}, M35M, 053M{S}

*Yucca mohavensis* - *Yucca schidigera*

*Yucca schidigera* - *Spanish dagger, Wild date* {S}. Young stems are chopped and cooked or baked like a sweet potato. Fruits and flowers are eaten raw or in jellies. Southwestern North America. TANAKA; C9M, F85, 133, 198M, I98M{PL}, N51{PL}, N84, R88

*Yucca whipplei* - *Hesperoyucca whipplei*

#### AIZOACEAE

*Glottiphyllum linguiforme* - {S}. Roots are used in the Transvaal for making a *kaffir beer*, the fermenting action being due to the presence of a yeast and two molds. South Africa. FOX, F.; H52{PL}, Q41, R88, T25M

*Khadia acutipetala* - {S}. The roots are used by the natives of Transvaal for the preparation of *khadi*, a fermented liquor. South Africa. FOX, E, TATE; N84, S28M

*Sesuvium portulacastrum* - *Sea purslane, Gelang pasir* {PL}. Seacoast plant with succulent, salty leaves that are eaten raw or cooked. They are also pickled like samphire. The leaves should be well rinsed in water to remove some of the salty taste. Good source of vitamin C. Pantropic, Southern United States. FERNALD, GIBBONS 1979, HEDRICK 1919, OCHSE, WATT; F73

*Trianthema portulacastrum* - *Ulisman, Toston* {S}. Succulent, fleshy leaves are eaten. The have a delightfully salty flavor, and are delicious in a salad dressed with apple cider vinegar. Tropical seacoasts. GIBBONS 1973, NIETHAMMER, WATT; F85

#### ALISMATACEAE

*AUisma plantago* - *Alisma plantago-aquatica*

*Alisma plantago-aquatica* - *Water plantain, Mad-dog weed* {S}. The bulb-like bases are eaten after being dried to rid them of their acrid properties. Northern temperate region. FERNALD, GIBBONS 1979; H30{PL}, I90M{PL}, J41M, K34, M15{PL}, M73{PL}, N3M{PL}, N11{PL}, N71M, N84, 053M, Q24

*Sagittaria latifolia* - *Arrowhead, Duck potato, Wapatoo* {PL}. Tubers are eaten boiled, creamed, fried and roasted, having a flavor similar to potatoes. It is best to peel the tubers after cooking them. The Indians sliced the boiled tubers and strung them on strings (like dried apples) to dry for winter use. North America. ANGIER [Re], CLARKE [Re], FERNALD, GIBBONS 1962 [Re]; A54, F73, G26,

G47M, G85, 174, J7M, J41M, K85M, M34M, M72, M73M, N3M, Nil, R49, etc.

*Sagittaria rigida* - *Sessile-fruited arrowhead* {PL}. The tubers are eaten, tasting like potatoes. Eastern North America. CROWHURST 1972 [Re], PETERSON, L.; G47M{S}, M34M, Nil, N84

*Sagittaria sagittifolia* - *Arrowhead, Water archer* {PL}. The tuber is eaten, wasted or boiled, and then seasoned. Young leaves and petioles are also edible. Eurasia. TANAKA; H4, K34, M73, N84{S}, 053M{S}, Q24{S}, R49

*Sagittaria sinensis* - *Chinese arrowhead, Chee koo, Kuwai* {PL}. Starchy tubers are chopped and cooked with pork or sliced and fried like potato chips. The protein content of 4 to 1% is high for a root crop. Young shoots are also eaten. Commonly found in Chinatown markets and used in Chinese and Japanese cuisines. China, Japan. COST 1988, DAHLEN [Pre, Cul], HARRINGTON, G. [Cu, Cul], HERKLOTS [Cu], ROSS [Re]; C74, 174, 190M, K34, M39

#### ALLIACEAE

*Allium akaka* - *Valik, Wolcg* {PL}. Young plants are considered a delicacy and are sold in the bazaars of Teheran. They are used as an addition to rice in pilafs. In Turkey, they are added to *herbal cheese* or dried and stored for winter use, in place of *A. cepa*. Iran, Temperate Asia. HEDRICK 1919, OZTURK; L92

*Allium ampeloprasum* - *Levant garlic, Perennial sweet leek, Yorktown onion* {PL}. Cultivated for its very large bulbs that are eaten raw or used as a condiment. The leafy tops of some strains are used as a vegetable or flavoring. Mediterranean region, Asia Minor, cultivated. FERNALD, KUNKEL, VILMORIN, ZEVEN; B61M, B61M{S}, L92, M77M, N84

#### CULTIVARS

**Elephant:** (Elephant Garlic) Very large bulbs can weigh over a pound. Preferred by some to regular garlic because of its milder flavor and ease of peeling. Mild enough to be eaten raw in salads. Also excellent baked, broiled, steamed, or boiled and served as a side dish. CUSUMANO [Cul, Rs], HALPIN [Cu], HAWKES [Cul]; B73M, C16, C16{PR}, C82, E3, FII, F66T{PR}, G16, H33M, 139, J99G, J99G{PD}, K22, K85, L7M, M46, etc.

**Gandana:** The green leafy tops are a common ingredient in Afghan cuisine. They are eaten with spinach and rice, or used as a filling in many famous dishes such as *ashak* (pasta) and *boulanee* (pastry). Mild, leek-like flavor. Grown as a perennial, cut-and-come-again crop. Occasionally available in Middle Eastern stores. SABERI [Re]; U63

**Perlzwiebel:** (Multipier Leek, Argentine Garlic) Multiplying cultivar that produces a cluster of solid (not layered) spherical white bulbs or rounds, much used for pickles in Holland and Germany. Bulbs range in size from 1/4 to 2 1/2 inches in diameter. If left in the ground after dieback, they will resprout in late winter or spring. Does not produce cloves or viable seed. WOOEWARD [Re]; U63

**Tarreh Irani:** (Three Irani, Persian Chives) Larger and flatter than common chives, but more delicate in both flavor and texture. Sweet, leek-like flavor. Widely used in Persian cuisine, especially for *kuku* (omelettes) and stews such as *khoresht-e ghormeh sabzi*. Occasionally available at Persian markets in the United States. Cultivated near Tehran. Similar if not identical to Gandana. SHAIDA [Re], ZEVEN; U63

*Allium ampeloprasum* var. *babingtonii* - *British leek, Welsh leek* {PL}. Bulbs are gathered and eaten in Western Ireland and Southwest England. The young leaves and bulbils are also eaten, having a mild, leek-like flavor. Thought to be a relic of former cultivation by monks. A very showy perennial with round, deep-purple flower heads. Grows to a height of 3 feet. British Isles. PHILLIPS, WOODWARD, ZEVEN; M82, N84, R49

*Allium ampeloprasum* Kurrat Group - *Kurrat-nabati, Salad leek* {S}. This is believed to be the leek of ancient Egypt, the leaves

having been found in Egyptian tombs. It is still cultivated there today, and in Arabia and the Middle East. Closely related to the common leek, but the young leaves are the part usually eaten. They can be added to salads, cooked as a side dish, or combined with other foods. Southwest Asia. DARBY, GESSERT, WOODWARD, ZEVEN; U63

*Allium ampeloprasum* Porrum Group - *Leek* {DF}. Leaves and long white stalks are eaten steamed, boiled, or braised much like asparagus. The stalk can be sliced thinly and added to salads. Also used to give a mild onion flavor to other foods. Widely used in gourmet French cuisine, especially *vichyssoise*. *Glamorgan sausages*, popular in Wales, are meatless sausages made from leeks, cheese and breadcrumbs. Sprouted seeds are eaten like those of onion or garlic. DWIES [Re], HALPIN, HEDRICK 1919, MORTON 1976; C16{S}, E14T, E97{S}, F37T, G73, L17, M82. (for cultivars see Leek, page 406, see also Sprouting Seeds, page 524)

*Allium angulosum* - *Mouse garlic* {PL}. In Siberia the bulbs are eaten fresh, and are dried or salted for winter use. Eastern Asia. HEDRICK 1919, TANAKA, WOODWARD; C11J, L92{PL}, N84

*Allium bakeri* - *Allium chinense*

*Allium canadense* - *Canada onion*, *Wild garlic*, *Meadow leek* {S}. The whole plant is gathered before the flowers appear and used like *scallions*. Top-setting bulbils make a fine onion-flavored pickle. The bulb is pure white, crisp, mild and of pleasant flavor. Forms a cluster of large bulbs under cultivation. North America. DORE, FERNALD, GIBBONS 1962 [Re], HEDRICK 1919, KINDSCHER; A61, A61{PL}, J39M, J39M{PL}, J42, J42{PL}, J43, M34M, N84, 053M, R49

*Allium cepa* - *Onion* {PD}. Bulbs are eaten raw, cooked, dried, pickled, roasted and served with salt and olive oil, or are used for flavoring other foods. The leaves of some cultivars are widely used as *scallions*. Sprouted seeds are eaten in salads and sandwiches. Dehydrated onions are a principal ingredient of herbal salt substitutes such as *Spike*, *Mrs. Dash* and *Vegit*. In Catalonia, large, leek-like *onion shoots* called *calgots* or *sprunzale* are produced from sprouting bulbs planted in trenches and blanched in the manner of celery, cardoons and finocchio. They are eaten raw with bread, grilled, or as flavoring for sauces and beans, both the white and green parts being used. The famous French dish *pissaladiere*, sometimes called *Provengalpizza*, calls for a thick covering of cooked onions, preferably sweet white onions with a high water content. *Sofregit* and *sambaina* are Catalan sauces made from onions. In Tunisia, a fermented onion paste called *hrous* flavor soups, stews and couscous. The outer scales or peels, called *shuski* in Slavic Macedonia, produce a dye widely used for coloring Easter eggs. In Egypt, they color and flavor *hamine* eggs. Shallots produce a particularly dark, rich-hued dye. Onion peels are used as a smoke flavoring by some gourmet chefs. Cultivated. ANDREWS, C. 1988 [Re], ANONYMOUS 1995, GRAY, P. [Cul, Re], HEDRICK 1919, KHALIL [Re], NEWALL, OLNEY [Re], TANAKA, UPHOF, WOLFERT 1994b [Re]; A52M. (for cultivars see Onion, page 438, see also Sprouting Seeds, page 524)

*Allium cepa* Aggregatum Group - *Potato onion*, *Multiplier onion*, *Shallot*. Unlike other onions these divide underground to form a cluster of bulbs. Some of the best gourmet onions are in this group. In Thailand, red shallots are fermented into *hom-dong* while in Indonesia their leaves and young flower stalks are used in soups and stews. OCHSE, STEINKRAUS, VILMORIN [Cu]; (for cultivars see Onion, page 438)

*Allium cepa* Aggregatum Group 'Perutile' - *Ever-ready onion*, *Everlasting onion* {PL}. Hardy perennial onion forming very dense clumps of leaves about a foot high. The leaves are finer in texture and milder than those of the Welsh onion, but are grown and used in the same manner. Each bulb planted in spring will produce 10 to 15 bulbs by autumn. HERKLOTS, LARKCOM 1984, WOODWARD [Cu]; N84, P92, R49, R53M

*Allium cernuum* - *Nodding onion*, *Lady's leek* {PL}. The strong-flavored bulbs are eaten raw, boiled, and pickled. Also used to flavor other foods. The flowers can be used like those of chives. North America. BARASH [Re], GESSERT, GIBBONS 1962 [Re], HARRINGTON, H.; C11J{S}, E15{S}, E61, G47M{S}, H37M, I47{S}, J39M, J40, J40{S}, J42, J42{S}, J43{S}, L13{S}

*Allium chinense* - *Rakkyo* {PL}. The bulbs, which have an excellent crisp texture and a strong onion-like but distinctive odor, are eaten raw or cooked. In China and Japan, they are often pickled in vinegar with either sugar, honey or soy sauce added. They can also be preserved in salt, sake lees or sweet sake. Sold in the United States in bottles or cans as *pickled scallions* or *rakkyo-zuke*. The finest rakkyo, known as *hana-rakkyo*, can take up to four years to produce. In Thailand, the roots are pickled with ground chili or used to make a kind of noodle dish called *khao soi*. China, cultivated. HERKLOTS, JACQUAT, MANN [Cu, Pro], TANAKA, TSUJI, UPHOF, WOODWARD [Cu, Be], YAMAGUCHI [Re], YASHIRODA; E56{PD}, G20M{ED}, H37M, N49M{PD}, S70

*Allium drummondii* - *Cebolla del monte*, *Wild onion* {PL}. The mineral-rich greens as used as a condiment by the Kickapoo Indians. Bulbs are eaten as a vegetable. North America, Mexico. KAVASCH [Re], KINDSCHER, LATORRE 1977b; N84

*Allium fistulosum* - *Welsh onion*, *Ciboule*, *Japanese bunching onion*, *Negi*, *Chang fa* {S}. The leaves are a principal source of *scallions*. Mostly used as a condiment for other foods or for tying foods before serving. Widely used in Chinese, Korean and Japanese cuisines, especially in scallion pancakes, called *chung yo bing* in China and *pajon* in Korea. Flowers are excellent for use in salads, soups and sauces. Cultivated. CHANG, W. [Re], HALPIN, HARRINGTON, G., HERKLOTS, LARKCOM 1984, NOH [Cul, Re]; C11J, C82, C85M, E14T{DF}, G68, 191, L16{DF}, M82{PL}, N7G, 053M, S55. (for cultivars see Onion, page 438)

*Allium geyeri* - *Geyer onion* {PL}. The bulbs were eaten by the Navajo, Apache and Nez Perce Indians, usually after drying and then steaming in pits. Western North America. HARRINGTON, H., TANAKA, WOODWARD; A61, D95, L13{S}, N84{S}

*Allium grayi* - *Nobiru*, *Tallae* {PL}. The whole, young plants are eaten raw, seasoned with miso or put into miso soup, used in stir-fry dishes, made into *kimchi*, or prepared with soy sauce and sesame oil. The bulbs can be eaten in salads or pickled like those of *A. chinense*. Occasionally available fresh in Korean markets. Eastern Asia. LEE, F. 1988 [Re], NOH, PEMBERTON, TANAKA; M77M

*Allium kurrat* -+ *Allium ampeloprasum*

*Allium ledebourianum* - *Asatsuki*, *Siu yuk* {S}. The leaves are eaten raw, in soups, sauteed, or used as a garnish for chilled tofu. Bulbs are pickled in brine, vinegar, or syrup. The flavor resembles wild onion and chives, with a hint of garlic. China, Japan. HERKLOTS, SHURTLEFF 1975, TANAKA, TSUJI; U63, V29M, V73M, V85M, W5, X54, Y29

*Allium longicuspis* - *Top-setting wild garlic* {PL}. Bulbs are eaten, resembling rocambole. They have a good garlic flavor. Perennial plant is believed to be the wild parent of garlic. Central Asia. ZEVEN; U63

*Allium nipponicum* - *Allium grayi*

*Allium obliquum* - *Twistedleaf garlic* {S}. Cultivated since ancient times in Siberia for the bulbs which are used as a substitute for garlic. Eurasia. HEDRICK 1919; A61, A61{PL}, E48{PL}, L92{PL}, N84, 053M

*Allium odoratum* - *Allium tuberosum*

*Allium odorum* - *Allium ramosum*

*Allium paniculatum* - *Sirno* {S}. Above ground parts of the plants, collected before they flower, are added to *herbal cheese*, a specialty of the East Anatolian provinces of Turkey. The herb

flavors the cheese, and also makes it somewhat softer. OZÆELIK, OZTURK; C11J, M77M{PL}, N84, R52, R83{PL}

*Allium x proliferum* (A. cepa x A. fistulosum) - *Egyptian onion*, *Topset onion*, *Tree onion*, *Walking onion* {PL}. Strong flavored bulbils are used as a flavoring or are added to cucumber pickles. The green leaf tips are used like chives; white lower stalks are chopped raw into salads; young thinned stalks are used as *scallions*, and the fat, hollow leaves can be slit and stuffed with cottage cheese. Cultivated. HALPIN [Cu], LARKCOM 1984, VILMORIN [Cu]; C67M, E61, F67, G68, 139, K22, K85, L7M, M53. (for cultivars see Onion, page 438)

*Allium ramosum* - *Chinese leek*, *Fragrant-flowered garlic*, *Fragrant Chinese chives* {S}. Leaves are eaten raw or used to flavor other foods. Suitable for edible landscaping, having white flowers with a red stripe down the center of each petal. Often confused with A. tuberosum. Central Asia. COST 1988, GESSERT, KUNKEL, WOODWARD; A61, D92M, E7M, F67{PL}, L59{PL}, N84, Q24, Q34, R49{PL}

*Allium rubellum* - *Himalayan onion* {S}. In India, the hill people eat the bulbs raw or cooked. The leaves are dried and preserved as a condiment. Eurasia. HEDRICK 1919, WATT; V73M

*Allium sativum* - *Garlic* {PL}. Bulbs are roasted, baked, boiled, sauteed, broiled or used as a flavoring for other foods. *Allioli*, *aioli*, *tarator*, *bagna cauda* and *skordalia* are garlic sauces widely used in Mediterranean and Middle Eastern cuisines, and *fleurs d'ail* is a sauce made from the flowers. The mild-flavored young leaves are considered a delicacy in the Orient, and are used in salads, soups, egg-dishes, etc. Flowering stalks, sometimes called *garlic chives*, are also used for flavoring and are occasionally sold in bunches in oriental stores. Dehydrated garlic is a common ingredient of herbal salt substitutes like *Vegit*, *Spike* and *Mrs. Dash*. Garlic oil is occasionally used in cooking. The seeds and sprouted seeds are also eaten. A nutritional supplement known as *garlic balls* contains odorless garlic mixed with ginseng and honey. Can be grown in indoor windowsill gardens. Cultivated. COST 1988, ENGELAND, GRAY, P. [Cu], [Re], HARRIS [Re], MORTON 1976, SALLOUM [Re], TANAKA; A52M{PD}, C85M, C94M{PD}, D65, D78{DF}, D82, D97{PD}, E60P{PD}, G47J{PD}, G68, G71, H25M{PD}, H33M, H41{ED}, H42, H54, J20, M82, N54{PD}, etc. (for cultivars see Garlic, page 370, see also Sprouting Seeds, page 524)

*Allium sativum* Ophioscorodon Group - *Top-setting garlic*, *Rocamboles*, *Spanish garlic*, *Serpent garlic*, *Ophio garlic*, *Hardneck garlic* {PL}. Both the bulbs and bulbils are used to flavor food, providing a mild garlic flavor. The flower stalk coils then straightens, later producing a cluster of pea-sized bulbils at the top of the stalk. Young chive-like leaves are preferred by some for their delicate flavor. The young flower shoots, called *garlic spears*, are a delicacy much appreciated in the Orient. Fresh cut spears are also a source of garlic oil. ENGELANDt HAWKES, KRAFT, LARKCOM 1984 [Cu], MORTON 1976, VILMORIN [Cu]; C43M, C43M{S}, D78{DF}, E7M, G68, K22, K85, M82, R47. (for cultivars see Garlic, page 370)

*Allium schoenoprasum* - *Chives*, *Ciboulette* {PL}. The mildly pungent leaves are used for flavoring soups, sauces, eggs, butter, cream cheese, etc. In England, chopped onions and chives are often used for flavoring *Cotswold*, a local *Gloucester* cheese. Flowers are eaten in egg, cheese and fish dishes, or used as a garnish. Cultivated. CAMPBELL-PLATT, LATHEOP, LEGGATT [Re], MORTON 1976, TANAKA; A97, C3{S}, C82, C82{S}, E14T{DF}, F80{S}, F85J{PD}, G84{DF}, H46{DF}, K22, K66{S}, K85, M53, N19M, R47, etc.

#### CULTIVARS

**Black Isle Blush:** A light mauve flowered cultivar that "blushes" with a deep pink flower center. Same usage as common chives. Royal Horticultural Society Award of Garden Merit winner in 1995. Developed by Poyntzfield Herb Nursery. R53M

**Dwarf:** Compact, low growing form of chives that only reaches a height of 3 to 6 inches. Attractive, pink blossoms. Excellent for a border edging. C9, K22, M82

**Extra Fine Leaved:** A special strain with a very fine leaf that is much in demand by growers for bunching. Grows about 12 inches tall. S55{S}

**Forescate:** Good flavor for culinary use. Choice edible flowers. Vigorous plant, 18 to 24 inches tall. The clumps of attractive foliage and clear, bright rose-red flower heads also make it an outstanding ornamental. A61{S}, B92, C9, C36, 139, J37M, M82

**Grolau:** (Windowsill Chives) Bred in Switzerland for greenhouse forcing. Can be grown on a windowsill, and because of its thick, dark green foliage will not yellow or become leggy. Produces best when kept continuously cut. Good strong flavor. I39{S}, J82, L94M{S}, M82, S55

**Pink Perfection:** A good culinary type with attractive pink blossoms. Royal Horticultural Society Award of Garden Merit winner in 1995. Developed by Poyntzfield Herb Nursery. R53M

**Profusion:** (Sterile) Prolific producer of flowers and tender leaves. Flowers remain edible much longer than other types because they do not develop seeds. Ideal for commercial edible flower producers and the gourmet trade. Also good for potted plant and indoor growing. Introduced by Richters. J82

**Purly:** Medium-heavy leaf. Good for both fresh market and processing. More upright plant habit than Staro, with a slightly straighter leaf. G6{S}

**Staro:** Heavy-leaf type. Developed for fresh market uses which demand a thicker leaf for freezing, drying, or immediate consumption. G6{S}

**Triumph:** Selected strain. Highly recommended for specialty market growers. Upright, fine-leaved plant; resistant to tip burn. Preferred by commercial growers over standard varieties. I77{S}

#### *Allium schoenoprasum* var. *foliosum* - \**Allium ledebourianum*

*Allium schoenoprasum* var. *sibiricum* - *Siberian chives*, *Giant chives* {PL}. The leaves and bulbs are pickled, used as a condiment or eaten in dumplings. Has a stronger garlic flavor than common chives. Temperate Asia, North America. TANAKA; C1 1J{S}, P92, R53M

*Allium scorodoprasum* - *Sand leek*, *Giant garlic* {S}. Bulbs are used for flavoring. It is still cultivated in some parts of the former Soviet Union. Eurasia. KUNKEL, ZEVEN; U63, V73M, V85M, V87, W88M, X54

*Allium senescens* - *Broadleaf chives*, *Sekka-yama-negi* {PL}. Bulbs, leaves, and young shoots are used as food. Eurasia. TANAKA; C9, E30, E61, F35M, J37M, L22, M77M, N84{S}

#### CULTIVARS

**Glaucum:** (Silver Corkscrew Chives) Very decorative, twisted, silver-grey foliage which never needs trimming. Mild, chive-like flavor, highly appreciated by some. Grows 6 to 8 inches tall, with contrasting 9 inch high flower stalks and lavender ball-shaped flowers. Excellent used as an edging in border plantings. Attractive as well as functional. B77, C9, C43M, E30, G96, H29M, H51M, J24, J37M, K22, K79, L22, M65M, M77M, M82, M92, etc.

#### *Allium sibiricum* - \**Allium schoenoprasum* var. *sibiricum*

*Allium sphaerocephalum* - *Round-headed garlic*, *Ballhead onion* {PL}. Bulbs are eaten by the people near Lake Baikal, Siberia. Dried leaves are used as food in India. Eurasia. HEDRICK 1919, TANAKA, WATT; A61{S}, E11, E33, F67, H63, I99M, K33M, L92, M82, N71M{S}, N84{S}, O53M{S}, Q24{S}

*Allium splendens* - *Chishima-rakkyo* {PL}. Small bulbs are eaten boiled or pickled in a mixture of sake, vinegar, and scy. Japan. UPHOF; A61{S}, C9, C1 I J{S}, M77M

*Allium stellatum* - *Prairie onion* {S}. The bulbs are eaten. North America. PETERSON, L., TANAKA; A61, B29, C13T{PL}, E48{PL}, G47M, H70M, H70M{PL}, J39M, J39M{PL}, J41M{PL}, J42, J42{PL}, M82{PL}, Q24

*Allium thunbergii* - *Yama-rakkyo* {PL}. Young plants and leaves are eaten raw, in soups, as a potherb, oil-roasted or preserved in salt. Bulbs are pickled in brine, vinegar, and syrup. Eastern Asia. TANAKA; M77M, N84

*Allium tricoccum* - *Ramps*, *Wild leek* {S}. Unfolding leaves and bulbs have a mild, sweet flavor and resemble leeks. They can be chopped fine and added to salads, fried, boiled and served with cream sauce, used in leek soups or canned for winter use. North America. ANGIER [Re], DOUTT, FERNALD, GIBBONS 1962 [Re], MEDSGER, SCHNEIDER 1986 [Cui, Re]; B51, G5{PR}, H25M{PR}, H61M, H73{PR}, I44{PL}, J6, J26M, J63T, J63T{PL}, J63T{DF}, J63T{PD}, J82, N9M, N9M{PL}, etc.

*Allium triquetrum* - *Three-cornered leek*, *Onion weed* {PL}. The flat leaves have a milder and more delicate flavor than the onion. They are eaten in Algeria. The flowers can be added to salads. Attractive for edible landscaping, but can be invasive. Mediterranean region, naturalized in North America. FAIRCHILD 1930, ROOS-COLLINS, WOODWARD [Cu, Re]; A61{S}, H37M, J99G, K33M, L59P, L92, N84{S}, R49, R83

*Allium tuberosum* - *Garlic chives*, *Chinese chives*, *Chinese leek*, *Nira*, *Gow choy* {PL}. The mild, garlic-flavored leaves are used in cooking, especially miso soup. Oil from the seeds is used as food. The blanched leaves, called *gau wong*, *chive shoots* or *yellow chives*, are a delicacy eaten with pork or poultry or stirred into noodle dishes at the last minute. Flowers, flower stems, and seedheads are all edible. Unripe seeds are used in Pennsylvania Dutch cooking. Sprouted seeds can be used like those of onion and garlic. Cultivated. ALTSCHUL, COST 1988 [Cul], DAHLEN [Pre, Cul], GESSERT, HERKLOTS, LARKCOM 1984 [Cu], ROUTHIER 1989 [Cul, Rs], WEAVER 1993 [Re]; A97, C3{S}, C82, C82{S}, K22, K22{S}, K66{S}, K85, L59{S}, M53, N7G{S}, N19M, R47{S}. (see also Sprouting Seeds, page 524)

#### CULTIVARS {S}

**Broad Leaved:** Long, thick white stems with large, broad dark-green leaves of excellent flavor. Used in Chinese cooking and stir-frying with eggs and meat. Very vigorous plant; height 13 to 15 inches; can be cut several times. Good for blanching culture. C20M, K73, L59, L79G, Q39, S63M

**Flowering:** (Chinese Leek Flower, Gow Choy Fah, Tenderpole) A cultivar selected for the edible flower buds and long, flower stalks. Unusual leek-like flavor, stronger than Chinese chive leaves. Excellent fried, pickled, and in soups. Widely grown in south China and Southeast Asia. COST 1988 [Cul], DAHLEN [Pre, Cul], ROSS [Re], ROUTHIER 1989 [Cul, Re]; B1M, C20M, D55, 177, L59, L79G, N84, S70

**Green Belt:** Specially selected for its dark green color, large and broad leaves, and disease resistance. Vigorous plant produces numerous tillers in a short period and is tolerant of winter temperature and summer heat. Ideal for year-round growing. Soft, pleasant flavored leaves; excellent for seasoning and kimchee making. C20M, F85, L79G, Q3

**Mauve:** (Curly) Has the same excellent garlic flavor as regular garlic chives, but features attractive mauve-colored edible flowers. Twisted, flat leaves. F35M, J82, K57{PL}, L94M, M82

**New Belt:** Thick, green leaves, 10 millimeters in width. Slightly more vigorous than the standard cultivar. Prolific and resistant to disease. Both stalks and buds are eaten. May be harvested at any stage for use raw in salads. Very important vegetable for Chinese dishes. S70

**Pink:** Similar to regular garlic chives in habit and flavor, but features attractive pink-colored edible flowers. E61

**Vietnamese:** Giant garlic chives from Metnam. Young flower stalks are stir-fried, steamed, or boiled. C82, C82{PL}

*Allium unifolium* - *One-leaf onion* {PL}. Bulbs and young shoots are fried and eaten. Western North America. TANAKA; D24, E63M, I98M, J99G, K33M, L92, N84{S}, R83

*Allium ursinum* - *Ramsons*, *Bear's garlic* {S}. Finely chopped leaves and bulbs are added to salads, omelettes, casseroles and sauces. They have an overpowering garlic odor that dissipates on cooking. The small green bulbils are used as a caper substitute. Eurasia. LAUNERT, MABEY, MICHAEL [Re], WOODWARD [Cu, Re]; A61, N71M, N84, O53M, Q24, R47, R49{PL}, R53M, R53M{PL}, S55

*Allium validum* - *Swamp onion* {PL}. Although the bulbs are somewhat fibrous they are very acceptable as a flavoring ingredient for soups and stews. Western North America. CLARKE, MEDSGER; D95, N84{S}

*Allium vineale* - *Crow garlic*, *Field garlic* {S}. Tender young tops can be chopped finely and used in salads. Bulbs are sometimes used but they have a very strong flavor and odor. Eurasia, naturalized in North America. ANGIER, FERNALD, GIBBONS 1962, MEDSGER; N84, 048

*Allium wallichii* - *Jimbu*, *Dzimbu* {S}. The aromatic leaves are cut, crushed and dried and used as a condiment for soups, dais, cooked vegetables and meat dishes. Has a strong, distinctive flavor, a small amount being enough to flavor a dish. An important article of trade in parts of Nepal. Himalayan region. ALTSCHUL, ASSOCIATION [Re], MAJUPURIA [Re], MANANDHAR, POHLE; N84, Q40{PL}

*Brodiaea douglasii* - {S}. Corms are edible raw, but are at their best when roasted slowly in hot ashes for up to an hour, after which they become rather sweet. The young seedpods may be used as a potherb. Western North America. KIRK; 147, O53M

*Brodiaea pulchella* - *Blue dicks* {S}. The corms are eaten raw, fried, boiled and roasted. Flowers are eaten in salads. Western North America. CLARKE; F80, G60{PL}, H61M, I98M{PL}, J25M, K15, L13, N7M, N84

#### *Dichelostemma pulchella* - *Brodiaea pulchella*

*Tulbaghia alliacea* - *Wild garlic*, *Isikhwa* {S}. Leaves and stems are cooked and eaten like spinach or are chopped fine, seasoned with salt and used as a relish. Young leaves are added to soups, stews, omelettes, pickles, etc. The flowers are regarded as a delicacy by Zulu women. Bulbs are cooked with meat or roasted and eaten. Southern Africa. FOX, R, TREGOLD; N84

*Tulbaghia violacea* - *Society garlic* {PL}. Flat leaves have a mild, garlic flavor and are used as a flavoring in soups, butters, spreads and salads. The attractive pink flowers are produced year round in warm climates, and can be used as a garnish, eaten in salads, or used to flavor other foods. South Africa. FOX, F., LATHBOP, MORSE [Re]; A97, E61, F35M, F53M, F93G, H4, H94M, J27, K22, L56, M53, N84{S}

#### CULTIVARS

**John Rider:** {S} Attractive border plant, growing 18 to 24 inches tall when in flower; rich violet flower umbels on strong stems. Will flower the first season if started early. Produces flowers year round in warm climates. Both flowers and foliage are edible, having a strong garlic-like flavor. D92M, N84, O53M

**Silver lace:** (Variegated, Tricolor) Dwarf, clumping plant with attractive grass-like leaves of deep green, margined with pink and white. Makes a fine container plant. More ornamental than the common type. The flowers are also somewhat milder in flavor. C9, E48, E61, F35M, F53M, G20, H4, H94M, I99P, K22, M82, N37M, R77



## ALTINGIACEAE

*Liquidamber orientalis* - {S}. Source of a gummy resin, called *Asian styrax*, used to flavor tobacco, chewing gum, baked goods, and candy. Asia Minor. MORTON 1976, TANAKA; Z25M

*Liquidamber styraciflua* - *Sweet gum* {S}. Produces a gummy resin that is chewed to sweeten the breath and clean the teeth, and also to flavor tobacco. It is called *storax*, or *American styrax*. Does not produce much resin in the Northern states. Eastern North America to Central America. MORTON 1976; A82{PL}, C9M, E47, E47{PL}, F80, H4{PL}, H7I, I28{PL}, K38, K63G, Q32

## AMARANTHACEAE

*Achyranthes aspera* - *Prickly chaff flower*, *Apamarga*, *Latjira* {S}. Young leaves and the leafy tops of the stems are eaten as *lalab* (side-dish) and as *bayam* or *bayem* (spinach) in *sayor* (soup). Used as a salt substitute in Chad. The seeds boiled in milk, *chach*, or whey are regarded as a good tonic in India. Old World Tropics. BHANDARI, CRIBB, DALZIEL, OCHSE, TREDGOLD, UPHOF; F68T, F85, N84

*Alternanthera amoena* - *Alternanthera ficoidea*

*Alternanthera ficoidea* - *Bayam merah*, *Bayam bang* {PL}. The young leaves are eaten raw with rice, boiled as a potherb, or eaten with *sambal*, a hot-pepper mixture. Southeast Asia. OCHSE; G96, N84

*Alternanthera sessilis* - *Bayam kremah*, *Chuk-tsit-tsoi* {PL}. The leaves and tender tops of the plants are eaten in salads, soups, curries, with fish or rice, and steamed as a potherb. Resembles spinach in appearance and flavor. Flowers are eaten in China. Tropics. ALTSCHUL, TANAKA, UPHOF; F85{S}, H29, I90M, N3M, N84{S}

*Alternanthera versicolor* - *Pink cress* {PL}. Pink-red serrated leaves make an attractive addition to salads. They are mild flavored and can be boiled and used as a potherb, mixed with stronger flavored greens. Southern Asia. KUNKEL; I90M

*Amaranthus caudatus* - *Inca wheat*, *Kiwicha*, *Pendant amaranth* {S}. Mild flavored greens are boiled and used as a potherb, or cooked in soups and stews. They can be harvested as thinnings from amaranth grain fields. Seeds are popped, ground into flour for baking, cooked into a porridge, or mixed with crude sugar to make a confection called *boroco*. Cultivated. COLE, J. [Re], KAUFFMAN [Cu], NATIONAL RESEARCH COUNCIL 1984, SAUER, WILLIAMS, L.; F80, F85, J25M, N84, O53M, PIG

*Amaranthus cruentus* - *Mexican grain amaranth* {PD}. Leaves are steamed and used as a spinach substitute. Sprouted seeds are eaten in salads and natural-foods cuisine. In Guatemala, the seeds are used for *torillas* or parched and popped, then made into a confection called *niguas*. A relatively new product, *pre-gel amaranth powder*, can be used as a replacement for corn starch in instant puddings, gravies and sauces. Flowers are used to color ceremonial maize bread. Cultivated. COLE, J. [Re], KAUFFMAN [Cu], NATIONAL RESEARCH COUNCIL 1984, SAUER; C25M, E56{DF}, 116, 116, I51M{DF}, I51M, L14G{DF}, L14G, O53M{S}. (for cultivars see Amaranth, page 265)

*Amaranthus dubius* - *Khada sag*, *Bayam bhaji* {S}. The leaves of this species are considered very palatable. They are eaten as a potherb in India, West Africa, the Caribbean, and Indonesia. One of the best cultivars is *Claroen*, particularly popular in Benin and Suriname. Seeds are also eaten. Tropics. CHAUHAN, D., NATIONAL RESEARCH COUNCIL 1984; N84, S55

*Amaranthus edulis* - *Amaranthus mantegazzianus*

*Amaranthus gangeticus* - *Amaranthus tricolor*

*Amaranthus gracilis* -> *Amaranthus viridis*

*Amaranthus graecizans* - *Prostrate amaranth* {S}. Young, tender leaves and stems have a bland, mild flavor. They are steamed and used as a potherb with purslane, mustard, and other greens with a more pronounced flavor. Seeds are eaten raw, parched, or ground into flour or meal. North America. HARRINGTON, H., KINDSCHER, KIRK; N84

*Amaranthus hybridus* - *Rough pigweed*, *Spleen amaranth* {S}. Leaves and young seedlings are eaten in salads\* soups, and stews. Seeds are eaten or ground into flour. Has the potential, through crossbreeding, of imparting early maturity to the white-seeded grain amaranths. North America, widespread. MORTON 1977, NATIONAL RESEARCH COUNCIL 1984; M34M, N84, R47. (for cultivars see Amaranth, page 265)

*Amaranthus hypochondriacus* - *Mercado grain amaranth*, *Guegui*, *Bledo*, *Ramdana*, *Rajgira* {S}. The seeds are eaten toasted, made into *torillas* and *chapaties*, rolled into balls, or powdered and drunk as *atole*. Popped grain is soaked in milk and sugar, or mixed with honey to form cakes called *laddoos* in India and *alegrías* in Mexico. Young leaves are used like spinach. Sprouted seeds are used in salads. Cultivated. COLE, J. [Re], HALPIN [Cu], JONES, M. [Re], KAUFFMAN [Cu], NATIONAL RESEARCH COUNCIL 1984, NIETHAMMER [Re], SAUER; A25G{EQ}, B31{DF}, C43M, J73, J82, PIG, RO. (for cultivars see Amaranth, page 265, see also Sprouting Seeds, page 524)

*Amaranthus lividus* - *Purple amaranth*, *Vleeta*, *Horsetooth amaranth* {S}. Cultivated in the gardens of the ancient Greeks and Romans for die purple-red leaves, eaten as a potherb. Ground seeds are made into cakes and porridge. Eurasia. KUNKEL, NATIONAL RESEARCH COUNCIL 1984, WATT; L77D, N84

*Amaranthus mangostanus* - *Amaranthus tricolor*

*Amaranthus mantegazzianus* - *Quinoa de Castilla* {S}. Seeds are used as a grain crop. Cultivated in Argentina but becoming rare. Andean South America. COLE, J., COONS, TANAKA, ZEVEN.

## CULTIVARS

**Bolivia 153:** Purple to black-seeded cultivar suitable for milling into flour. Mostly uniform red plants, 2 to 4 feet tall, characterized by one very thick floral spike. Medium to long season. A2, K49M

*Amaranthus oleraceus* - *Amaranthus lividus*

*Amaranthus paniculatus* - *Reuzen amaranth*, *Marsa* {S}. Leaves are a good substitute for spinach. Starchy seeds are ground into flour and used in baking. Cultivated. TANAKA, K53, RO

## CULTIVARS

**Oeschberg:** Very productive plant; height 3 feet; produces up to one half pound of nutritious seed on a square yard. Dark, ornamental foliage. Striking, rich bright blood-red spikes. Developed by the famous Oeschberg Horticultural College in Switzerland. D92M, N81, N84, Q34

*Amaranthus patulus* - *Amaranthus retroflexus*

*Amaranthus quitensis* - *Sangorache*, *Ataco* {S}. Occasionally cultivated for its stout, intensely red inflorescences which are a source of dye used for coloring *chicha* and ceremonial maize dishes. The leaves are eaten as a potherb. Seeds are ground into flour. Andean South America. KUNKEL, SAUER, ZEVEN; X54

*Amaranthus retroflexus* - *Redroot amaranth*, *Wild beet*, *Pigweed* {S}. Leaves and stems, while still young and tender, are eaten alone as a potherb or mixed with stronger flavored greens such as cress, dandelion and chicory. Amaranth meal is greatly improved by roasting the seeds before grinding. It is then mixed with cornmeal and used as *pinole* to make bread, cakes, and gruel. Seeds are occasionally sprouted and eaten. North America. ANGIER [Re], CLARKE [Re], GIBBONS 1962 [Re], HARRINGTON, H.; C82, L3J, M34M, N71M, N84, P38

*Amaranthus spinosus* - *Prickly amaranth*, *Spiny callaloo*, *Careless weed*, *Taduliya* {S}. The young leaves and tender stems, before

the spines form, are used as a spinach. Older ones are highly esteemed after the spines have been removed. In Uganda, the plant is used in the preparation of a local salt known as *abalong*, which imparts a sourish flavor to foods. The Maori make a type of wine from it. Pantropical. BURKILL, CAMPBELL-PLATT, GOODE, OCHSE, WATT, WILLIAMS, L.; F73D, F85, G73, N84, RO, R50

*Amaranthus tricolor* - *Chinese spinach*, *Hinn choy*, *Bayam*, *Callaloo*, *Sag* {S}. Leaves are eaten raw, boiled, steamed, stir-fried, or used in soups, stews, curries, frittatas, omelettes, pastas, sauces, etc. Types with very large leaves can be used for wrapping like grape leaves. The crisp interior of large stems makes a tasty cooked vegetable. An excellent hot weather substitute for spinach. Cultivated. BURKILL, COLE, J. [Re], HALPIN [Cul, Nu], HARRINGTON, G. [Cu], HERKLOTS, NIETHAMMER [Re], OCHSE, ORTIZ 1973 [Re], VILMORIN [Cu]; F85, G73, H49, I39, J82, N84, PIG, S55. (for cultivars see *Amaranth*, page 265)

*Amaranthus viridis* - *Green amaranth*, *Green callaloo*, *Bayam hedjo* {S}. The leaves are cooked and used as a spinach substitute. Leafy stems and flower clusters are also used as vegetables. One of the principal ingredients, along with *Xanthosoma* spp., of the Jamaican *peppercup* soup. Tropics. BENGHIAT [Cul, Re], BURKILL, CRIBB, OCHSE, TANAKA; F85, S55

*Amaranthus* x sp. (*A. cruentus* x *A. powellii*) - *Hopi red-dye amaranth*, *Komo* {S}. A form selected for its bright red pigmentation. A water extract of the flower clusters is used to color the pink maize wafer bread (*piki*) used in Hopi ceremonial dances. Seeds are also edible. Cultivated. SAUER; A2, C43M, C95, D68, D92M, E61, F35M{PL}, F37T{PL}, 116, J76, J76{PL}, K49M, L94M, O53M

*Celosia argentea* - *Quailgrass*, *Sokoyokoto* {S}. Leaves, tender stems, and young inflorescences are steamed and eaten as a potherb, or finely cut and used in soups. In Africa there are both green and red types. An edible oil is extracted from the seeds. The protein extracted from the leaves, known as *sokotein*, is used as a food supplement. Tropics, cultivated. DALZIEL, MARTIN 1975, OCHSE, OOMEN PIRIE, VAN EPHENHUSEN [Cu]; D33, D92M, F85, N84

*Celosia argentea* f. *cristata* - *Cockscomb* {S}. The young leafy shoots are boiled or steamed and used as a potherb. In Japan, they are added to miso soup. The classic Moghul and Kashmiri dish *rogan josh*, sometimes called *red lamb stew*, is often colored with a reddish liquid made by soaking partially dried cockscomb flowers in water. *Rista*, *Dani*, and *vari masala* (spice cake) are other Kashmiri foods using cockscomb flower water. Cultivated. ACHAYA, ALTSCHUL, MATTOO [Re], TANAKA; B6, D40G, D56M, D68, E7M, E81M, G0{DF}, G71, G82, 116, I63Z, 191, J82, K17J{PD}, K49M, K49T, K71, L3J, M29, N7D{DF}, etc.

#### CULTIVARS

**Mano de Obispo:** (Bishop's Hand) Ornamental cockscomb used in Mexico for decorating graves on The Day of the Dead (El Dia de los Muertos). Flowers are mostly a vivid magenta color, occasionally golden. The black seed is edible. 116, N84

*Celosia cristata* - \**Celosia argentea* f. *cristata*

*Celosia trigyna* - *Silver spinach*, *Ajefowo* {S}. Young and tender leafy shoots are finely cut up and used in soups and sauces. Tropical Africa. DALZIEL, FOX, R, VAN EPHENHUSEN [Cu]; U14

*Iresine herbstii* - *Blood leaf*, *Beefsteak* {PL}. Leaves are squeezed in water to obtain a red dye used for coloring agar-agar jellies. New Guinea, cultivated. BURKILL, TANAKA; E48, G73, G96, N84, P38, R77

*Pfaffia paniculata* - *Suma*, *Brazilian ginseng* {DF}. The roots have reportedly been used as a ginseng-like tonic by the Xingu tribe of Matto Grosso, Brazil for at least three hundred years. Also becoming popular with natural foods enthusiasts. Amazonian region. TIERRA, TYLER, VAN STRATEN; B21P, E14T, F37T, F73D, F86G, GO, K18M, L34, M15M, N7D

## AMARYLLIDACEAE

*Narcissus jonquilla* - *Jonquil* {PL}. The flowers are eaten in salads, candied, or made into desserts. Cultivated. CROWHURST 1973 [Re], MACNICOL; A61, E11, F40M, H37M, K33M, N84{S}, R52, R83

*Pancreatum maritimum* - *Sea daffodil* {S}. The bulbs are edible. They were exhibited with other foods at the International Exhibition of 1862. The seeds were apparently eaten in Ancient Greece. Southern Europe. HEDRICK 1919, LANZA 1996, NIEBUHR; H37M{PL}, L91M, M77{PL}, N84, Q24

## AMBROSIACEAE

*Ambrosia artemisiifolia* - *Ragweed* {S}. Achenes contain 19% oil, having slightly better drying properties than soybean oil. They have been suggested for edible purposes, as the oil is relatively free from linolenic acid. Sometimes called *oil of ragweed*. North America. UPHOF; M34M, N84

## ANACARDIACEAE

*Anacardium giganteum* - *Caju do matto* {S}. Fleshy receptacles are eaten green, cooked and roasted, or made into alcoholic beverages. They have a very pleasant subacid flavor reminiscent of strawberries. The cashew-like nuts are roasted and eaten. Northern South America. TANAKA, WILLAN; X88M

*Anacardium occidentale* - *Cashew* {S}. Kidney-shaped kernels are the cashew nuts of commerce. After preparation, they are eaten raw, roasted or made into cashew butter, nut milks, and *seed yogurt*. They also give flavor to *Madeira* wine. The fleshy receptacle, the *cashew apple*, is eaten fresh, stewed, candied, dried or made into chutney, vinegar, pickles, a carbonated beverage *cashola*, a brandy *fenni*, and a gin-like liquor *koniagi*. Cultivated. BENGHIAT [Cul, Re], CARIAS [Re], COLE, C. 1990 [Re], GARNER [Pro], JOHNS [Cul], MEYEROWITZ 1994b [Re], MORTON 1987a, POPENOE, W. 1920 [Cu], ROSENGARTEN, UPHOF; A79M, E29{PL}, F85, F97MJED), G92{PD}, H80M{ED}, I12{PL}, I66M{EQ}, J22{PL}, J51M{DF}, M63M{ED}, N84, 093, P5, Q12, Q18, Q93{PL}, etc.

*Bouea gandaria* - *Bouea macrophylla*

*Bouea macrophylla* - *Maprang*, *Gandaria*, *Kundang* {S}. The young, grayish-violet leaves are often eaten raw with *sambal ontjom*. Fruits with a sweetish sour flavor are peeled and eaten raw. Others have an acid flavor and are used as a substitute for sour lime and tamarind. Unripe fruits are used in making *rujak*, *asinan*, and *sambal gandaria*. Malaysia. BURKILL, MORTON 1987a, OCHSE, RIFAI. A45{PD}, N84

#### CULTIVARS {SC}

**Wan:** (Sweet) Small, plum-sized, orange fruit. Much sought after because of its fine flavor. When fully ripe, the entire fruit including the skin but not the seeds is eaten. Originated near Bangkok, Thailand. Introduced into Florida in 1967, by William F. Whitman. MORTON 1987a, WHITMAN; T73M

*Buchanania lanzan* - *Almondette tree*, *Chironji*, *Charoli* {S}. The seeds, which have an excellent flavor somewhat reminiscent of almonds or pistachio nuts, are eaten raw and roasted, or used in the preparation of sweetmeats and desserts such as *shrikhand*, *laddu* and *burfi*. The fruit has a pleasant, sweetish, subacid flavor. Also the source of a light yellow, wholesome oil that has a pleasant aroma and may be used as a substitute for almond or olive oil. Commonly found at Indian stores in North America. Also popular in England, where the seeds are known as *almondettes*. Tropical Asia. DEVI, JAFFREY [Re], MACNICOL [Re], MENNINGER, PARMAR, P. [Re], ROSENGARTEN, UPHOF; F74{DF}, Q46

*Choerospondias axillaris* - *Spondios axillariss*

*Dracontomelon dao* - *Yun meen*, *Jen-mien-tzu* {S}. The small, sourish-sweet fruits are cooked with soy sauce and eaten with rice, or used for flavoring curries. In Canton, they are commonly served

with minced pork. Leaves are also edible. Philippines. BURKILL, DAHLEN [Re], MARTIN 1975, PONGPANGAN, TANAKA; N84

*Harphephyllum caffrum* - *Kaffir plum* {S}. The tart, juicy, red fruits are sometimes eaten raw, but are more often made into a delicious jelly or a good rose wine. South Africa, cultivated. KUNKEL, TANAKA, TREDGOLD; A79M, C9M, N84, 053M, P5, P38, Q32, R33M, R60

*Lannea coromandelica* -> *Lannea grandis*

*Lannea grandis* - *Wodier wood*, *Kayoo djaran* {S}. Trunk is the source of a gum, *jingan gum*, much used in confectionery. Young leaves and shoots are eaten uncooked, steamed as *lalab* (spinach) with rice, and mixed in *sayor* (soup). Powdered bark is used as a flavoring for roast fowl. Southeast Asia. BURKILL, OCHSE, UPHOF; F85, Q46

*Mangifera caesia* - *Hndjai* {S}. Young fruits are sliced and eaten raw with ketjap or sambal. In Sumatra, the pulp is salted and preserved in bottles stoppered with ashes, then used as an admixture to small fishes wrapped in leaves. The leaves are eaten raw or used as a condiment. Fresh or dried seeds are grated, mixed with spices and dried fish, and eaten as a side-dish with rice. Malaya. MORTON 1987a, OCHSE, TANAKA, TANKARD, TINGGAL; N84

*Mangifera foetida* - *Horse mango* {S}. Before being eaten, the peeled young fruits—which have a strong turpentine-like flavor—are pickled, preserved in syrup, or used for chutneys and curries. They are sometimes consumed with a sambal sauce. Ripe fruits of sweet types are eaten fresh. Southern Asia, cultivated. BURKILL, JACQUAT, MORTON 1987a, OCHSE, RIFAI, TANAKA, TINGGAL, WATT; N84

*Mangifera indica* - *Mango* {S}. The juicy, aromatic fruit is eaten fresh, in curries, made into chutney, jams, pickles, pies, sauces, wine, vinegar, etc. The grated unripe flesh is used as a meat tenderizer. Dried unripe fruits, *amchoor*, are ground into a powder and used as a sour flavoring in Indian cuisine, and are also an ingredient of *chat masala*, a spice mixture. Seeds are used in the preparation of *dodol* or pudding; a starch and an edible fat are also extracted from them. Flowers and young leaves are also edible. In Jamaica, mango wood is reportedly used as a smoke flavoring for sausages. Cultivated. BENGHIAT, DEVI, GARNER [Pro], JAFFREY [Cul], KUNKEL, MORTON 1987a [Cu], NORMAN, OCHSE, ORTIZ 1973 [Re], PASSMORE, POPENOE, W. 1920 [Cu], SCHNEIDER 1986 [Cul, Re], TANAKA; A7{DF}, B23P{PR}, B60M{PR}, C9M, E29{PL}, F74{DF}, G0{PD}, G92{DF}, G99M{PR}, G99M{PD}, L54{PR}, L54{DF}, L54{PD}, N84, Q12, Q46, etc. (for cultivars see Mango, page 420)

*Mangifera odorata* - *Kuveni mango*, *Kuini* {S}. The ripe fruits are sour-sweet, with a strong turpentine-like aroma, and are eaten fresh or prepared as syrup, jam and sweets. Unripe fruits are pickled, used in curries, or eaten with vinegar. Malaysia, Indonesia. BROWN, BURKILL, MORTON 1987a, RIFAI, TANAKA; 019

*Pleiogynium cerasiferum* -> *Pleiogynium solandri*

*Pleiogynium solandri* - *Burdekin plum* {S}. The large, ribbed seeds have a pleasant flavor and are eaten. Fruits are used in jams and jellies. They develop their best flavor when allowed to soften and ripen for several days after they are harvested. Australia. CRIBB, MOWRY [Pro], ROBINS, UPHOF; E29{PL}, I83M{PL}, N84, 094, P5, P17M, P38, R15M, R33M

*Pleiogynium timorense* -> *Pleiogynium solandri*

*Rhus aromatica* - *Fragrant sumac* {PL}. The acid red fruits are made into *Indian lemonade*. Kiowa Indians ate the berries mixed with com meal, beaten with sugar or boiled into a tea. North America to Mexico. KINDSCHER, MEDSGER; B9M, C9M{S}, C47, D92M{S}, D95, F51, G89, H90, J39M, K38{S}, K63G{S}, M69M, M92, 093{S}

*Rhus chinensis* - *Sumac*, *Tibri* {S}. The fruit is eaten. Also used as a salt substitute and a vegetable rennet in the preparation of curds. China, Himalayan region. TANAKA; D95{PL}, F85, G66, N84

*Rhus copallina* - *Shining sumac*, *Winged sumac* {PL}. Fruits are used to make *Indian lemonade*. North America. ANGIER, FERNALD, HEDRICK 1919, MEDSGER, UPHOF; A80M, B9M, B32, E87, F51, G66{S}, H49,111M, I11M{S}, K38{S}, K63G{S}, K89, M69M, 053M{S}, 093{S}, etc.

*Rhus coriaria* - *Sicilian sumac*, *Elm-leaved sumac*, *Tartak* {DF}. Crushed fruits, along with *Origanum syriacum*, are the principal ingredients of *za'tar*, a popular spice mixture used in Middle Eastern cuisine. In Syria a valued drink is prepared by soaking the berries in milk. Immature fruits are used as a caper substitute. Middle East, Mediterranean region. HEDRICK 1919, MORTON 1976, NIEBUHR; A7, A7M{PD}, A52M, D95{PL}, E69, G66{S}, J66M, L16, L16{PD}, L50M{PD}, ei5G{S}

*Rhus glabra* - *Smooth sumac*, *Scarlet sumac* {PL}. A refreshing pink lemonade-like beverage is prepared by bruising the fruit in water, thus freeing the malic acid, straining the resulting liquid through cloth, and then adding sugar. The peeled young shoots and the peeled roots can be eaten raw. North America. FERNALD, GIBBONS 1962 [Re], KINDSCHER, MEDSGER, TURNER 1979 [Re]; A49D{DF}, C9M{S}, D95, F51, G0{DF}, H4, 14, I11M, I11M{S}, I47{S}, J26, M35M, 053M{S}

*Rhus integrifolia* - *Lemonade berry* {S}. Fruits are crushed in water to make a cooling beverage. Boiling should be avoided as this releases tannic acids. The Indians dried the berries for winter use when they made a kind of hot pink lemonade. Southwestern North America. CLARKE, HEDRICK 1919, MEDSGER; B94, C9M, D92M, D95{PL}, F85, G60{PL}, H71, 147, I98M, I98M{PL}, K15, N84, 053M

*Rhus javanica* - *Nurude*, *Mu-yen* {PL}. A salt derived from the fruit is used to flavor foods and to coagulate *tofu*. Indonesia. TANAKA; N37M

*Rhus ovata* - *Sugar bush* {S}. The pulp of the fruit is sucked for the pleasingly tart juice that forms on its surface. A sweetish white sap exudes from the fruit and is used as an acid flavoring or a sugar substitute. Leaves are boiled to make tea. Southwestern North America. CLARKE, MEDSGER, UPHOF; B94, C9M, D95{PL}, F63M, G59M, G60{PL}, H71, I98M, I98M{PL}, J25M, K15, N84

*Rhus trilobata* - *Lemonade sumac*, *Squaw berry* {PL}. Fruits are eaten fresh, dried, mixed with corn meal, or made into jam, lemon pie, or sumac ade. Southwestern North America. CLARKE [Re], KIRK, UPHOF; C43V{S}, D95, E61, E67T, F53M, F63M{S}, G60, G66{S}, H4, I47{S}, J25M, J25M{S}, J26, K38{S}, M35M, etc.

*Rhus typhina* - *Staghorn sumac*, *Vinegar tree* {PL}. Very sour fruits are used in pies and soaked in water to make *Indian lemonade*. Eastern North America. FERNALD, KUNKEL, MEDSGER; B9M, B32, C9M{S}, D45, D95, E33M, F51, F80{S}, H4, I11M, K38{S}, M35M, M69M, 053M{S}

*Schinus molle* - *Californiapfeppertree* {S}. Dried, roasted berries are used as a pepper substitute. Oil distilled from the fruit is used as a spice in baked goods and candy. The fruits are brewed into wine. They are also pulverized and used in cooling drinks called *horchatas* or *atoles* in Central America. The Incas of Peru made *chicha* and vinegar from them. South America, cultivated. COE, MORTON 1976, TANAKA, WILLIAMS, L.; A79M, C9M, G66, I28{PL}, I68{?L}, J86{PL}, K38, 053M, 093, P5, P17M, Q15G, Q32, S92

*Schinus terebinthifolius* - *Brazilian pepper*, *Pink peppercorns*, *Red peppercorns* {S}. The peppery seeds, imported from Reunion, are sold in expensive specialty markets and are used as a spice in Cajun and Nouvelle cuisines. However, they are known to cause rashes, vomiting, and diarrhea in some sensitive individuals. South America, cultivated. VONWELANETZ; A7{DF}, A79M, C9M,

C43M{PL}, C94M{DF}, F85, G66, K17J{DF}, K18M{DF}, L16{DF}, L17{DF}, L34{DF}, 053M, 093, P5, P17M, Q15G, Q32, etc.

*Sclerocarya birrea* - *Dineygama* {S}. Sugary fruits, the size of a plum, have a pleasant acid flavor and are eaten fresh or made into an alcoholic cider. Milky kernels are eaten like peanuts. Tropical Africa. HEDRICK 1919, TANAKA, UPHOF, VON MAYDELL; N84

*Sclerocarya birrea* ssp. *caffra* - *Sclerocarya caffra*

*Sclerocarya caffra* - *Marula* {S}. The tart, juicy fruit is eaten or made into jelly and a liqueur known as *Amarula*. An alcoholic cider is brewed from its juice, which is also boiled down to a thick black syrup used by the natives to sweeten their Guinea-corn gruel. Seed kernels, tasting like walnuts or peanuts, are eaten with *mealie meal*, or ground into flour. They contain 4 times the vitamin C of oranges. *Sakoa oil*, extracted from the kernel, contains 28% protein and is used in cooking. Southern Africa. CAMPBELL-PLATT, FCK, F., MENNINGER, TANAKA, TREGOLD, VAN WYK; M17{PL}, N84, 053M, R47, S28M

*Spondias axillaris* - *Lapsi*, *Hsuan-tso* {S}. The sour green fruits are used as a tamarind-like flavoring. In Nepal, they are commonly made into achar, candies, soups and sauces, or served as an accompaniment to various foods. *Titori* is a kind of bon-bon made from lapsi, salt, chili and asafoetida. Young leaves are eaten raw with chili sauce. The bark is chewed like betel nut. China. JACQUAT, MAJUPURIA [Re], TANAKA, VON REIS; P38

*Spondias cytherea* - \**Spondias dulcis*

*Spondias dulcis* - *Ambarella*, *Vi apple*, *Otaheite apple*, *June plum*, *Golden apple* {PL}. The ripe fruits are eaten fresh, dried, cooked in coconut milk, curried, put in syrup with agar-agar, or made into jams, drinks, wine, and marmalade. Unripe fruits are made into jelly, pickles, *rujak*, and relishes or used as a sour flavoring for sauces, soups and stews. Young leaves are pleasantly acid and are consumed raw, steamed with salted fish and rice, or used as a seasoning. Cultivated. EISEMAN, KENNARD [Pro], MORTON 1987a, POPENOE, W. 1920 [Cu, Pro], RICHARDSON, M. [Re], STURROCK, TANAKA, WALSH; A7{PD}, E8M, E29, F85{S}, 777, M17, N84{S}, R78M{S}

*Spondias lutea* - *Spondias mombin*

*Spondias mangifera* - *Malayan mombin*, *Amra*, *Buah amara*, *Klonjing* {S}. Young leaves and fruits are used in Indonesian cuisine to add a sour, lemony flavor to curry and other dishes. Fruits are also pickled in oil, salt and chilis or preserved in sugar. In Thailand, they are added to papaya salad or *plaa kung*, fresh shrimp in lemon juice. Panicles are eaten raw or cooked as a vegetable. Tropical Asia. BURKILL, JACQUAT, MORTON 1987a, OCHSE, TANAKA, WATT; N84, P38, P38{SC}, Q46

*Spondias mombin* - *Yellow mombin*, *Hog plum*, *Ciruella tronadora* {S}. The fleshy fruits are pleasantly acid and are eaten fresh or stewed with sugar, and are also made into cider-like drinks, ice cream, jams and jellies. Huastec Indians use them to flavor *aguardiente*. In Amazonas, they are used to produce a wine sold as *vinho de taperiba*. Unripe fruits are pickled and eaten like olives. Young leaves are cooked as greens. The bark is added to sugarcane juice when making *pulque*. Tropical America. ALCORN, JOHNS [Cu], KENNARD, MORION 1987a, POPENOE, W. 1920 [Cu, Pro], STURROCK; F85, M17{PL}

*Spondias pinnata* - *Spondias mangifera*

*Spondias purpurea* - *Red mombin*, *Purple mombin*, *Spanish plum*, *Ciruella* {S}. Spicy, subacid fruits are consumed fresh, stewed with raw sugar, or are boiled and dried for future use. Also made into jams, jellies and beverages. Unripe fruits are pickled in vinegar or made into a tart, green sauce. The sour leaves and shoots, containing 5.5% protein, are eaten raw or cooked. Tropical America. DUKE, KENNARD, MORION 1987a, POPENOE, W. 1920 [Cu, Pro],

STURROCK, WILLIAMS, L.; E29{PL}, F85, M17{PL}, N84, P38{SC}

*Spondias tuberosa* - *Imbu* {PL}. The greenish yellow, thick-skinned fruit has soft, melting, almost liquid flesh with a pleasant, subacid flavor suggestive of a sweet orange. It is eaten fresh or made into ice cream, jams, jellies and drinks. In northern Brazil, a famous custard-like dessert called *imbuzada* is prepared by adding the juice of the fruit to boiled sweet milk. Brazil. HEDRICK 1919, KENNARD, MORTON 1987a, POPENOE, W. 1920, UPHOF; E29, N84{S}

## ANNONACEAE

*Annona x atemoya* (*A. cherimola* x *A. squamosa*) - *Atemoya* {S}. A garden hybrid of the cherimoya and the sugar apple grown in the tropics for its sweetish fruit, which is usually eaten chilled. Has some of the qualities of the cherimoya, but is mostly grown in warmer climates where the cherimoya does not succeed. GARNER, MORTON 1987a [Cu], MOWRY, SCHNEIDER 1986 [Nu, Re], STURROCK; A41G{PL}, B60M{PR}, I77G{PL}, J29M, N84, P5, P38

### CULTIVARS {GR}

48-26: Libby cherimoya x Red Sugar sugar apple. Grey-pink fruit with short, bumpy protuberances; inside surface of skin pink-red; white flesh with a pink core, melting, very juicy; mild, sweet, refreshing flavor. Hyper-productive tree, should be thinned for good fruit size. Originated in Boynton Beach, Florida by Har Mahdeem. N53M

**African Pride**: (Kaller) Large fruit, up to 20 ounces; skin dull green, smooth to medium rough; flesh rubbery in texture, free of discoloration and bitterness next to the skin, flavor good; seeds few. Tree dwarfish, comes into production early; a biannual bearer in Florida, the first crop in September and October, the second in March and April. Originated in Israel; introduced into Australia from South Africa. BROOKS 1972, MORTON 1987a; J22, Q93

**Bradley**: Small to medium-sized fruit, symmetrical round in shape, of excellent flavor. Tree a heavy producer. Good for back yard growers. Originated in Florida. E29, 183M, N53M

Elly: Local Hawaiian selection with sweet fruits of good flavor and few seeds. Bears good crops of fruit. E8M

**Geffner**: Medium-sized fruit with firm, rubbery flesh and fair to good flavor; seedier than African Pride. Tree a heavy producer. Grown commercially on Kauai and in Florida. Selected in Israel. E8M, E29, G2M, J22, M17, N53M, Q93, S97M

**Hillar White**: Improved strain of Pink's Mammoth. Large fruit of good quality. Smaller and seedier than Pink's Mammoth, but more productive. Has fewer seeds than African Pride. Grows to a large tree. Does not produce good crops as early as African Pride, but will produce commercial crops for a longer period. Q93

**Page**: Medium-size fruit, tends to split on the tree. Sets good crops without hand pollination. Originated on the property of Morrison Page in the Redlands, Florida. One of the first named selections of *atemoya*. MORTON 1987a; Q93

**Pink's Mammoth**: (Mammoth, Pink's Prolific) Very large, irregularly-shaped fruit, up to 5 pounds; remarkably few seeds; flavor excellent; quality good though the flesh immediately below the rind is usually brownish and bitter. Large open tree, takes several years to come into production. Originated in Queensland, Australia. MORTON 1987a; E8M, J22

**Priestly**: Medium-sized fruit with few seeds and an excellent flavor; susceptible to splitting if left on the tree too long. Somewhat knobby and unattractive. Also not very productive. N53M

*Annona cherimola* - *Cherimoya* {PR}. The delicious fruits, tasting like a cross between a pineapple and a banana, are best eaten out of hand. Or they can be used in ice cream, custards, cakes, pies, sherbets and other desserts or turned into soft drinks and alcoholic

beverages. Andean South America, cultivated. GARNER [Pro], JOHNS [Cu], MORION 1987a [Cu], POPENOE, W. 1920 [Cu], SCHNEIDER 1986 [Nu, Re], SIMMONS 1972; C89, D3M, D57{PL}, E13G, E29{PL}, F15, N40, 093{S}, P38{S}, Q41{S}, Q49M{PL}. (for cultivars see Cherimoya, page 326)

*Annona cinerea* - *Anon morado*, *Rihon* {S}. The violet-tinted fruits, resembling a large sugar apple, have an unusually sweet flavor. Sold in the markets of Colombia. Southern Caribbean region. HEDRICK 1919, PEREZ-ARBELAEZ, UPHOF; Y2

*Annona diversifolia* - *llama* {PL}. The sweet fruits are eaten fresh, being one of the best for the tropical lowlands. Pale-green fruited types have very sweet white flesh. Pink-fruited kinds have a rose-pink tinged flesh that is more acidic like that of the cherimoya. Central America. KENNARD, MORTON 1987a, MOWRY, POPENOE, W. 1920 [Cu], SIMMONS 1972; A41G, D57, E29, F85{S}, M17{GR}, N84{S}, S97M

CULTIVARS {SC}

**Genova Red:** Large, smooth, pinkish-green fruit with deeply cracked skin; reddish pulp with a very pleasant, subacid flavor. Originated in Genova, Guatemala. Introduced into Florida in 1988. MAHDEEM; N53M

**Guillermo:** Large fruit with whitish-green skin and large rounded bumps, deeply cracked. Dark pink flesh of very good flavor. Originated in El Xab, Guatemala. Introduced into Florida in 1985. MAHDEEM; N53M

**Paiaoitá:** Medium-sized fruit; smooth, pinkish, lightly cracked skin, has a tendency to turn brown when ripe. Dark pink to light reddish pulp of very good flavor. Originated in Pajapita, Guatemala. Introduced into Florida in 1985. MAHDEEM; N53M

*Annona glabra* - *Pond apple*, *Alligator apple* {S}. The fruit is eaten raw, though not of good quality. Some types have fair flavor that can be improved by boiling. Also made into jelly and wine. Valued as a rootstock for other *Annona* species in wet soils. Florida, Tropical America. MORTON 1977, MORTON 1987a, POPENOE, W. 1920; A79M, E29{PL}, F85, M17{PL}, N84, P38

*Annona mannii* - *Anonidium mannii*

*Annona montana* - *Mountain soursop*, *Guandbana cimarrona*, *Araticu grande* {S}. Fruits are juicy, refreshingly subacid, peculiarly aromatic and of a fair flavor similar to the soursop. Can be grown at slightly higher elevations, with cooler temperatures, than the soursop. West Indies. KENNARD, MORTON 1987a, POPENOE, W. 1920; E29{PL}, F85, M17{PL}, N84, P38

*Annona muricata* - *Soursop*, *Guandbana* {PL}. Ripe fruits are juicy, refreshingly acid and are eaten raw. Also used in ice cream, sherbets, custards, and mixed with wine or brandy. A popular Cuban beverage *champola de guandbana* is made from the strained pulp and milk. In the Philippines, the juice is fermented into *nata de guayabana*. Young leafy, shoots are steamed and eaten. Unripe fruits are roasted, fried or boiled or used in soups. Leaves are brewed into *corosol tea*. Cultivated. CAMPBELL-PLATT, GARNER [Pro], HEDRICK 1919, MORTON 1987a [Cu], OCHSE, ORTIZ 1973 [Re], POPENOE, W. 1920 [Cu], RICHARDSON, M. [Re], STURROCK; A41G, A52M{PD}, A79M{S}, C4M{PD}, D57, E29, F85{S}, G5M{DF}, I77G, I83M, /77, N84{S}, P38{S}, Q93, R78M{S}, etc.

CULTIVARS {GR}

**Cuban Fiberless:** Medium to large, oblong fruit, 8 to 15 inches long; thin yellow-green skin, covered with short spines which become shorter and separate as the fruit ripens; juicy, white flesh with a subacid to sweet flavor, fiberless; numerous dark brown seeds. Tree small, upright, vigorous. Q93

**Dulce:** A sweet type having a very low acid content. Suitable for eating raw or using for drinks. E8M

**Miles 28:** A large-fruited strain, with fruits reaching the size of a watermelon. Originally from Costa Rica. E8M

**Whitman Fiberless:** Large fruit with delicious, melting pulp, completely fiberless. Can be eaten with a spoon like ice cream, spitting out the small seeds. Tree bears regularly. Second generation seedling selection of Cuban Fiberless, which seldom fruits in Florida. WHITMAN; E8M

*Annona purpurea* - *Soncoya* {S}. The fruit is round, brownish-gray in color, with soft bright-orange flesh of a pleasant aromatic flavor suggesting that of the northern pawpaw (*Asimina triloba*). It is usually eaten fresh or strained for juice and drunk as a beverage. Central America, cultivated. MORTON 1987a, POPENOE, W. 1920, STURROCK, UPHOF, WILLIAMS, L.; A79M, M17{PL}

*Annona reticulata* - *Bullock's heart*, *Custard apple* {S}. The sweetish fruits vary considerably in quality. Some are eaten fresh, but most often they are used in preserves, drinks, ice cream, custards, ices, milk shakes, and other desserts. Cultivated. GARNER [Pro], MORTON 1987a [Cu], POPENOE, W. 1920 [Cu], STURROCK; A79M, E29{PL}, F85, G73, G73{PL}, I77G{PL}, /77{PL}, K8, N84, 093, Q46

CULTIVARS {GR}

**Canul:** Medium-sized fruit; waxy, glossy, night-red skin; attractive purple flesh, very aromatic, deliciously sweet; free of grittiness but often lumpy near the seeds. Grows well on *A. glabra* rootstock. Introduced into Florida by L.H. Zill. MAHDEEM; M17, N53M

**San Pablo:** Large, elongated fruit with red skin and dark pink flesh. Good flavor and texture. Selected for creamy texture, attractive color, and rich flavor. Introduced into Florida by L.H. Zill. MAHDEEM; E29, M17, N53M

**Sartenava:** Red-skinned fruit with dark pink pulp, not as attractive as Canul or Tikal. Exceptional texture and flavor. Tree more vigorous than Canul or Tikal. Introduced into Florida by L.H. Zill. MAHDEEM; N53M

**Tikal:** Brilliant red pulp throughout except for some white around the seeds and core. Eating quality excellent. Apparently grows well on *A. glabra* rootstock. Originated in El Remate, Guatemala, near Lake Peten Itza. Introduced into Florida by L.H. Zill. MAHDEEM; E29, N53M

*Annona scleroderma* - *Posh-te* {PL}. The delicious, aromatic fruit is eaten out of hand. It is much richer than the soursop, with a suggestion of the flavor of the white sapote (*Casimiroa edulis*). Central America. POPENOE, W. 1920; M17

*Annona senegalensis* - *Wild custard apple*, *Abo*, *Amamense* {S}. The round, deep orange fruit has a pineapple-like aroma and the flavor of apricots. It is considered one of the best fruits of Tropical Africa. Unopened flower buds are eaten in soup and are also used to flavor other foods. Leaves are edible, containing 8.2% protein when dried. West Tropical Africa. DALZIEL, FOX, F., KUNKEL, MORTON 1987a, TREGOLD; F85, M17{PL}, N84

*Annona squamosa* - *Sugar apple*, *Sweetsop*, *Custard apple*, *Fruita de Conde* {S}. Sweet, creamy fruits are highly regarded as a dessert fruit in the Tropics. Mostly eaten fresh, but sometimes made into sherbets, ice cream, jellies, preserves, or a fermented cider. Cultivated. GARNER [Pro], IDONE, MORTON 1987a [Cu], POPENOE, W. 1920, TANAKA; A79M, B60M{PR}, D57{PL}, E8M{PL}, E29{PL}, F85, I12{PL}, I77G{PL}, I83M, N84, P5, P17M, Q12, Q18, Q46, etc.

CULTIVARS {PL}

**Kampona Mauve:** Medium-sized, very attractive fruit; skin segments mauve or reddish-purple, bright red or pink along the edges; inside of peel also reddish; creamy-white flesh, translucent when ripe, sweet and juicy; excellent flavor and texture. Highly productive, self-fertile tree. Seedling that originated at The Kampong, David Fairchild's former residence in Coconut Grove, Florida. VANAKEN; E29, M17, N53M

**Red:** Roundish fruit, 2 to 3 inches in diameter; skin pale green blushed with pink, small protuberances evenly distributed; soft, light pink flesh with a sweet melting flavor, numerous brown seeds

scattered throughout; ripens in early spring. Small tree with long, pointed, pale green leaves. Brought into Hawaii from Queensland, Australia. E29, M17

**Seedless:** Completely seedless fruit, slightly malformed; less appealing in flavor than seeded types. Splits badly during hot, humid summer weather; resists splitting in the cooler, drier winter months. MORTON 1987a, WHITMAN; E8M, E29, M17, N53M

*Anonidium mannii* - *Junglesop* {S}. The very large elongated fruits, weighing between ten and fifteen pounds, are eaten out of hand. The soft, yellow flesh varies from sweet and delicious to somewhat sour, depending on the genotype and the maturity of the fruit when picked. Tropical Africa. DANFORTH, UPHOF; Y40

*Artabotrys uncinatus* - *Climbing ylang ylang* {S}. Flowers are used to scent tea. Southeast Asia. TANAKA; A79M, D56M, F85, G73, K8, N40M, Q46

*Asimina grandiflora* - \**Asimina obovata*

*Asimina obovata* - *Florida pawpaw* {PL}. Fruits are said to be eaten. Can be hybridized with *A. triloba*. Southeastern North America. DARROW, TANAKA; H4, H14M, M17, N37M

*Asimina parviflora* - *Dwarf pawpaw* {PL}. The fruits are edible but not pleasant. Hybridizes with *A. triloba*. Southeastern North America. DARROW; D95, H4, H14M

*Asimina triloba* - *Pawpaw*; *Michigan banana*, *False banana* {PL}. Soft, creamy fruits have the flavor of banana custard and are delicious eaten out of hand. They can also be used for making preserves, pies, ice cream, cookies, cakes, and other sweet desserts. North America. ANGIER [Re], DARROW, FERNALD, GIBBONS 1962 [Re], LOGSDON 1981, SIMMONS 1972, THOMSON 1974 [Cu, Pro]; A80M, A82, B73M, D37, F16, H4, I11M, I49M, 160, 174, I83M, K38{S}, K63G{S}, L99G, L99G{S}, N37M, N84{S}, etc.

#### CULTIVARS {GR}

**Davis:** Small to medium, kidney-shaped fruit, up to 4 3/4 inches long; weight 4 ounces or more; skin green when ripe; flesh yellow, sweet, flavor good, seeds large; ripens the first week of October in Michigan. Keeps well in cold storage. Originated in Bellevue, Michigan by Corwin Davis. Introduced in 1961. BROOKS 1972; B74, B99, D37, 140, 149M, I49P, I60{PL}, I66T, 174, K67, L99G

**Estil:** Improved clone selected by Nettie Estil of Frankfurt, Kentucky. Large, high quality fruits averaging about 8 1/2 ounces each. Yellow flesh with a smooth texture and superior flavor. H4

**IXL:** Overleese x Davis. Large fruits weighing about 12 ounces each; tasty, yellow flesh. Ripens the second week of October in Michigan. Developed by Corwin Davis. 140, L99G

**LA Native:** (Louisiana Native) Small to medium-sized fruit with yellow flesh and good flavor. Blooms late in Tennessee. Somewhat resistant to frost. Originated in Louisiana. F43M

**Mango:** Medium to large fruit, may reach 12 to 14 ounces; yellow skin and flesh; quality very good to excellent. Ripens in late August and early September. Selected from the wild in Tifton, Georgia by Major C. Collins, in 1970. BROOKS 1997; D37, F43M, K67

**Marv Foos Johnson:** Good sized fruit with smooth, flavorful yellow flesh and relatively few seeds. Heavy producer. Similar if not identical to Sunflower. Selected from the wild in Kansas by Milo Gibson, possibly in the 1960's. Original seedling donated to North Willamette Experiment Station by Mary Foos Johnson. F43M, 174, K67

**Mitchell:** Medium to large, oval to round fruit; slightly yellow skin; golden-colored flesh with excellent flavor; few seeds. Hand-some tree with large leaves. Originated in Jefferson County, Illinois as a wild clone. Introduced by Joseph Hickman, prior to 1979. F43M, H4, K67

**NQ--1.1** Davis x Overleese. Large fruits with thin skin and few seeds; weight about 12 ounces; yellow skin and flesh. Ripens early, about September 15 in Ontario. Originated in Ontario, Canada by R.D. Campbell. Introduced in 1976. BROOKS 1997; B99

**Overleese:** Medium to large, oval to round fruits, weight 12 ounces or more; flesh firm, flavor very good to excellent; few seeds. Ripens the first week in October in Michigan. Tree very vigorous; productive, bears fruit in clusters of 3 to 5. Selected from the wild in Rushville, Indiana by W.R. Ward, in 1950. B74, B99, E62, E62{SC}, F43M, H4, 149M, I49P, 174, K67, L99G

**Pennsylvania Golden:** Yellow skin and golden flesh. Ripens in mid-September in New York. Seedling selection made by John Gordon of Amherst, New York. Original seed obtained from the George Slate collection. BROOKS 1997; E62, E62{S}, E62{SC}

**Prolific:** Medium to large fruit, weight 7 to 8 ounces; yellow flesh of excellent flavor; quality high. Ripens the first week of October in Michigan. Very precocious and reliable; an excellent cropper. Originated in Bellevue, Michigan in the mid-1980's. Selected by Corwin Davis. BROOKS 1997; B74, C34, 140, 149M, I49P, J61M, K67, L99G

**Rebecca's Gold:** Blunt, kidney-shaped fruit, weight 3 1/2 to 6 ounces; skin smooth and somewhat tender, green with slight bloom, turns yellowish when ripe; flesh chrome-yellow, melting, sweet and aromatic; seed unusually large, mostly 8 per fruit. Tree vigorous, upright, free of suckering; self-fruitful, bears 4 to 5 fruit per stem. Selected by John M. Riley in 1974. B74, F43M, H4, 149M, I49P, I66T, 174, J61M, K67

**Sue:** Discovered in southern Indiana by Don Munich. Selected for its excellent flavor and productiveness. Small fruits, about 4 inches in diameter and weighing 4 to 6 ounces; skin yellow when ripe; very tasty, yellow flesh. 140

**Sunflower:** Fruit large, about 8 to 12 ounces, borne in clusters of up to 5; skin has a yellowish cast when ripe; flesh butter-colored, flavor good; seeds few, often only 6 to 8; ripens the first week in October in Michigan. Tree wide rather than pyramidal; blooms and ripens its fruit slightly later than most cultivars; self-fertile; hardy in southern Michigan. Originated near Chanute, Kansas. B74, B99, C34, D37, E62{SC}, E87, F43M, H4, I49M, I49P, I66T, 174, J61M, K67, L99G

**Sunalo:** Large fruit, up to 12 ounces; yellow skin and yellow flesh; very good flavor. Ripens the first week of October in Michigan. L99G

**Sweet Alice:** Medium to large fruit with orange-yellow flesh. Excellent flavor with no aftertaste, not overly sweet. Bears in large clusters without hand-pollination. Introduced by Homer L. Jacobs of the Holden Arboretum, Mentor, Ohio. Selected from the wild in West Virginia. F43M, H4, 174, K67

**Taylor:** (Taylor #1) Small to medium-sized fruit; skin green when ripe; flesh yellow, sweet, flavor slightly better than Davis; ripens the first week in October. Tree fairly productive, bears fruit in clusters of up to 7. Selected from the wild in Eaton Rapids, Michigan by Corwin Davis, in 1968. B74, 149M, I49P, I66T, K67, L99G

**Taytwo:** (Taylor #2) (Taytoo) Large fruit, weighing up to 10 ounces; skin light green in color when ripe; flesh yellow, of excellent flavor; ripens from the 10th of October onward in southern Michigan. Tree a rather shy bearer. Selected from the wild in Eaton Rapids, Michigan by Corwin Davis, in 1968. 174, K67, L99G

**Wells:** Large to very large fruit; weight 10 to 14 ounces; green skin; very tasty, orange flesh; high flesh-to-seed ratio. Ripens in mid-season. Winner of a contest for the largest fruit. Selected by Brett Callaway and David K. Wells from a chance seedling found in Salem, Indiana. Introduced in 1990. B74, D37, E87, 149M, I49P, I66T, 174, J61M

**Wilson:** Attractive, medium-sized fruit; lemon-yellow skin; golden flesh with a very good flavor; quality high. Very prolific tree. Originated in the wild on Black Mountain, Harlan Co., Kentucky. Discovered by John V. Creech in 1985. BROOKS 1997; H4

**Zimmerman:** (SAA Zimmerman) One of the superior selections collected by the late George A. Zimmerman of Picketown, Pennsylvania during the first half of the 20th century. Yellow skin and flesh; few seeds; weight 6 to 8 ounces. E62, E62{PL}, E62{SC}

*Cananga odorata* - *Ylang-ylang* {PL}. The essential oil distilled from the flowers is used as a flavoring in candies, icings, baked goods, soft drinks, and chewing gum. Southeast Asia. MORTON 1976; A79M{S}, E29, F85{S}, G73, G73{S}, 112, M17, N84{S}

*Friesodielsia obovata* - *Monkey fingers* {S}. The scarlet fruits have a sweetly acid and mildly peppery flavor when eaten raw. They can be cooked as a rich red acid jelly, stewed, or fermented into a pleasant wine. Southern Africa. FOX, E, TREGOLD; F85

*Hexalobus crispiflorus* - *Bonde kpilima* {S}. The banana-shaped fruits are eaten fresh. Near the skin the flesh is firm and tart, while the jelly-like part surrounding the seeds is very sweet. When eaten together, the flavor is said to be reminiscent of ambarella, *Spondias dulcis*. West Tropical Africa. DANFORTH; Y40

*Monodora myristica* - *Calabash nutmeg*, *Jamaica nutmeg* {S}. Spicy seeds, resembling true nutmeg in flavor, are commonly sold in African markets. They are used to flavor soups and other foods. Tropical Africa. BURKILL, DALZIEL, MORTON 1976, UPHOF; F85

*Rollinia deliciosa* - *Biriba*, *Countess\*fruit*, *Amazon custard-apple* {PL}. The yellow fruits have a juicy, melting flesh of a very pleasing flavor, reminiscent of lemon meringue pie. Mostly eaten fresh, but can be used for pies, ice cream and cakes or made into wine. One of the most promising fruits of the expanding rare fruit market in Australia. Brazil, cultivated. MORION 1987a, POPENOE, W. 1920, UPHOF; E8M, J22, M17, N84{S}, 019{S}, P38{S}, Q93, R78M{S}

*Rollinia mucosa* - *Wild cachiman*, *Wild sweetsop* {S}. The yellow fruits have a white, mucilaginous, sweet pulp. They are eaten fresh or in desserts. Tropical America. KENNARD, MARTIN 1987, UPHOF, WILLAN; A41G{PL}, N84, P38

*Stelechocarpus burakol* - *Keppel apple* {S}. Round fruits, born on the trunks of the tree, are juicy, sweet, and fragrant. It is claimed that after eating these fragrant fruits, one's whole body is permeated with the smell of roses. Malaria. FAIRCHILD 1930, RIFAI; T73M

*Uvaria microcarpa* - *Kai kung shue* {S}. The yellowish-red to black fruits are eaten. Leaves are used for making *tsau peng*—*yczst* cakes employed in the manufacture of wine. China. ALTSCHUL, VON REIS; P5

*Xylopia aethiopica* - *Ethiopian pepper*, *Spice tree* {S}. Seeds and fruits are the source of an aromatic peppery spice once commonly exported to Europe. Now used locally to flavor coffee, palm wine and various dishes. Sold in markets of Senegal and other parts of Africa. Tropical Africa, cultivated. HEDRICK 1919, MORTON 1976, UPHOF; F85

*Xylopia frutescens* - *Malagueto chico* {S}. The fruits have an acrid, aromatic taste and are used as a substitute for pepper. It is said that the flesh of wild pigeons feeding on them permanently takes on their flavor. Brazil, Guiana. HEDRICK 1919, LOVELOCK, TANAKA; F85

#### APIACEAE (UMBELLIFERAE)

*Aegopodium podagraria* - *Gout weed*, *Ashweed*, *Ground elder*, *Herb Gerard* {S}. Young leaves and stems, having an unusual tangy flavor, are eaten raw in salads, cooked as greens, or made into fritters. Consumed by the country people of Northwest Germany

during spring, in *grüne suppe* (green soup). Eurasia, naturalized in North America. HEDRICK 1919, LARKCOM 1984, LAUNERT, MABEY, MICHAEL [Re], UPHOF; B9M, B47, K2, N84{S}, 048{S}

*Ammi majus* - *Bishop's weed*, *Queen Anne's lace* {S}. The seeds are used as a condiment. Eurasia. KUNKEL; C43M, D92M, E7M, F44, F80, H80, J82, J88, K66, 053M, Q34

*Ammi visnaga* - *Toothpick*, *Bishop weed* {S}. Seeds are one of the spices added to *mish*, a soft, pickled, ripened cheese with a yellowish-brown color and a sharp, salty flavor known to the ancient Egyptians and still popular in many parts of Egypt today. Leaves are chewed for their pleasant aromatic flavor. Eurasia. DAGHER, ROBINSON, R. 1991, TANAKA; A2, C43M, C43M{PL}, C95, D92M, F37T{PL}, F68T, F86G, 191, J82, Q34

*Anethum graveolens* - *Dill* {PL}. The young leaves, known as *dill weed* or *baby dill*, are used as a seasoning for salads, soups, eggs, vegetables, sour cream, cream cheese, *gravlax*, vinegars, sauces, etc. Seeds and flowers add flavor to pickles, gravies, stews, mustards and breads. In Poland, the roots, stems, leaves and seeds are added to pickles. Dill oil is used by the food industry in pickles, condiments, meat products, chewing gum, and candy. Sprouted seeds are eaten in breads, soups, and salad dressings. Both leaves and seeds can be brewed into tea, that made from the latter having a milder flavor. Eurasia, cultivated. BARASH [Re], GESSERT, GRIEVE, HEDRICK 1919, KNAB, LATHROP [Cu], LEGGATT, MARCIN, MORSE [Re], MORTON 1976, ROOT 1980b; A97, B75{S}, D92M{S}, F80{S}, H46{DF}, I91{S}, J66, J76, J76{S}, K22{S}, M35, N19M. (see also Sprouting Seeds, page 524)

#### CULTIVARS {S}

**Ambrozia:** Extremely fragrant cultivar that contains high levels of ethereal oil. Produces large quantities of foliage over an extended harvest period. Disease resistant. Originally from Poland, where it is well known and highly valued. K47

**Aroma:** Dark-green, leafy plants produce much more green matter before forming seed. Has a particularly fine fragrance and flavor. Excellent for *dill weed*, used either fresh or dried. Vigorous, bushy plants are heavy yielding and late blooming. Tetraploid. K22

**Bouquet:** 65 days. Leaves deep blue-green; stems slender; large, fairly compact head. Plant is relatively bushy, 30 to 40 inches, slightly earlier than Mammoth. Once the leaves turn yellow, they remain yellow for a long time before turning brown. The best cultivar to grow for the production of seeds. GESSERT; A75, B75M, C44, D82, D92M, F82, G68, H61, K73, M49

**Dukat:** Leaves blue-green; flavor very good, mellow and sweetly aromatic, never bitter or overly pungent. Plant vigorous; an abundant producer of leaves; holds longer at the leaf stage than other dills. Excellent either fresh or dried. *Al<sub>9</sub>* C53, D11M, D92M, E81M, F70, I39, J82, K50, K66, K73, L89, R53M, S55

**Fernleaf:** Unique dwarf dill, only grows 18 to 20 inches tall, branches from the base. Ideal for growing in pots, borders, or where space is limited. Dark bluish-green, finely cut foliage, excellent for *dill weed*. Very slow to bolt. Distinct and ornamental, but also retains the flavor of larger types. All America Selections winner for 1992. A97{PL}, B75{PL}, C92, D74B, E63D, G6, G71, I39, I91, I99P{PL}, J82, J97M, K50, K71, L89, L94M, M29, M82{PL}, R53M, etc.

**Hercules:** Heavy yielding tetraploid strain. Very flavorful. Slow to flower so foliage stays green and succulent longer. One of the best cultivars for the fresh leaf market. Large plant, 3 to 4 feet tall. G6, J82, K57, N84, 053M

**LQn<sup>^</sup> I<sup>^</sup>land.Mgmmph;** (Mammoth) 70 days. Leaves greenish, comparatively few in number. Plant 24 to 36 inches tall, vigorous, runs to seed very readily. Produces large productive heads which make unusual decoration. Grown primarily for the seeds. A2, A75, B78, C44, C92, E24, G16, G71, H61, K57, L7M, L89, S55

**Super Dukat:** Improved Dukat type with a higher essential oil content. Straighter and cleaner plant for easier harvesting. Flower heads are more uniform in height. Developed by Svalof of Sweden. G6, N84, S61M

**Tetra:** High quality tetraploid dill developed especially for its lush green foliage. Grows bushier and more vigorously than standard dill. Slow to bolt. Excellent for *dill weed*. Has double the normal number of chromosomes resulting in greater vigor and increased yields of foliage and seed. D92M, E81M, J82, N81, N84

**Vierlina:** A German cultivar specially selected to produce extra large flat-topped clusters of tiny yellow, green and white flowers for cutting, either fresh or dried. The fragrant, very fine feathery leaves are an attractive bluish-green. Very productive plant; height 2 1/2 feet. D92M, J82, K53, N81, N84, O1, 053M, S55

*Anethum graveolens* 'Sowa' - *Indian dill*, *Satapashpi* {S}. The fresh leaves are eaten with steamed rice or used for flavoring soups. Although pungent and bitter, the seeds are more popular than common dill and are an essential ingredient in curry powder. In Indonesia, they are used in pastries and drinks. Plants are taller than common dill, attaining a height of 2 to 4 feet. GESSERT, MORTON 1976, TANAKA; D92M, F85, J73, J82, N84, 048, S55

*Anethum sowa* - *Anethum graveolens*

*Angelica archangelica* - *Angelica* {PL}. The leafstalks are blanched and eaten like celery or combined with rhubarb in pies, sauces, and jams. Aromatic, licorice-flavored leaves are eaten in salads or cooked with fish or poultry. Candied flower stems and leafstalks are used in pastries, cakes, and confectionery. Young flower-heads, enclosed in their sheaths are eaten in salads, omelettes, or grilled and served with oil and vinegar. The seeds and roots are the source of an essential oil that flavors ice cream, candy, baked goods, puddings, cordials, *Benedictine*, *Chartreuse*, *vermouth*, *Angelique*, *Tatra* vodka, gins, etc. Dried leaves are used in the preparation of hop bitters. Leaves, seeds, and roots are brewed into tea. Eurasia, cultivated. BROWN, G, GRAY, P. [Cu], GRIEVE [Pie, Re], LATHROP, MARCIN, MORTON 1976, RAY, C, TANAKA, UPHOF, VILMORIN [Cu]; A97, C67M, C81M, D92M{S}, E61, F35M, H15T{PD}, J66M{PD}, K22, K54{ED}, K85, R47{S}

*Angelica atropurpurea* - *Purple angelica*, *Masterwort* {S}. Tender new stems and leafstalks are peeled and eaten in salads or blanched and used like asparagus. When boiled in two waters, they form a vegetable that strongly resembles stewed celery. The young leaves can be added to fish dishes, soups and stews. Roots, leafstalks and stems are candied. North America. CROWHURST 1972 [Re], FERNALD, MORTON 1976; C95, E7M, E61{PL}, F85, G47M, 131, J26M, J39M, J39M{PL}, J40, J42, L91M, N84, Q24

*Angelica gigas* - *Oni-no-dake*, *Korean angelica* {PL}. The young leaves are pickled, boiled or fried and eaten. Eastern Asia. TANAKA; A61, B28, C43M, D92M{S}, E33, E7M{S}, 191, I91{S}, K22, K63G{S}, L22, Mil, M82, M98, 053M{S}, etc.

*Angelica sinensis* - *Dong quai* {DF}. The roots are used in Chinese tonic soups, wines and rice porridges (congee). They have a strong distinctive flavor that combines well with hearty meats like mutton, but are also excellent with chicken or duck and vegetables such as winter melon. The main ingredient of a very famous commercial tonic known as *Shou Wu Chih*. Also an ingredient of *Four Things Soup*. Eastern Asia. FLAWS 1995, LEE, G, PASSMORE, TAN [Re], TEEGUARDEN, TIERRA; A49D, B21P, E2M, E14T, E13G{PR}, F68T{S}, F86G, G19P, G73, J82{S}, K18M, L17, E2M, L34, N29{ED}, etc.

*Angelica sylvestris* - *Woodland angelica*, *Wild angelica*, *Ground ash* {S}. Young stems and leaves are boiled and eaten as a vegetable. The chopped leaves are a good addition to stewed fruits, especially rhubarb. Stems and leafstalks are used in candies and sweetmeats. Eurasia. MABEY [Pre, Re], TANAKA; N71M, N84, 048, 053M, Q34

*Anthriscus cerefolium* - *Chervil*, *French parsley*, *Cerfeuil* {PL}. The leaves, when young, impart a warm, aromatic flavor to soups, stews, stuffings, egg dishes, potato salads, sauces, dressings, and tossed salads. They constitute the basis of the herbal mixture known by the French name of *finer herbes*. As a garnish they are added to meats and fish. The flowers are also used as a seasoning. Roots are consumed. Eurasia, cultivated. DE SOUNIN [Cu], HEDRICK 1919, KRAFT, LATHROP [Cu], LEGGATT [Re], MORTON 1976, VILMORIN; C3{S}, C94M{DF}, C94M{PD}, E7M{S}, F35M, F80{S}, H46{DF}, J11M{ED}, K66{S}, L16{DF}, L17{DF}, M53, N40{PR}, R47

CULTIVARS {S}

**Brussels Winter:** An improved European selection. Leaves are dark green, lacy, with a pleasant anise flavor. Plant is vigorous, slow to bolt, becomes much larger, and is more resistant to both heat and cold than older types. C53, DIT, D68, E28M, E63D, G6,177, K49M, K57{PL}, L7M, L77D, N84, Q34

**Curled:** (Curly, Cerfeuil Frise) The leaves are crisped or curled, very ornamental, and are better for garnishing; the aroma and flavor are the same as common chervil. It is more easily cultivated, earlier, of more vigorous growth, less hairy, and more productive. BURR [Cu], VILMORIN; D92M, E5T, G93M, 177,191, J82, K2, K22, K71, L94M, M46

**Long Standing:** Similar in habit and usage to common chervil, but has the tendency to bolt less quickly. Grows to about 2 feet tall. L94M

**Vertissimo:** Hardy type with dark green leaves. Very slow in running to seed. Grows back quickly after having been cut. Sown in the summer for a winter harvest. P59M

*Anthriscus nemorosa* - *Mendi*, *Mendo* {S}. The whole above ground plant is gathered before flowering and eaten as a vegetable or added to *herbal cheese* for flavoring. Mediterranean region. OZ-CELIK, OZTURK; W59M

*Anthriscus sylvestris* - *Woodland chervil*, *Beaked parsley*, *Cow parsley* {S}. Young leaves are sometimes eaten as a potherb or dried and stored for future use. Small quantities can be used for seasoning soups, salads, omelettes, casseroles, baked potatoes, and bean dishes. The roots are edible and are recommended for improvement by selection and breeding. Eurasia. MABEY, VILMORIN; F80, N71M, N84

*Apium australe* - \**Apium prostratum*

*Apium graveolens* - *Celery* {DF}. Leafstalks are blanched and eaten raw in salads, fried, braised, steamed, stuffed with cream cheese, or added to soups, stews, stuffings, and casseroles. Leaves can be chopped and added to tossed green salads. Celery juice is often blended with carrot, parsley and spinach juices. Celery seed, seed extract, and oil are used for flavoring sauces, soups, omelettes, beverages, pickles, celery salt, bakery products, etc. The dried leaves, sometimes marketed as celery flakes, have a stronger flavor than the seeds and can be added to salads and sandwiches. Eurasia, cultivated. CARCIONE [Re], FELL 1982b, GURSCHE [Nu], LARKCOM1984, MORTON 1976, ROOT 1980b [Cu], SKELLY, UPHOF, VILMORIN [Cu]; A49D, L17. (see also Celery, page 325)

CULTIVARS {S}

**Soice Celery 60000:** Developed in Israel for its aromatic seeds which are used as a spice. Has a high percentage of essential oils. A non-shattering type with very high yield potential. T27M

*Apium graveolens* Rapaceum Group - *Celeriac*, *Celery root*, *Turnip-rooted celery*, *Knob celery* {S}. Roots are sliced or grated and eaten raw in salads, braised, pureed, marinated, baked, mashed, cooked as a vegetable, or used in soups, stews, fritters, and stuffings. A popular way of preparing celeriac in France is to shred the roots into julienne strips, and then serve them with a *remoulade* sauce. Celery root powder gives a sweet, celery-like flavor to sauces, soups and dressings. Fermented celeriac root juice, sold



under the brand names *Biotta* and *Eden*, is popular with those following a natural foods diet. Leaves can be used for flavoring soups and stews. Often succeeds in areas not suited for celery culture. CUSUMANO [Cul, Re], DE SOUNIN [Cul], HALPIN [Cu], HAWKES [Re], HEDRICK 1919, HUNTER 1973a, KRAFT, ORGAN, SCHNEIDER 1986 [Pre, Re], UPHOF, VILMORIN [Cu]; E13G{PR}, J66M{PD}, L55J, N40{PR}, R47. (for cultivars see *Celeriac*, page 324)

*Apium graveolens* Secalinum Group - *Leaf celery*, *Soup celery*, *Cutting celery*, *Celeri a couper*, *Sedano da taglio* {S}. A group of cultivars that have been little improved by cultivation, and closely resemble the wild celery. Generally, they produce an abundance of erect-growing leaves. The stalks are hollow, rather thin, tender, and brittle. They send up great numbers of suckers, and are grown for their strongly aromatic leaves, which are cut like parsley and used for flavoring soups, stews, and the Italian herb mixture *soffritto*. After being cut they produce new leaves GRAY, P. [Cul, Re], LARKCOM 1984, VILMORIN, ZEVEN; C67M{PL}, C85M, E33, G6, J82, K49M, Q11M, R32, R47, R53M, S55

#### CULTIVARS

**Afina:** 60 days. Large, clumping, upright plant that produces numerous shoots; leafstalks hollow and tender. Very aromatic, dark-green foliage, excellent for flavoring soups. Regrows quickly after having been cut. Originally from The Netherlands. D68, P59M

**Amsterdam Fine:** Attractive 12 to 18 inch plant with crisp, dark green, somewhat serrated foliage that looks like a very shiny, flat-leaved parsley. Fresh or dried, they add a rich, mellow flavor to foods. Very easy to dry and does not lose its flavor in storage. Ready for picking when stalk celery is high in price. J97M, K66

**E-Z Leaf:** 75 days. Easily grown crops of leaves that can be used to add the flavor of celery to soups and stews. Can also be added to salads or used as a garnish. Grows to 12 inches in height. 191, K71, M53{PL}

**French Dinant:** Sends out a multitude of narrow thin stalks. Has a much fuller flavor than common stalk celery and is excellent for seasoning soups, stews, salads, and dressings. Resistant to light frosts. Can be dried and stored for winter use. A2, 139, N24M

**Golden Medium Early:** (Chinese Golden Medium Early, Golden Leaved) Yellowish-green leaves with long, crisp hollow stalks. Smaller and more delicate than Western cultivars. Has a very pleasant aroma, and a more subtle combination of flavors than Western types. D55, F73D, L59, L79G, N84

**Heung Kunn:** (Chinese Celery, Kintsai) The plant has a branching rather than a bunching habit, which makes it easier to harvest individual leafstalks as needed. These are thin, hollow, have a strong flavor, and should be picked when young as older ones lose their crisp tenderness. Both the leaves and stalks are used in stir-fried dishes, or used as a garnish in bowls of soup. COST 1988 [Cul], DAHLEN [Pre, Cul], KRAFT [Cu, Cul], ROSS [Re]; A2, F44, K73, M46, N84, Q34, R32, S55, S63M, S70

**Par-Cel:** Attractive plant with tender, dark-green leaves that resemble parsley; height approximately 18 inches. Rich, warm aromatic flavor. European heritage cultivar from the seed bank at Gatersleben, Germany. Traditionally boiled, eaten raw, or used specifically for soup flavoring. C53, D68, L91M, Q34

**Smallaae:** 90 days. Plants are tall, to 2 feet, with slender, yellowish green stalks and leaves. The leaves are smaller and more flavor-filled than those of regular celery, and are used for seasoning soups and stews. Both the leaves and stalks are blanched for use by planting densely. K2

**White Queen:** (F.) Distinctive, Chinese white-stalked type. Dark-green leaves and very long, thin, pure white leafstalks. Excellent for salads and cooking. Can be harvested 60 to 65 days after sowing. Potential specialty market item and salad mixture ingredient. PHILLIPS; 177, S63M

**Zwolsche Krul:** An old Dutch heritage cultivar with extra dark green leaves and a height of 2 1/2 to 3 feet. Bred for the production of leaves not leafstalks. Quite handy, hardier than common stalk celery. Excellent in soups and stews, and for drying. G16, J20, 053M

*Apium prostratum* - *Australian celery*, *Sea parsley* {PL}. The leaves have a parsley-like flavor and may be used as a garnish, cooked as a potherb, or added to salads, seafoods, soups and stews, and casseroles. Considered to have good potential for the bushfoods industry. Apparently not an Aboriginal food. Australasia. CHERI-KOFF, CRIBB, HEDRICK 1919, NATUSCH.

#### CULTIVARS

**Southern Ocean:** Vigorous, low-growing, perennial herb; spreading 3 to 3 1/2 feet wide. Selected for its unusual, broad-leaf form and intense parsley and celery-like flavor. Glossy-green leaves, similar in shape to common parsley. Produces better quality leaves and stems if given partial shade in summer. Adapted to coastal exposures and alkaline soils. N79, N79{PR}

*Arracacia xanthorhiza* - *Peruvian carrot*, *Apio*, *Arracacha* {PL}. The starchy tubers are eaten boiled, steamed, fried, added to soups and stews, or made into fritters and *chicha*. In flavor, they are faintly reminiscent of parsnips or celery with a hint of sweetness, and the texture is like that of potato or cassava. Also the source of a starch used in foods. Blanched young shoots can be eaten in salads or cooked as a vegetable. Andean South America, cultivated. DUKE, FRIED, HERKLOTS, HODGE 1954 [Cu, Pro], NATIONAL RESEARCH COUNCIL 1975a, NATIONAL RESEARCH COUNCIL 1989, ORTIZ 1979; 174, L55J, N84

*Athamanta cretensis* - *Candy carrot* {S}. Seeds are used for flavoring liqueurs. Mediterranean region. HEDRICK 1919; N84, Q24

*Bunium bulbocastanum* - *Earth chestnut*, *Tuberous-rooted caraway* {S}. Starchy tubers are eaten raw in salads or boiled and served as a vegetable. Leaves are used like parsley. The flowers and seeds are employed as condiments. Eurasia. KUNKEL, LOVELOCK, TANAKA, UPHOF; A2, C95, F73D, 139, 174{PL}, L3J, N84, 053M, R47

*Bunium persicum* - *Royal cumin*, *Shahi jeera*, *Siyah jeera*, *Black cumin* {DF}. An expensive spice occasionally sold in Indian stores. The seeds are darker, finer, and more complex in flavor than ordinary cumin. In Pakistan, Kashmir, Punjab and Uttar Pradesh the seeds are preferred to regular cumin for flavoring curries because of their strong flavor. Sometimes confused with *Nigella sativa*. South-west Asia. DEVI [Re], IAFFREY, KARIM, NORMAN; A7, C34G, E14T, F74, K17J

*Bupleurum rotundifolium* - *Thorowax* {S}. Leaves are eaten in salads or cooked as a potherb. Also said to be used as a spice. Eurasia. HEDRICK 1919, TANAKA; D92M, F35M{PL}, F68T, F86G, N84, 048, 053M

#### *Carum bulbocastanum* - *Bunium bulbocastanum*

*Carum carvi* - *Caraway* {PL}. Seeds are widely used for flavoring breads, sauerkraut, sausages, *Kiimmel* and other cheeses, cookies, cakes, brandy *schnapps*, and liqueurs such as *Kiimmel* and *Danziger Goldwasser*. They are often sugar-coated (*sugar plums*) and taken as a breath freshener and digestive aid after spicy meals. The young leaves form a good salad while older ones may be boiled and served like spinach or added to soups and stews. Roots are boiled and eaten or chopped and used in soups. Seeds are crushed and brewed into a tea. The seed oil is used commercially in ice cream, candy, pickles, soft drinks, etc. Eurasia, cultivated. BOWN, BREMNESS, CAMPBELL-PLATT, GRIEVE, HEDRICK 1919, KRAFT, MARCIN, MORTON 1976, RAY, C., ROOT 1980b [Cul], UNDSSET, UPHOF, VILMORIN [Cu]; A97, C3{S}, C43M, D92M{S}, F35M, F80{S}, G40{PD}, G84{DF}, H46{DF}, H94M, K22{S}, K54{PD}, N19M

## CULTIVARS {S}

**Annual:** Superior strain developed for commercial production. High-yielding plant, yields twice the crop of the standard biennial type. Also does not shatter when mature making for easier harvesting. Sown in March and April for harvesting in August and September of the same year. D92M, J82, N84, T27M

**Arterner:** High-yielding European cultivar with large, smooth seeds for cooking. Can be planted from early to late summer to yield fresh seed the second year. Essential oil content averages 4%. G6

*Carum copticum* - \**Trachyspermum ammi*

*Carum kelloggii* - \**Perideridia kelloggii*

*Carum roxburghianum* - *Ajmod, Randhuni, Wild celery* {S}. Widely cultivated in India for its seeds which are used in curries. In parts of Bengal they are occasionally added to the spice mixture known as *panch phoran*. The leaves are occasionally used as a substitute for parsley. One of the spices used in the manufacture of *kecap*, and Indonesian soy sauce. Southern Asia. KIRCHNER [Re], STEINKRAUS, WATT; D92M, J82, N84

*Carum segetum* - \**Ridolfia segetum*

*Chaerophyllum bulbosum* - *Turnip-rooted chervil, Tuberous chervil, Cerfeuil tubereux* {S}. The roots are eaten boiled, steamed, pureed, or used as a garnish for game. Their flesh is aromatic, floury, and sweet, with a peculiar aromatic flavor. The flavor is excellent and unlike that of any other vegetable. Do not peel the roots or the flavor will be ruined. For a change, the cooked roots can be sliced and fried in butter and served garnished with parsley. Eurasia. BROUK, ORGAN [Pre], ROHDE, VILMORIN [Cu]; C95, N71M, N84, R47

*Chaerophyllum bulbosum* ssp. *prescottii* - *Siberian chervil-turnip, Prescott chervil* {S}. The roots are cooked and eaten. They are longer and larger than the common tuberous-rooted chervil, but their flavor is coarser and more like that of the parsnip. Siberia. VILMORIN; W5, X33, X34, Z88

*Chaerophyllum prescottii* - *Chaerophyllum bulbosum* ssp. *prescottii*

*Conopodium denudatum* - *Conopodium majus*

*Conopodium majus* - *Pig nut* {S}. The small, tuberous roots are peeled and eaten raw in salads, boiled, roasted, or used in broths and soups. They are said to taste like a cross between raw chestnuts and fresh hazelnuts, with a hot after-taste of radish. Northern Europe. HEDRICK 1919, MABEY, MICHAEL [Re]; N84, 048, R49{PL}

*Coriandrum sativum* - *Coriander, Cilantro, Chinese parsley, Yuensai, Dhania* {S}. Young, aromatic leaves are pickled, stir-fried, used as a garnish, or eaten in soups, fish dishes, guacamole, and salads. Seeds are widely used to season curries, breads, puddings, sausages, pickles, cakes, liqueurs, gin essences, and spicy sauces. Confectioners form little pink and white comfits from them. They are often dry roasted to bring out their full flavor and aroma. In Southeast Asia, they are chewed with betel nut. Unripe seeds, having a distinctive flavor, are used by the Pennsylvania Dutch in pickles. The roots are used extensively in Thai cooking. Flowers are eaten in salads. Leafstalks are added to beans and soups for flavoring. Dried stems are popular for smoking foods, providing a very intense flavor. Mediterranean region, cultivated. BARASH, BREMNESS, CRAWFORD [Pre, Re], GRIEVE, HALPIN, HARRINGTON, G. [Cu, Cul], HERKLOTS, KENNEDY, D. [Cul], KRAFT [Re], ROUTHIER 1989 [Cul, Re], SHURTLEFF 1979, TANAKA, UPHOF, WEAVER 1993 [Re]; A49D{DF}, A97IPL, F71M, F80, G84IDF, H46{DF}, J3{PD}, K22, L90G{£D}, M53{PL}, N19M{PL}, N40{DF}

## CULTIVARS

**Caribe:** Long standing or slow bolting type used for the production of green leaves (cilantro). Adapted to Northeast growing conditions. K50

**Festival:** 50 days. Ultra early producer of leaves for culinary use. Produces a harvestable crop at least 2 weeks earlier than other types. Strong vigorous plants. Recommended for planting with Santo for continuous, season-long harvests. A87M, 191

**Indian:** 40 days. Annual type with oblong-shaped seeds. Seeds are sweeter and have a fuller flavor; used in curries or eaten like candy when sugar coated. Crushed leaves are more aromatic and superior in flavor to commercial coriander. Most highly esteemed cultivar in India. J73

**Jantar:** Slow-bolting type. Greater leaf production and at least 1 week slower to bolt than Santo. Plant with Santo and extend the harvest season for leaves. G6

**Large Leaved:** 35 days. A relatively slow flowering type which produces large quantities of young leaves for vegetable use. Resistant to bolting. Yields up to three times as much foliage as other types. D55, J20

**Leisure:** 47 days. Extra long standing or bolt resistant strain similar to Santo. Lush, finely-cut, deep green leaves. Grows about 2 feet tall. Has performed extremely well in trials across the nation. Recommended especially for hot weather plantings in southern or northeastern areas. AI, A87M, D12, E24, F63, H21, K10, L11, L42, N16, N84, R53M, S55

**Moroccan:** One of the best cultivars for the production of seeds. Quick to bolt and with minimal leaf production. C20M, D12, N84, S55

**Santo:** 60 days. Select strain that is fast growing yet remarkably slow bolting. Broad, celery-like, bright green leaves. Upright growth habit; grows about 15 inches tall. Recommended for spring and summer plantings where bolt tolerance is most important. A87M, C28, C44, D11M, F70, G6, G16, I64, 191, K50, L89, M35{PL}, N24M

**Slow Bolt:** (Long Standing) Bolt resistant strain similar to Santo. Produces lush vegetative growth through several cuttings and is relatively long standing. Although it is slow to bolt to seed, it is best to make succession plantings every few weeks to ensure a continuous harvest. Height 18 inches. Recommended for fall and winter plantings. C44, C53, E28M, 139, K50, J73, K17M, K57{PL}, K66, K71, L59, M46, N52, N84

**Tian China:** Very fine-leaved type originally from Eastern Asia. Said to be sweeter than most other commercially available strains. Also germinates very quickly, only 6 to 8 days at 60° F. J73

**Yen Sai:** Reportedly the sweetest of all cilantros. Also has thicker leaves than most other types, and keeps producing for a somewhat longer time. Slower to germinate than some, 17 days at 60° F. J73

*Crithmum maritimum* - *Samphire, Rock samphire, Sea fennel, Cristemarine* {PL}. The salty, slightly spicy leaves are pickled in vinegar, added to salads, or used like capers for flavoring other foods. The flowers are also eaten in salads. In Italy and Greece, the leaves are washed, cut into small pieces, and mixed with olive oil and lemon juice to prepare an agreeable salad dressing. Mediterranean region. BIANCHINI, FRANKE [Nu], GRAY, P. [Cu], GRIEVE, HAWKES, MATIGNON [Re], MICHAEL [Pre, Re], UPHOF, VILMORIN [Cu]; E61, F37T, H25M{£D}, H49, 139, J82, K22, L56, L90J, M82, 053M{S}, Q24{S}, R53M

*Cryptotaenia canadensis* - *Honewort, Wild chenil* {S}. Young leaves, stems, and flowers are boiled and eaten as a potherb, chopped and added to salads, or used in green soups. The roots can be scrubbed and boiled in salted water for 20 minutes and served with butter and a sprinkling of parsley, or with a cream sauce. The seeds can be used as a flavoring for cookies, cakes, and breads. Stems are candied in sugar. North America. CROWHURST 1972, FERNALD, GIBBONS 1979; N84

*Cryptotaenia japonica* - *Mitsuba, Japanese parsley, Japanese honewort, Trefoil* {S}. The leaves and blanched leafstalks are eaten

raw in salads and sandwiches, boiled, fried, added to soups, or used in egg dishes, tempura, and as a garnish. Often dressed with ground sesame seeds or soy sauce. Young seedlings or sprouts are eaten, having a pleasant angelica-like flavor. Roots can be blanched for five minutes, then sauteed in sesame oil, or they can be boiled together with diced parsnips. Seeds are utilized as a seasoning. Japan, cultivated. COST 1988 [Cu], HARRINGTON, G. [Cu, Cu], LARKCOM 1984, LARKCOM 1991, MORTON 1976, SHURTLEFF 1975, TANAKA, YASHIRODA; D55, D92M, E61{PL}, G20M{PR}, G33, G68, J76{PL}, K22{PL}, K85{PL}, L59, O53M, R32, S63M

#### CULTIVARS

**Kansai:** Vigorous, upright, rapid growing plant. Small leaves with long, uniform leaflets and good coloration. Suitable for growing in both water or open fields, but particularly adapted to water culture. Popular with market growers in Japan. Q88

**Purple:** (*Atropurpurea*) An attractive, unique, dark purple form from Japan that could be a useful specialty market item. N84

*Cuminum cyminum* - *Cumin, Jeera, Safed jeera* {S}. Aromatic seeds are widely used for flavoring soups, pickles, breads, cakes, cookies, *Leyden* and *Kumino* cheeses, curry powders, *falafel*, chutneys, chili sauce, cordials, etc. Occasionally they are candied and taken as a digestive aid. The ground spice is a standard ingredient of commercial curry powder. Cumin seed oil is used in condiments, sausages, meat sauces, etc. Especially popular in Spanish, Mexican, and Indian cuisines. In Vietnam, the stems are used as a condiment. Eurasia, cultivated. BREMNESS, DE SOUNIN, LATHROP [Cu], MORTON 1976, PAINTER [Cu, Re], ROOT 1980b[Cul], WALTER; A2, D92M, E91G, F80, F85J{PD}, 139, 191, J76{PL}, K22, M46, M82, S55

*Daucus carota* - *Wild carrot, Queen Anne's lace* {S}. Roots are sometimes cooked and eaten as a vegetable or added to soups and stews. The aromatic seeds are used for flavoring stews, soups, fish chowders, and savory sauces. Dried and roasted roots are ground and utilized as a substitute for coffee. Flower clusters can be French-fried into a carrot-flavored gourmet treat. Northern temperate region. CROWHURST 1972, FERNALD, GIBBONS 1979, HARRINGTON, H.; B39M, C43M, C82, D11T{PL}, D92M, F80, I11M, I37M{PL}, J76, J76{PL}, N9M, N9M{PL}, N23

*Daucus carota* Sativus Group - *Carrot* {DF}. The sweet roots are widely used raw in salads, boiled, steamed, fried, pickled, made into jam and wine, or used in soups, stews, casseroles, etc. Pigment from the juice of the orange-red cultivars is sometimes used for coloring butter. In Egypt, sliced red carrots are added to pickles to provide a pink or red color. An alcoholic tincture of the seeds is used in French liqueurs. Carrot seed oil is used for flavoring and as a yellow food colorant. Carrot root juice, both raw and fermented, is a very popular beverage with natural foods enthusiasts. It is sometimes made into a syrup used for sweetening. The leaves are eaten in soups and stews, couscous dishes, etc. Flour, made from dried roots, may be used to flavor and thicken soups, dips, sauces, breads, pancakes, muffins, puddings, and custards. Pectic acid can be extracted from the root and solidified into a wholesome, appetizing jelly. FELL 1982b, GRIEVE [Cu, Re], KHALIL [Re], LARKCOM 1984, LEUNG, MARTIN 1975, MILIUS [Re], TANAKA, UPHOF, VILMORIN [Cu], WOLFERT 1994b [Re]; G17M, L17. (for cultivars see Carrot, page 319)

*Daucus pusillus* - *American carrot, Rattlesnake weed* {S}. Roots were consumed by the Navajo and Nez Perce Indians. The Navajo of northern Arizona are reported to still use the plant, eating the roots raw or cooked. Western North America. KIRK, YANOVSKY; 198M

*Eryngium campestre* - *Snakeoot* {S}. Young shoots are used as a substitute for asparagus. Candied roots are occasionally eaten in France and England. They are also cooked and used as a vegetable. Europe. TANAKA, UPHOF; A61, A61{PL}, G80{PL}, J82, M82{PL}, N71M, N84, O53M, Q24, S55

*Eryngium foetidum* - *Culantro, Recao de monte, False coriander, Saw leaf herb, Shadow bennie* {PL}. Young leaves are sometimes eaten raw or steamed and served with rice. They have a strong coriander-like aroma, and are more commonly used as a garnish for fish and for flavoring soups, sauces and curries. Roots are used as a condiment in soups and meat dishes to which they impart a very agreeable flavor. The seeds are also said to be used. In West Indian markets of New York and other large cities, a seasoning mixture called *sofrito* is widely sold. Its three main ingredients are culantro, cilantro and *ajicitos*—small chilis, usually mild bonnet peppers (*Capsicum chinense*). Tropical America, cultivated. ALTSCHEUL, CHANTILES [Re], DEWITT 1993 [Re], DUKE, MORTON 1976, OCHSE, ROUTHIER 1989, UPHOF, WILLIAMS, L.; C43M, C43M{S}, C95{S}, D92M{S}, F80{S}, H94M, 112, J82, J82{S}, L94M{S}, M82, N84

*Eryngium maritimum* - *Sea holly, Sea eryngo* {S}. The young, tender, flowering shoots, when blanched, may be boiled and eaten like asparagus. When boiled or roasted, the roots are said to resemble chestnuts or parsnips in taste. The candied roots were known as *eringoes*, to which Shakespeare refers in *The Merry Wives of Windsor*. They were a vital ingredient of the Elizabethan dish, *marrow-bone pie*, European coasts, Asia Minor. GENDERS 1977, GRIEVE, HEDRICK 1919, LEYEL 1987a, MABEY; A61, A61{PL}, B61M, N84, O53M, Q24, R53M{PL}

*Falcaria vulgaris* - *Longleaf, Kazayagi* {S}. In Azerbaijan, the herb is mixed with malva, chickweed and other wild greens and put into *kutabs*—flatbread wrapped around various stuffings. Also used as a vegetable in Turk<sup>^</sup>. Euiasia. AKHMEDOV [Re], OZTURK; N71M

*Ferula assa-foetida* - *Asafoetida, Food-of-the-gods* {S}. The roots are the source of a gum resin used as a flavoring in lentil soup, curried fish, vegetarian dishes, sauces, drinks, pickles, cakes, etc. It is a standard ingredient of *Worcestershire sauce* and is widely employed in spice blends and condiments. Also popular in natural foods cuisine as a substitute for garlic. Young shoots are consumed as a cooked green vegetable. The cabbage-like folded heads are eaten raw as a delicacy. Roots are roasted and eaten. Southwest Asia, cultivated. GRIEVE, HEDRICK 1919, JAFFREY, MORTON 1976, UPHOF, VON WELANETZ; A2, A7{DF}, A49D{DF}, C43M, C43M{PL}, C95, E7M, F74{DF}, J76{PL}, K17J{DF}, K18M{DF}, L17{DF}, L94M, N84, R47

*Ferula communis* - *Giant anise fennel* {S}. Leaves are edible. North Africa. MARTIN 1975; C43M, C43M{PL}, F32D{PL}, J75{PL}, J76, J76{PL}, N84, O53M, Q24

*Foeniculum vulgare* - *Fennel, Wild fennel, Bitter fennel, Sweet fennel, Green anise* {PL}. The anise-flavored leaves are used as a garnish or as a seasoning for soups, salads, sauces, fish, olives, snails, *Champsac mustard*, etc. They are an essential ingredient of the classic Sicilian dish *pasta con le sarde*. Aromatic seeds, whole or ground, are used in stuffings, *finocchiona* sausage, breads, cookies, cakes, cheese, *taralli* biscuits, confectionery, etc. Cracked fennel seed is preferred for flavoring Italian sausages. Unripe seeds flavor *Kutztown Jar-Jar*, a relish. Fennel oil is widely employed for flavoring liqueurs such as *Sambuca*. The stems and flower heads are used as vegetables. Young flower heads are also steeped in vinegar and eaten in salads or used to flavor capers. In Tuscany, the pollen is added to soups and stews. Dried stalks are used as a smoke flavoring in the famous Provençal red mullet dish, *rouget flambe au fenouil*. Sprouted seeds are added to salads. In India, roasted or candy-coated seeds are chewed as an after-dinner breath freshener. In France, rabbits fed on fennel are said to develop a delicious flavor. A tea can be made by steeping the seeds or leaves in hot water. Roots are edible. Southern Europe, cultivated. BAILEY, C., BISSELL, BROWN, G., CLARKE [He], DEVI [Cu], GRAY, P. [Cu], GRIEVE, LANZA 1993 [He], MABEY, MARCIN, MICHAEL [Re], MORTON 1976, NORMAN, ROOT 1980b [Cu], VILMORIN [Cu], WEAVER 1993 [Re]; A97, B61M{S}, D92M{S}, E14T{PD}, F35M, G40{PD}, G68{S}, G87M{PD},

191 {S}, K27T{PD}, L99{PD}, M35, M53, N19M. (see also Sprouting Seeds, page 524)

#### CULTIVARS

**Berfena:** Consistent producer with a taller and sturdier growth habit than the standard type. Also has a stronger flavor. Used for both fresh leaf and seed production. J82, N84{S}

**Bronze:** (Red, Copper, Rubrum) The foliage, especially the new growth, is an attractive brownish-purple in color. Clusters of flat-topped ocher flowers. It is a vigorous grower, and can be used very effectively in a border. Good for culinary use. A97, C43M, C43M{S}, C67M, D92M{S}, J76, J82, K22, K85, M35, N7G{S}, N19M

**Smokey:** {S} 60 days. Attractive, lacey, smokey bronze foliage. Grows 5 or 6 feet tall. Strong, sweet licorice-like taste. Excellent for flavoring salads, fish and egg dishes. Also very good as a component of mesclun. The seeds may be harvested in the fall and used throughout the year. C53, E9JG, 191, K71, L89, L91M, M46

*Foeniculum vulgare* Azoricum Group - *Florence fennel*, *Finocchio* {S}. The blanched leafstalks are eaten raw in salads, steamed, sauteed, braised, pureed, fried, baked, or used in antipasto, soups, chowders, and pasta dishes. Fresh leaves can be used in salads or to give a slight anise flavor to foods. Dried or fresh, they are used in salad dressings. The seeds, which appear in the second year, may be used for flavoring cookies and candies. CUSUMANO [Cul, Re], GRIEVE, HALPIN [Cu, Cul], KRAFT [Re], LARK-COM 1984, SCHNEIDER 1986 [Pre, Re], VILMORIN; A76{PD}, C43M{PL}, D92M, F44, G68, G93M, J66{PL}, J76, J76{PL}, L7M, L89, M46, M53, M82{PL}, R47, etc.

#### CULTIVARS

**Albaro:** Newer cultivar with whiter bulbs. Also more rounded like Italian cultivars. Very resistant to bolting. Suitable for both spring and autumn sowing. Considered to be an important improvement over the standard cultivars Zefa Fino and Zefa Tardo. Q34

**Cantino:** A very reliable cultivar for spring sowing. Very resistant to bolting and produces fine quality bulbs. Grows all year and can be grown on open ground. B49, C95, N84, R32, S55

**Colossale d'Inaeanoli:** Very large, rounded, pure-white bulbs; very broad stalks with a good, firm texture. Ripens later than Romanesco. Very poor resistance to bolting. Sown from August onwards for harvesting in the fall and winter. N84, Q11M

**Cristal:** A selected strain recommended for areas with a short spring and hot summers. Plant in June and July for a fall harvest. Produces a medium-sized, roundish, brilliant pure-white bulb with full, crisp stalks. N84, Q11M

**Goal:** Compact plant, shorter in height than Zefa Fino, about 10 inches tall. Produces one of the largest, roundest bulbs available. Uniform bulbs. Very resistant to bolting. DI 1M, F70

**Mammoth:** Slow bolting, forms a large, thick bulb before running to seed. Best sown as a fall crop. Pleasant anise-like flavor, delicious cooked or eaten raw in salads. K49M, S17, S95M

**Perfection:** Developed in Europe for cool, northern climates. Matures quickly, is easier to grow, and is fairly resistant to bolting. Produces a round, medium sized bulb that is fleshy, tender, and crisp. Delicate aniseed flavor. S55

**Romanesco:** Very large, round, compact, pure white bulbs; tender, very sweet and quite aromatic; matures early. Moderately resistant to bolting. One of the most attractive cultivars. Sown from July onwards for harvesting in the fall. B8, N84, Q11M, S17

**Romy:** Large, globular bulbs, the shape preferred by Italian fennel aficionados; crisp delicate flesh with a refined sweet flavor. Produces more usable flesh because it lacks the tough, fibrous wrapper leaves that the more long-standing cultivars may develop. An extremely early maturing Italian heirloom. Suitable for an early spring or fall harvested crop. K66

Rudyi(F<sub>1</sub>) 80-90 days. More uniform, rounder, higher yielding version of Zefa Fino. Large, white bulbs; very thick and heavy; good tolerance to bolting. For spring and summer production. G6, K50, N81, N84

**Sicilian:** (Carosella) The plant is used while in the state of running to bloom; the stems, fresh and tender, are broken and served raw, still enclosed in the expanded leaf-stalks. The flavor is quite similar to finocchio, recalling tarragon or chervil. Bulbs can be used in place of finocchio. HALPIN, KRAFT [Re], VILMORIN; S17

**Zefa Fino:** (Fino) Slow bolting, can be sown in late spring or early summer with success, whereas other cultivars go to seed before forming a bulb. Vigorous plant, 12 to 18 inches tall; forms a large, tender, very sweet bulb. Recently introduced, and one of Europe's top varieties, bred at the Swiss Federal Research Station. LARK-COM 1984; C53, C95, D68, E24, E63D, G6,139,177, J20, K49T, K50, K66, M35{PL}, N7G, N81, RUM, S75M, etc.

**Zefa Tardo:** (Wadenswil) Produces thicker bulbs than Zefa Fino with heavy sheaths. Tall foliage. Recommended sowing is late spring to early summer, although late summer to early autumn plantings can be made in mild winter climates. S75M

*Glehnia littoralis* - *Corkwing*, *Hama-bdfu* {S}. The young leaves and leafstalks are used for their agreeable flavor and fragrance. They are pickled and are often served with sliced raw fish and vinegared dishes. One of the seven herbs that flavor *tozo*, sweet Japanese sake. Said to taste like a cross between angelica and tarragon. Grows in strong sun on coastal sand dunes. Eastern Asia. COOK, LOVE-LOCK, UPHOF, YASHIRODA; F88M

*Heracleum lanatum* - *Cow parsnip* {S}. The young leafstalks are eaten raw or cooked as greens. Chopped leaves may be added to salads. Peeled stalks can be eaten raw, but are best when cooked. Dried base of the plant and ashes from the burned leaves are used as a substitute for salt. The cooked root is said to have the flavor of rutabaga. Dried seeds are used as a seasoning for soups, stews, and potato salad. Northeast Asia, North America. CROWHURST 1972, FERNALD, GIBBONS 1979, HALL [Pre, Re], HARRINGTON, H., KIRK, UPHOF; F68T, F80, F85, G59M, H61M, 131, 160{PL}, I98M, J39M, J42, L3J, L55J

#### *Heracleum maximum* - *Heracleum lanatum*

*Heracleum persicum* - *Golpar*, *Sov* {DF}. Petioles and fleshy shoots are boiled and eaten as a breakfast food in parts of Turkey. They are also used there as an aromatic condiment in *herbal cheese*. In Iran, the seeds are ground into a powder and sprinkled over potatoes, cooked fava beans, and roasted watermelon seeds, or added to the spice mixture known as *advieh*. Whole seeds are added to soups, stews and some types of pickles. Southwest Asia, cultivated. BATMANGLU [Re], OZQELIK, OZTURK, SHAIDA [Re], UPHOF; K60D, K60D{PD}

*Heracleum pubescens* - *Downy cow-parsnip* {S}. The young shoots are filled with a sweet, aromatic juice and are eaten raw by the natives of the Caucasus. Southern Europe, Asia Minor. HEDRICK 1919; Y89M

*Heracleum sphondylium* - *European cow-parsnip*, *Hogweed* {S}. The young shoots and leaves may be boiled and eaten as a green vegetable, and when just sprouting from the ground resemble asparagus in flavor. From the boiled leaves and fruits an alcoholic beverage, called *bartsch*, is prepared. Employed in France to flavor liqueurs. A sweet substance resembling sugar is said to form upon the dried leafstalks, which is eaten as a great delicacy. The peduncles before flowering can be eaten as a vegetable or added to soups. Eurasia. CAMPBELL-PLATT, FERNALD, HEDRICK 1919, LAUNERT, UPHOF; C95, D35G, F80, F85, K63G, N71M, N84, O53M

*Laserpitium latifolium* - *Laserwort*, *White gentian* {S}. The Romans used the root with cumin in seasoning preserved artichokes.

A decoction of the seeds is used in beer. Eurasia. HEDRICK 1919, UPHOF; N84, Q24

*Laserpitium siler* - {S}. Roots and seeds are used by mountain people as a condiment. Seeds are used in Austria for the preparation of a liqueur. Europe. UPHOF; A61, A61{PL}, N84, 053M, Q24

*Ledebouriella divaricata* - *Bofu, Fang feng* {S}. Young leaves and shoots are eaten raw, boiled, stir-fried, preserved or added to soups. In Japan, the wine-red stems are commonly used as a garnish for seafood and kombu dishes such as "White Hsh and Tororo Kombu" and "Sea Bream and Sea Urchin". Eastern Asia. ARASAKI [Re], PASSMORE, TANAKA, TSUJI; J82, N84

*Ledebouriella seseloides* - *Ledebouriella divaricata*

*Leptotaenia dissecta* - *Lomatium dissectum*

*Levisticum officinale* - *Lovage* {PL}. The leafstalks and stem bases are blanched and eaten like celery or candied. Young leaves can be chopped and added to salads, soups, omelettes, stews, and seafood dishes. Seeds, either whole or ground, are used for flavoring soups, breads, cookies, confectionery, and French liqueurs. They are sometimes pickled like capers. The flowers are eaten. Roots are the source of *oil of lovage*, used for flavoring. An aromatic tea is made from the dried leaves or grated roots. Roots may be chopped and preserved in honey. Eurasia, cultivated. GRIEVE, HEDRICK 1919, LATHROP, LEGGATT [Re], MORTON 1976, UPHOF, VILMORIN [Cu]; A7{DF}, A97, C3{S}, D92M{S}, F80{S}, H46{DF}, I77M, J66, J76, K22, K85, N19M, R47{S}

CULTIVARS {S}

**Maanus:** An improved strain with more uniform growth. J82, N84

*Ligusticum hultenii* - *Sea lovage, Wild celery* {S}. Young leaves can be used as a substitute for celery. The leaves and stalks are cooked as a vegetable. In Alaska, they are eaten raw with seal oil, or stored in seal oil for winter use. The roots are reportedly eaten. Alaska, Eastern Asia. HELLER, TANANA, UPHOF; C95

*Ligusticum monnieri* - *Gieng sang, Xa-sang* {S}. Occasionally cultivated in northern Vietnam where the herb is used as a condiment. Temperate Asia. UPHOF; F85

*Ligusticum scoticum* - *Scotch lovage* {S}. The young shoots and leafstalks are blanched and used as a celery substitute in tossed green salads or as a flavoring for soups and stews. In the Hebrides, it is eaten raw in a salad known as *shunis*. Young shoots and roots are occasionally candied like angelica. The green stem is peeled and eaten. Roots are chewed. Northern temperate region. ANGIER [Re], FERNALD, GIBBONS 1964 [Re], GRIEVE, HEDRICK 1919, LEYEL 1987b, UPHOF; K49Q, N84, R53M, R53M{PL}

*Lomatium californicum* - *Wild celery-parsley* {S}. Both the large, aromatic roots and flavorful tops were eaten by the Indians. An endangered species. Western North America. C95, N84

*Lomatium dissectum* - *Fern-leaved biscuit-root* {S}. Roots are dried and then cooked. Nez Pierce Indians baked the roots in a pit for up to two days, in the manner of cooking camass. Western North America. HART, YANOVSKY; A2, B21P{DF}, C95, E14T{DF}, F86G, I39, F68T, I23G{PR}, I23G{DF}, I47, I81T{DF}, J82{DF}, N84

*Lomatium macrocarpum* - *Large-fruited biscuit-root* {S}. The roots are eaten raw, or dried and ground into flour and made into cakes. Tea may be prepared from the leaves, stems and flowers. The tiny seeds are nutritious raw or roasted, and can be dried and ground into flour. North America. HART, KIRK, YANOVSKY; C95, I47, N84

*Lomatium nudicaule* - *Cow parsley, Smyrniium* {S}. The leaves and stems are eaten as a vegetable or used like celery in soups. An infusion of the leaves, stems, and flowers is utilized as a beverage. Roots are sometimes cooked and eaten. In the young plant the vitamin C is remarkably high, one cup providing more than the adult

Recommended Dietary Allowance Western North America. HEDRICK 1919, HILTY [Nu, Pre], YANOVSKY; A2, C95, E15, F68T, F88M, N7G, N84, R47

*Lomatium triternatum* - *Lewis\* biscuit-root* {S}. The roots are eaten raw, roasted, baked or ground into flour and made into cakes. They have a sweet mild flavor, especially after having been dried. Western North America. HART, HEDRICK 1919, YANOVSKY; C95, E15, I47, N7G, N84

*Lomatium utriculatum* - *Desert gold, Porno celery* {S}. Young leaves and shoots are eaten as greens or in salads. North America. YANOVSKY; E15, F88M, N7G, N84

*Meum athamanticum* - *Spignel, Meu, Baldmoney* {S}. The crushed fresh herb can be rubbed on to pork or lamb before cooking. As a condiment it adds a subtle, sweetish-aromatic flavor to soups, stews, and vegetable dishes. The roots are collected and consumed as a parsnip-like vegetable by the Highlanders of Scotland. Europe. GRIEVE, LAUNERT, MABEY, UPHOF; N71M, N84, 048, Q24, R53M, R53M{PL}

*Myrrhis odorata* - *Sweet cicely* {PL}. The sweet, anise-like leaves can be eaten raw in salads, added to soups and stews, used as a garnish for fish dishes, or brewed into tea. Because of its sweet flavor, it is cooked with fruits such as plums and rhubarb to reduce the amount of sugar needed. Roots are bailed and served with oil and vinegar or candied. The fresh seeds are chewed or chopped and mixed with salads to give them an aromatic flavor. Seeds are used for flavoring brandy and *Charreuse*. Alpine Europe, cultivated. FELL 1982b, GRIEVE, HEDRICK 1919, LAUNERT, MARCIN, MORTON 1976, PAINTER [Cu, Re], UPHOF, VILMORIN [Cu]; C9, C67M, D92M{S}, E7M{S}, F80{S}, G96, J76, K22, K54{PD}, K85, 053M{S}, R47{S}

*Oenanthe javanica* - *Water dropwort, Seri, Minari, Korean watercress, Metnamese celery* {PL}. Young leaves and stems are eaten raw, steamed, with soy sauce and sesame oil, boiled with fish and meat, or chopped fine and used as a seasoning in soups, suki-yaki, and chicken dishes. In Korea, the stems are used for tying squid in bundles before serving. The slender white roots grow about one foot long in the water, and the prettiest of these are highly esteemed for cooking. In Japan, seri and six other herbs are customarily boiled in rice gruel (<*okayu*) on January 7th or 15th. Seeds are said to be edible. Usually available in Oriental markets. Southeast Asia. ALTSCHUL, HAWKES [Cu], HERKLOTS, HOMMA, LARKCOM 1991 [Cu], LEE, F. 1988, MILLON [Re], NOH [Cu, Re], OCHSE, TANAKA, YASHIRODA; H30, I90M, J7M, M82

CULTIVARS

**Flamingo:** Variegated form with pink, green and white foliage, the pink being outstanding in the cooler weather of spring and fall. Not as vigorous as the common form. Grows to 6 inches in height. B9M, B77, C74, D95, G96, H30, I90M, M82, M92, N84

**Su Zhou:** Medium early cultivar with few fibers and excellent taste. 054{S}

*Oenanthe pimpinelloides* - *Meadow parsley* {S}. The roots have been esteemed as food in certain areas. They are said to be starchy, with a flavor somewhat like a filbert. Europe. GRIEVE, HEDRICK 1919; F85

*Oenanthe sarmentosa* - *Pacific water dropwort, Water parsley* {S}. The black tubers have sweet, snow-white, farinaceous flesh that was esteemed by the Indians. Has a cream-like taste when boiled, with a slight parsley flavor. Western North America. HEDRICK 1919, MEDSGER, YANOVSKY; C74{PL}, F85, F88M

*Oenanthe stolonifera* - *Oenanthe javanica*

*Osmorhiza aristata* - *Ibu-ninjin* {S}. Young leafstalks are eaten boiled and seasoned, put into soups, or cooked with soy sauce. Roots are eaten raw. The young plant is also cooked and eaten. Southern Asia, Eastern Asia. TANAKA; X33

*Osmorhiza claytonii* - *Anise sweet-cicely* {S}. The roots and stems are sometimes eaten as vegetables. Aromatic roots and unripe seeds are used as anise-like flavorings. North America. PETERSON, L., YANOVSKY; B61M, H61M, J39M, J39M{PL}, N84

*Osmorhiza longistylis* - *Anise-root, Smooth sweet-cicely, Sweet myrrh* {S}. Roots have the spicy taste of anise and are chewed, made into a tea, or used as a flavoring. Anise-flavored leaves and green seeds may be added to salads. Dry seeds are used in cakes, candies and liqueurs. North America. MEDSGER, PETERSON, L., TANAKA; N84

*Osmorhiza occidentalis* - *Western sweet-cicely* {S}. The roots have a sweet licorice or anise flavor and may be dried, ground into a powder and used as a flavoring for cookies and other foods. Dried seeds are used as a seasoning, fl or nibbled raw when they are still fleshy. Western North America. HARRINGTON, H., KIRK; E66M, J82, N84

*Pastinaca sativa* - *Parsnip, Wild parsnip* {S}. Roots are eaten raw, boiled, steamed, sauteed, mashed, pureed, baked, or used in soups, stews, sauces, cakes, pies, and puddings. They are also made into marmalade, syrup, beer, and wine. Young leaves and shoots are added to soups or mixed with other greens and eaten as a cooked vegetable. In Belarus, they are occasionally added to pickled apples. The seeds make a fine condiment, being similar in taste to dill. *Parma* and *San Daniele* hams are said to derive their flavor from the parsnips which are used as feed. Eurasia, cultivated. BISSELL, BOLOTNIKOVA, CARCIONE, FELL 1982b, GRIEVE [Re], HAWKES [Re], LAUNERT, MABEY, TANAKA, VILMORIN [Cu]; M34M, N71M, N84, 048, 053M. (for cultivars see Parsnip, page 449)

*Perideridia gaindneri* - *Yampa, Squawroot, Ipo, False caraway* {S}. The fleshy roots have a pleasant, sweet, nutty flavor and are eaten raw, boiled, baked or preserved for winter use. Occasionally they are dried, ground into flour, and baked in cakes. The seeds are used as a caraway-like seasoning, or parched and eaten in porridge. Western North America. HALL [Re], HARRINGTON, H. [Re], HEDRICK 1919, KIRK, MEDSGER, YANOVSKY; F85

*Perideridia kelloggii* - *Cascade caraway, Kellogg's yampa* {S}. Roots are eaten raw or cooked having a sweet, pleasant, nutty flavor. The aromatic seeds have a fine, distinctive flavor and can be used like caraway. California. YANOVSKY; C95, L77D

*Petroselinum crispum* - *Wild parsley, Sheep's parsley* {S}. Leaves are used as a garnish or added to soups. The herb can be fried in hot butter and served as a vegetable with fish. Eurasia. LAUNERT, MABEY; L91M, N71M, 048

*Petroselinum crispum Hortense Group* - *Parsley* {PD} Leaves are widely used as a garnish or for seasoning soups, stews, salads, *salsa verde*, dressings, omelettes, *tabouli*, *falafel*, stuffings, etc. Also the main ingredient of *Chimichurri*, a green salsa-like sauce from Argentina that is widely used on barbecued meats. Parsley juice is often mixed with carrot, celery and spinach juices. Parsley oil, derived from the leaves and seeds, is used by the food industry in sauces, pickles, meats, bakery products, and soups. The stems are dried and powdered and used as a food coloring. Fresh or dried leaves can be brewed into a pleasant tasting tea. GRAY, P. [Cu, Re], GRIEVE, GURSCHE [Nu], MARCIN, MORTON 1976, ROOT 1980b [Cu], UPHOF, VILMORIN [Cu]; A7, N54. (for cultivars see Parsley, page 448)

*Petroselinum crispum Radicosum Group* - *Hamburg parsley, Turnip-rooted parsley, Parsnip-rooted parsley, German parsley* {S}. The thick, fleshy, parsnip-like roots are thinly sliced or grated, and eaten raw in salads. They are also a popular ingredient in soups and stews or can be roasted, mashed, and fried, or made into chips the way potatoes are. The flavor is delicious and somewhat reminiscent of a combination of celery and parsley, but with a nuttier flavor. Young leaves are such a popular soup and stew ingredient, they are known as *soup greens*. HALPIN [Cu, Cul], KRAFT [Re], ORGAN [Pre, Re], RODALE [Cu], SCHNEIDER 1986 [Cul, Re],

VILMORIN; A16, C85M, D11M, D92M, E13G{PR}, F70, F80, G16, G73{DF}, G80{PL}, G71, H61, H73{PR}, K73, L79, N40{PR}, etc. (for cultivars see Parsley, page 448)

*Petroselinum sativum* -> *Petroselinum crispum*

*Peucedanum nudicaule* -> *Lomatium nudicaule*

*Peucedanum ostruthium* - *Masterwort, Hog-fennel* {S}. The leaves are boiled and eaten as a potherb. Aromatic roots are used in the preparation of gin, Swiss cheese, and certain herb-cheeses. One of the ingredients of *Ramazotti*, an Italian bitter. Europe. BROWN, G., HEDRICK 1919, LOVELOCK, TANAKA, UPHOF; F37T{PL}, F80, J82, N84, Q24, R53M{PL}

*Peucedanum palustre* - *Marsh hog's-fennel* {S}. In some Slavic countries, the roots are used as a substitute for ginger. Europe. GRIEVE, HEDRICK 1919, LOVELOCK, UPHOF; V73M, V84T, V85, V85M

*PheUopteris UttoraUs* -> *Glehnia littoralis*

*Pimpinella anisum* - *Anise* {S}. Aromatic seeds are used as a seasoning in cakes, cookies, breads, cheese, *anise milk*, confectionery, beverages, wine, icings, etc. One of the most popular flavorings for aperitifs and liqueurs, such as *Anisette*, *Ouzp*, *Pastis* and *Raki*. The fresh leaves can be chopped and used in salads, soups, stews, vegetable dishes, and sauces. Source of a distilled oil that flavors licorice candy, chewing gum, ice cream, and pickles. Both leaves and seeds are brewed into a sweet, licorice-like tea. Cultivated. DOMINE, GRIEVE, LATHROP [Cu, Cul], MARCIN, MORTON 1976, RAY, C., ROOT 1980b [Cu], UPHOF, VILMORIN; A97{PL}, C3, C43M, D92M, F80, G84{DF}, H46{DF}, K2{ffi}, K22, N19M{PL}, R47

*Pimpinella brachycarpa* - *CKam-namul* {S}. Young leaves are eaten fresh, boiled, or seasoned with sesame oil and soy sauce. Very common in the markets of Korea where it has recently been brought into cultivation. Eastern Asia. PEMBERTON, TANAKA; W22

*Pimpinella major* - *Greater burnet-saxifrage, White saxifrage* {S}. Roots are the source of an essential oil used to flavor candy and liqueurs. Eurasia. MORTON 1976; N71M, N84, 048

*Pimpinella saxifraga* - *Burnet saxifrage* {S}. Young leaves and shoots have the flavor of cucumber and can be eaten in salads or used in cooling drinks. They have been tied in bundles and hung in casks of beer, ale, and wine to improve the flavor. The flower heads were formerly made into wine. Seeds are coated with sugar and eaten as a confection. An essential oil from the root is used for flavoring candy and liqueurs. Eurasia. GRIEVE, MORTON 1976, ROOT 1980b [Cu, Cul]; C43M, C43M{PL}, C95, F35M{PL}, F86G, J82, L66{PL}, N71M, N84

*Porphyroscias decursiva* - \**Angelica decursiva*

*Ridolfia segetum* - *False caraway* {S}. An aromatic herb that can be used as a condiment. Mediterranean region. HEDRICK 1919; C95, N84

*Saposhnikovia divaricata* - \**Ledebouriella divaricata*

*Scandix pecten-veneris* - *Venus' comb, Shepherd's needle, Kafkalithra* {S}. Young leaves and stem tops are eaten raw in salads or cooked as a potherb. In Greece they are a popular ingredient of *hortopita*, a classic vegetable pie made with a mixture of seven different wild greens including sweet, sour, bitter and aromatic types chosen to complement each other. Eurasia, naturalized in North America. HEDRICK 1919, KREMEZI 1993 [Re], UPHOF; N84, 053M

*Setinum monnieri* - *Ligusticum monnieri*

*Silaum silaus* - *Pepper saxifrage, Meadow saxifrage* {S}. Sometimes cooked as an acid potherb. Europe. HEDRICK 1919; N71M, N84, 048

*Silaus flavescens* - *Silaum silaus*

*Siler divaricatum* - *Ledebouria divaricata*

*Sison amomum* - *Bastard stone-parsley* {S}. The aromatic leaves and seeds can be used as a condiment. Roots are edible, and are said to have the taste of celery. Eurasia. HEDRICK 1919, UPHOF; N84, 048

*Sium cicutaefolium* - *Water parsnip* {S}. Roots have an agreeable nutty flavor and are consumed as food by some Indian tribes in the United States and Canada. The aromatic leaves were eaten by the Klamath Indians as a relish. Eastern North America. FERNALD, UPHOF; C74{PL}, G47M

*Sium sisarum* - *Skirret* {S}. The sweet, floury white roots are eaten raw in salads, boiled, stewed, braised, baked, batter-fried, creamed, or used in soups, stews, pies, and curries. They are delicious when mashed with potatoes, served with a cheese sauce, or dressed in a vinegar marinade and served alone as a salad. Sometimes used as a substitute for coffee. Eurasia, cultivated. HALPIN [Cu, Cul], ORGAN, UPHOF, VILMORIN [Cu]; C95, E7M, E61{PL}, 139, J26M, K2, K85{PL}, L56{PL}, M82{PL}, 053M, R53M{PL}, S55

*Sium suave* - *Sium cicutaefolium*

*Smyrniolum olusatrum* - *Alexanders, Black lovag?* {S}. Young shoots and leafstalks are blanched and eaten like celery in salads, soups, sauces, and stews. The thicker stems may be used as a cooked vegetable, and the flowerbuds as a salad. Leafy seedlings can be used as a parsley substitute. The roots are boiled and served with oil and vinegar or used in soups. They are said to be more tender if kept all winter in a cool place. Spicy seeds are used as a pepper substitute. Was cultivated for several centuries, until recent times when it was gradually replaced by celery. Eurasia. HEDRICK 1919, LARKCOM 1984, LOVELOCK, MABEY, MACNICOL [Re], MICHAEL [Pre, Re], PAINTER [Cul, Re], UPHOF, VILMORIN [Cu]; A2, C95, E61{PL}, F37T{PL}, 139, L77D, L90J{PL}, N19M{PL}, N61, N84, 053M, R47, S55

*Smyrniolum perfoliatum* - *Perfoliate alexanders* {S}. The blanched leafstalks are eaten raw in salads or used as a potherb. It is considered superior to *S. olusatrum*, as it not only blanches better, but is more crisp and tender, and not so harsh flavored. Southern Europe. BURR, HEDRICK 1919; L91M, 053M

*Tordylium apulum* - *Roman pimpinell, Small hartwort* {S}. The aromatic young plants are eaten as a vegetable in some parts of Greece, often combined with other sweet greens in pies and stews. In Italy, they are used as a condiment. Eurasia. LOVELOCK, UPHOF, WOLFERT 1998; V84, W59M, X47

*Trachymene glaucifolia* - *Native carrot* {S}. The root is reported to be edible, either raw or cooked. Australia. CRIBB; N84, R15M

*Trachyspermum ammi* - *Ajowan, Ajwain, Bishop's weed, Ammi, Nech azmid* {S}. The aromatic, pungent seeds are widely used for seasoning curries, *chat masala*, vegetable dishes, fritters, stews, cookies, and breads. Their flavor is said to be a combination of anise and oregano with a hint of black pepper. They are also considered a good preservative for canned foods. In Ethiopia, they are used in *niter kibbeh*, a spiced butter, *shiro* (spiced, powdered peas), and the red pepper pastes *berbere* and *awaze*. Ajowan oil, sweeter than oil of thyme, is extracted from both the plant and seeds and used for flavoring. Southern Asia, cultivated. JAFFREY [Re], MACMILLAN, MESFIN [Re], MORTON 1976, NORMAN, UPHOF; A7{DF}, D92M, F74{DF}, F80, H51{DF}, H51{ED}, J73, J82, K17J{DF}, L16{DF}, L94M, N84, 053M, S55

#### CULTIVARS

**Bengal Bold:** Improved leafy type from India. Has thicker leaves than Bengal Thin, and they are also sweeter. Can be steamed like spinach or chopped and added fresh to salads and sandwiches. J73, N84

**Bengal Thin:** Improved fine-leaved type from India. Not as sweet as Bengal Bold. Leaves have a mild flavor reminiscent of carrot and caraway. They are often added to sandwiches and soups. J73, N84

*Zizia aurea* - *Golden alexanders* {S}. The golden flower clusters, with the main stem removed, are a welcome addition to a tossed green salad. They also make a delicious cooked vegetable, somewhat in the manner of broccoli. Eastern North America. CROWHURST 1973 [Re]; B29, B29, B51, E7M, F80, G47M, G89{PL}, H61M, J39M, J39M{PL}, J41M, J41M{PL}, J42, J42{PL}, J43, etc.

#### APOCYNACEAE

*Carissa arduina* - \* *Carissa bispinosa*

*Carissa bispinosa* - *Amatungula, Num-num* {S}. The small red fruits, the size of a cherry, have few seeds and are eaten fresh. Southern Africa. FOX, F., MOWRY, POPENOE, W. 1920; N84

*Carissa carandas* - *Karonda, Christ Is thorn* {S}. Fruits are eaten raw or cooked. When ripe they are eaten fresh as a dessert, or made into wine, drinks, syrups, preserves, chutneys, tarts, and an acid jelly used with meat and fish. Unripe fruits are pickled. Tropical Asia, cultivated. KENNARD, MORTON 1987a, SINGH, S., STURROCK [Pc], WATT; F74{ED}, F85, N84, P5, Q12, Q46, R50{PL}, S97M{PL}

*Carissa edulis* - *Arabian num-num* {S}. The milky red pulp of the fruit is sweet and pleasant and is eaten fresh or made into jelly, jam, preserves and vinegar. Pieces of the root are used as a condiment to disguise fish odor or as bitters macerated in rum or gin. In Kenya, they are added to tonic soups. Tropical Africa. DALZIEL, FOX, F., GACHATHI, TREGOLD; N84

*Carissa grandiflora* - *Carissa macrocarpa*

*Carissa macrocarpa* - *Natal plum, Amatungula* {S}. The ripe, bright red fruits are eaten out of hand, made into jellies, syrups, pickles, tarts and pies, or stewed into a sauce that very much resembles cranberry sauce. South Africa, cultivated. CREASY 1982 [Re], MORTON 1987a, POPENOE, W. 1920 [Cu], RICHARDSON, M. [Pre, Re], THOMSON 1976; A79M, C9M, F85, G96{PL}, H49{PL}, 7£{PL} I57{PL}, K38, N84, P5, P38, S28M  
CULTIVARS {GR}

**Fancy:** Large, nearly round fruit with a pointed end; skin dark red; flesh whitish, flavor very good, seeds few. Bush ornamental, grows 6 feet tall; self-fertile, bears fruit all year along the California coast; flowers fragrant. Makes a uniform hedge. H78, I8, 183M

**Yautepec:** An improved type selected at Vive» Yautepec in Cuernavaca, Moreles, Mexico. S97M

*Fernaldia pandurata* - *Loroco* {S}. The flowers and buds are cooked as greens, folded into egg batter, or added to a kind of stuffed tortilla called *pupusa* which is very popular in El Salvador. In Guatemala, they are an essential ingredient of *polio en crema*, a rare and celebrated delicacy. Available canned or frozen at Latin American markets. Central America. MARKS [Re], TANAKA, WILLIAMS, L.; YOM

*Hancornia speciosa* - *Mangabeira, Mangaba* {S}. The pleasant, subacid fruits, yellow streaked with red, are eaten fresh or made into juice, preserves, sherbet, pudding and wine. Much esteemed as a marmalade in some parts of Brazil. South America. CARDENAS, HEDRICK 1919, MARTIN 1987, TANAKA, UPHOF, WILLAN; T73M

*Plumeria acutifolia* - *Plumeria rubra acutifolia*

*Plumeria rubra* - *Frangipani* {S}. Flowers are eaten in sweetmeats. Tropical America, cultivated. BURKILL, KUNKEL; A79M, A79M{PL}, F85, I57{PL}, I83M{PL}, J27, J27{PL}, N84, 053M, Q46

*Plumeria rubra* f. *acutifolia* - *Pagoda tree*, *Chi-tan-hua* {S}. Dried flowers are used as a substitute for tea. Tropical America, cultivated. BURKILL, TANAKA; 053M, Q46

*Tabernaemontana elegans* - *Lowveld toad tree* {S}. The juicy, orange-colored pulp of the fruit is eaten fresh, having somewhat the flavor of Citrus fruits. It is considered a delicacy in some parts of Africa. Also used by the Zulus for curdling milk. Southern Africa. FOX, F, TREGOLD.; N84, S28M

*Willughbeia angustifolia* - *Kubal madu*, *Surapit* {S}. The round, bright orange fruit is eaten. Its flesh, which surrounds the large flat seeds, is soft and juicy and has a sweet, tangy flavor reminiscent of orange sherbet. Borneo. TANKARD, TINGGAL; F85

#### APONOGETONACEAE

*Aponogeton distachyus* - *Cape asparagus*, *Water onion*, *Water Hawthorne* {PL}. Flowering spikes are eaten pickled, or as a substitute for asparagus and spinach. The starchy roasted roots are also eaten. Southern Africa. FOX, E, HEDRICK 1919; C74, H30, 174, 190M, J7M, M15, M39, N3M, N84, P59M

#### AQUIFOLIACEAE

*Ilex aquifolium* - *Holly* {S}. The leaves have been used as a tea substitute in the Black Forest of Germai. A rare Alsatian brandy, made from the red berries, is known as *eau de vie de baie de houx*. Eurasia. CAMPBELL-PLATT, GIBBONS 1979, GRIEVE, RAY, C; C9M, C60D{PD}, D95{PL}, G23{PL}, G66, H8{PL}, K38, K63G, N84, 053M, 093, P5

*Ilex cassine* - *Cassine* {PL}. Dried, roasted leaves are used as a tea substitute. Should be used in moderation. Can cause dizziness and have a laxative effect. North America. FERNALD, HEDRICK 1919, MEDSGER, MORTON 1977; F73, F85{S}, H4, H14M, N37M

*Ilex glabra* - *Inkberry*, *Gallberry*, *Appalachian tea* {PL}. Dried leaves, after roasting, make a good substitute for yaupon tea. Contains caffeine. The flowers yield a very light-colored, heavy-bodied honey with a particularly mild flavor that is in great demand in parts of the South. Eastern North America. CRANE 1984, FERNALD, GIBBONS 1979; B9M, B70{PD}, D95, H4, H8, K38{S}, K63G{S}, L56M{PD}, M75, N37M, N84{S}, R78{S}

*Ilex latifolia* - *Tara-yo*, *Holly tea* {PL}. The leaves are used as a tea substitute, and the seeds as a substitute for coffee. Japan, China. KUNKEL, TANAKA; B96, D95, H4, H8, N37M

*Ilex opaca* - *American holly* {S}. Roasted leaves were the most popular tea substitute during the Civil War. Being free of caffeine, they lack the stimulating properties of mate and yaupon. North America. FERNALD, GIBBONS 1966b; D95{PL}, H4{PL}, H49{PL}, 147, K38, K63G, M92{PL}, N84, 053M

*Ilex paiaguariensis* - *Yerba mate*, *Paraguay tea*, *Jesuit tea* {PL}. Dried, crushed leaves are used as a stimulating beverage, containing about 1 % caffeine. It has a light green color, a pleasant aroma and a slightly bitter flavor. The most popular beverage in South America, preferred over coffee and tea. Usually graded into Mate grosso, Mate fino, and Mate entrefino. Andean South America, cultivated. BROUK, SCHERY, UMANA-MURRAY [Re], UPHOF; A26, A26{S}, C43M, F37T, F73D, F73D{DF}, G47J{DF}, G96, H4, I39{DF}, J76, J82{S}, L90J, N84{S}, P38{S}, etc.

*Ilex verticillata* - *Winterberry*, *Black alder* {PL}. Leaves are dried slowly in a warm attic, crumbled, and then used as a substitute for Oriental tea. Does not contain caffeine. Eastern North America. FERNALD, GIBBONS 1979; B9M, B32, C47, D95, G66{S}, H4, H14M, I47{S}, K38{S}, K63G{S}, K89, L12, M69M, N84{S}, 093{S}, etc.

*Ilex vomitoria* - *Yaupon*, *Cassena*, *Dahoon*, *Carolina tea* {PL}. A mildly stimulating beverage, containing caffeine, is prepared from the leaves. They are roasted slowly in an oven, powdered, and

steeped in first cold then boiling water. Also used to flavor ice cream and soft drinks. Southeastern North America. FERNALD, GIBBONS 1979, SCHERY; A19, B32, D95, F73, G66{S}, H4, H14M, K38{S}, K63G{S}, N37M, N84{S}

#### ARACEAE

*Acorus calamus* - *Calamus*, *Sweet flag*, *Myrtle sedge* {PL}. Rootstocks are candied, chewed, used as a ginger substitute, and to sweeten the breath. Calamus oil is used to flavor liqueurs, cordials, bitters, ice cream, soft drinks, and vinegar. Inner portion of young shoots makes a very palatable salad. Temperate Asia, cultivated. FERNALD, GIBBONS 1962 [Re], MORTON 1976, TOOMRE [Re], UPHOF; C43M, D75M, E33M, G47M{S}, G85, H4, I81M{DF}, J73, K18M{DF}, K22, L56, M15, M15T{DF}, M73, N3M, Nil, etc.

*Acorus gramineus* - *Grass-leaved sweet flag*, *Sekisho* {PL}. Rhizomes are peeled, finely chopped, steeped in several waters, and then eaten fried or oil-roasted. They are said to have a stronger and more pleasing taste than sweet flag, and can be used as a flavoring. Japan. HEDRICK 1919, TANAKA; B28, G73, H4, 128, I81M, K79, K85M, M15, N3M

#### CULTIVARS

Licorice: (Licorice Sweet Flag) Shiyy, strap-like leaves. Entire plant has a strong licorice scent and flavor. Used in Thai cuisine for flavoring rice dishes. Hardy plant, grows 8 to 12 inches tall. A good choice for a water garden. 139, J82, M7M

*Amorphophallus campanulatus* - *Whitespot giant arum*, *Telinga potato*, *Indo-konnyaku*, *Suran* {S}. Corms, leaves, and petioles can be eaten after proper preparation. The corms are then boiled with tamarind leaves, fried, curried, added to stews, pickled, or cooked in syrup. Available fresh or canned at Indian markets. Tropical Asia. BURKILL, HERKLOTS, MEHTA [Re], OCHSE, REEJH-SINGHANI1975 [Re], TANAKA; F74{PQ}, F85, N84, P38{PL}

*Amorphophallus paeoniifolius* - *Amorphophallus campanulatus*

*Amorphophallus rivieri* - *Devil's tongue* {PL}. The large brown tubers are peeled, cooked, and pounded to extract their starch, which is solidified with dissolved limestone into an edible gel called *konnyaku* or *yam cake*. Used in Japanese cuisine, and valued for its ability to cleanse the digestive tract without being a laxative. Konnyaku noodles, known as *shirataki*, are widely used in sukiyaki. In Korea, konnyaku is valued as a chewy addition to dishes like *yachae chongol*, a one-pot, sukiyaki-like dish served over a burner at the table. Southeast Asia, cultivated. HOMMA [Re], MILLON [Re], NOH [Re], SHURTLEFF 1975 [Re], SHURTLEFF 1976 [Re], TANAKA, TSUJI [Re]; A79M, G20M{EQ}, G73, 112, N49M{PD}, N84

*Amorphophallus variabilis* - *Kembang bangke* {S}. After proper preparation, tubers and young shoots may be eaten. From the tubers, an edible gel (*konnyaku*) is manufactured. Southeast Asia. BURKILL, OCHSE, TANAKA; F85, N84

*Arisaema triphyllum* - *Jack-in-the-pulpit*, *Indian turnip* {PL}. Fleshy roots are cut into very thin slices and allowed to dry for several months, after which they can be eaten like potato chips, crumbled to make a cereal, or ground into cocoa-flavored flour for baking cakes, cookies, rolls, muffins, and pancakes. Eastern North America. ANGIER, FERNALD [Pre], GIBBONS 1966b [Pre, Re]; B96, C43M, D75M, E33M, F80{S}, HIM, 144, J71, L88M, M77M, N9M, N9M{S}

*Calla palustris* - *Wild calla*, *Water arum*, *Water dragons* {PL}. In Scandinavia the roots are dried, macerated, boiled, and made into a kind of bread, *missen bread*. Northern temperate region. FERNALD [Pre]; C74, D75M, H30, M15, N84{S}, Q24{S}

*Colocasia esculenta* - *Taro*, *Coco-yam* {PL}. Corms are eaten boiled, fried, baked, steamed, in soups, stews, puddings, pounded into dumplings, or employed as a starch. In Hawaii, they are sliced



and fried into taro chips and fermented into a pasty mass called *poi*. Two types of corms are often marketed—the large main corm and the smaller side corms or cormels, called *malanga coco* and *eddoe*, respectively. Young leaves and leaf stalks are eaten as vegetables, called *luau* and *aihaha*, respectively, in Hawaii. In the Caribbean, they are added to *callaloo*. The leaves can also be stuffed like cabbage leaves. In India, they are stuffed with besan flour and spices in a dish called *patra*. Leaf stalks are also used for thickening soups or are boiled, cut into sections and served with a soy sauce dressing. The forced white sprouts, having somewhat the taste of mushrooms, called *woo-sun* in China and *imonome* in Japan, are harvested when young, cut into sections and cooked with roast pork or chicken, baked fish, or in anchovy sauce. Both the leaf stalks and runners, called *zūiki* in Japan, are partly cooked and dried and hung in strands for decoration at the Zūiki harvest festival of Kyoto. Spadices were baked with fish or pork, as a delicacy. Leaves, leaf stalks, and flower stalks were all added to *lulau*, a Hawaiian pork dish baked in an underground oven. The ancient Hawaiians fed taro to dogs raised for meat, called *poi dogs*, to make the meat more delicately flavored. Cultivated. BOND, DEGENER, DEWITT 1993 [Re], GREENWELL, GRIGSON, J. 1986 [Re], HAWKES [Re], HERK-LOES [Cu, Pre], MAY, R. [Nu, Re], SCHNEIDER 1986 [Cul, Re], TANAKA; A25G{PD}, B60M{PR}, D43G{PD}, E13G{PR}, G20M{PR}, G85, H4, 128, I90M, K34, K85M, M73M, N3M, N40{PR}, N84{S}, etc.

#### CULTIVARS

**Akado:** Corm purple; flesh white with yellowish fibers. Leaf stalks greenish-bronze, shading into dark reddish-purple at base and apex. Medium-tall, stiffly erect, stocky plant; grown primarily under upland culture; produces more than 20 cormels. Matures within 10 months. Cormels are good baked or steamed. The vivid leaf stalks, and sprouts from small cormels grown in darkness make excellent greens. Probably a native of Japan. WHITNEY; T54

**Aouwai:** Corm cream-colored; flesh white with indistinct, yellowish fibers. Short, moderately spreading, very stocky plant; essentially a wetland taro. Matures within 6 to 9 months. Leaves are highly prized for *luau*; corms are very good baked or steamed. Also makes good *poi* of a very light, silver color, soft in consistency, and easy to pound and prepare. Native Hawaiian cultivar. WHITNEY; T54

**Bun-Lona:** (Chinese) Corm cream-colored; flesh white with conspicuous purple fibers. Has a crispy texture when baked or boiled. Used commercially for taro chips. Tall, well spreading, stocky plant; grown under both wetland and dryland culture. Matures within 9 to 12 months. Young leaves are desirable for *luau* because of their large size, tenderness and comparative non-acridity. Introduced into Hawaii from China. WHITNEY; T54

**Eleele Naioea:** Corm dark reddish-purple; flesh lilac-purple with conspicuous darker purple fibers. Medium-tall, well spreading plant; petioles blackish; grown under upland culture. Matures within 8 to 12 months. Produces red *poi* that is highly prized. Native Hawaiian cultivar. One of the so-called *royal black taros* of the early Hawaiians. WHITNEY; T54

**Kal Kea:** Corm light pink; flesh white, tinged with pink, especially at the apex. Medium-tall, well spreading plant; primarily grown under wetland culture. Matures within 8 to 12 months. Makes a translucent amber *poi* of excellent quality that was highly esteemed by the Hawaiian chiefs. Native Hawaiian cultivar. WHITNEY; T54

**Kakakura-Ula:** Corm cream-colored to white; flesh white with yellowish fibers. Good baked or steamed. Medium-tall to tall, moderately spreading plant; grown under upland culture; reproduces by rhizomes. Leaf stalk striped light and dark green, overlaid with brilliant reddish-purple, white at base. Matures within 9 to 12 months. One of the most beautiful of all taros. Introduced into Hawaii from the South Seas. WHITNEY; T54

**Lehua Maoli:** Corm dark pinkish-lilac; flesh light purplish-lilac with darker purple fibers. Medium-tall, well spreading, slender

plant; grown under both wetland and upland culture. Matures within 8 to 12 months. The primary cultivar used for *Lehua red poi*, which often commands a premium in price. A favorite native Hawaiian cultivar. WHITNEY; T54

**Lehua Palaii:** Corm light pink; flesh lilac-purple with darker purple fibers. Short to medium-tall, stiffly erect, slender plant; grown principally under upland culture; quite hardy and a good yielder. Matures within 12 to 18 months. Makes red *poi* of excellent quality. Native Hawaiian cultivar. One of the royal taros, formerly grown for and eaten only by the chiefs. WHITNEY; T54

**Mana Eleele:** Corm dark purple; flesh white tinged with lilac near the apex, with yellowish fibers. Medium-tall, erect plant; grown almost exclusively under upland culture. Matures within 9 to 12 months. Mainly used as a table taro, either baked or steamed. Said to be the most drought-resistant of the Hawaiian taros. WHITNEY; T54

**Mana Keokeo:** Corms large; skin white, light lilac-pink to purple at the leaf scars; flesh chalky white with yellowish fibers. Excellent baked or steamed. Also a favorite for *kulolo*, a Hawaiian pudding prepared from grated raw taro and coconut milk, steamed underground. Medium-tall, erect plant; grown almost exclusively under upland culture; yields well even under adverse conditions. Matures within 7 to 12 months. WHITNEY; T54

**Mana Uliuli:** Corm cream-colored, dark purple along leaf-scar rings; flesh yellow with light yellow fibers; tough and rubbery when cooked. Makes good *poi* of distinctly yellow color. Medium-tall, erect, moderately stocky plant; grown primarily under upland culture; branches prolifically. Matures within 9 to 12 months. Introduced into Hawaii from the South Seas. WHITNEY; T54

**Mana Ulu:** Corm yellow; flesh yellow with light yellow fibers. Excellent cooked, having a somewhat dry, mealy, flaky texture and an orange-yellow color that is much more attractive than that of most other cultivars. Medium-tall, slender, erect plant; does well under both upland and wetland culture. Matures within 7 to 12 months. Native Hawaiian cultivar. WHITNEY; T54

**Ohe:** Corm light pink; flesh white with a light pinkish tinge, especially near the apex, and yellowish fibers. Medium-tall, well spreading, stocky plant; grown primarily under upland culture; especially well adapted to elevations above 1,500 feet. Matures within 12 to 16 months. Makes gray *poi* of excellent quality. Native Hawaiian cultivar. WHITNEY; T54

**Piialii:** Corm brilliant reddish-purple; flesh lilac-purple with darker purple fibers. Short, erect, stocky plant; grown primarily under wetland conditions. Matures within 8 to 12 months. Makes a red *poi* that is highly prized for flavor and quality. One of the oldest cultivars grown in Hawaii, known in the early days as one of the royal taros. WHITNEY; T54

**Piko Kea:** Corm pale pink; flesh white with pinkish apex and yellowish fibers; fairly firm in texture, will absorb more water in the preparation of *poi* than most cultivars. Makes light bluish-gray *poi* of very good quality. Medium-tall, erect, moderately stocky plant; grown almost exclusively in wetland patches; widely adapted. Matures within 15 to 18 months. Native Hawaiian cultivar. WHITNEY; T54

**Tsurunoko:** (Araimo) Corm white; flesh white with yellowish fibers. Short, spreading, moderately spreading plant; grown almost exclusively under upland culture; produces as many as 40 cormels. Often matures within 6 months. Cormels are eaten baked or steamed. Sprouts from cormels grown in darkness are also eaten. Most important Japanese cultivar in Hawaii. Valued primarily for its excellent keeping qualities. WHITNEY; T54

*Cyrtosperma chamissonis* - *Te babai*, *Giant swamp taro* {PL}. The large tubers are boiled and eaten. They are also mashed into a dough, which is kneaded and then left to ferment before being

recooked in an earth oven. Pacific Islands. MASSAL, TANAKA; T67M, Z5

*Monstera deliciosa* - *Ceriman* {S}. Juicy, subacid fruits have an excellent aroma and taste, combining the flavors of banana and pineapple. They are eaten out of hand or used in ices, sherbets, and soft drinks. Even ripening of the fruit may be encouraged by wrapping the whole in paper, placing it in a refrigerator for 24 hours, and then leaving it at room temperature until soft. Central America, cultivated. JOHNS, KENNARD, RICHARDSON, M. [Re], SCHNEIDER 1986, STURROCK; B60M{?R}, C9M, D57{PL}, E29{PL}, E53M, 053M, 093, P5, P17M, Q32

*Peltandra virginica* - *Arrow arum*, *Tuckahoe* {PL}. Seeds are slightly sweetish, suggesting in taste parched Indian com. A bread can be made from them, tasting like corncake with a strong flavor of cocoa. Eastern North America. FERNALD; A54, B32, C74, F73, H4, H30, H61M{S}, J7M, K85M, M15, M72, M73, N3M, N11{S}

*Philodendron bipinnatifidum* - *Banana de Macaco* {S}. The red fruits are edible and much esteemed in some parts of southern Brazil. Pulp is used for making a jelly. Brazil. UPHOF; A41M, C9M, D56M, E53M, F85, H4{PL}, 053M, 093, P5, P17M, Q32

*Philodendron selloum* - *Arborescent philodendron* {S}. Fruits are used in compotes. Brazil, cultivated. UPHOF; B41{PL}, C9M, D26G, D56M, E53M, F85, H71, 157{PL}, N40M, 093, P5, P17M

*Xanthosoma atrovirens* - *Yautia amarilla*, *Tannia* {PL}. Young leaves, rich in protein and minerals, are cooked and eaten. The corms form one of the staple starchy foods of Dominica. Tropical America. HERKLOTS, TANAKA; A41G, J37M, M73M

*Xanthosoma brasiliense* - *Tahitian taro*, *Tanier spinach*, *Belembe* {PL}. Leaves, stems, and tender upper portion of the petioles are used as potherbs. They can contain few oxalate crystals and are preferred over other species of *Xanthosoma* and *Colocasia* in the popular West Indian stew called *callaloo*. Tropical America, cultivated. MARTIN 1975, MASSAL, OMAWALE, OOMEN [Re], ORTIZ 1973 [Re]; H29, L55J, N84

*Xanthosoma maffafa* - *Maffafa* {PL}. Corms are pounded and made into *fufu*, a starchy food. Northern South America. DALZIEL; H4

#### *Xanthosoma nigrum* - *Xanthosoma violaceum*

*Xanthosoma sagittifolium* - *Yautia*, *Malanga blanca*, *Indian kale* {PL}. Corms are peeled and then eaten boiled, baked, pureed, in soups and stews, made into chips, pancakes, fritters, *fufu*, etc. Young leaves and petioles are cooked and eaten like spinach. In Jamaica, they are an ingredient of *pepperpot* and other soups. Tropical America, cultivated. BENGHIAT [Cul, Be], HAWKES [Re], ORTIZ 1973 [Re], SCHNEIDER 1986 [Pre, Re], TANAKA, WILSON, E.G.; B60M{PR}, E13G{PR}, H4, L14G{ED}, N37M, N40{PR}, N84

*Xanthosoma violaceum* - *Violet-stemmed taro*, *Primrose malanga*, *Woo chai* {PL}. Young leaves and petioles are chopped and eaten as a spinach. Cormels are peeled and used in stews, custards, and pancakes. In Tonga, the leaves are used like taro for wrapping meat in a dish known as *lu*. Tropical America. BURKILL, HARRINGTON, G. [Cu, Cul], OCHSE, WHISTLER, W.; A41G, H4

#### ARALIACEAE

*Acanthopanax divaricatus* - *6-ukogi* {S}. Leaves are parboiled and dried for use as a winter vegetable. Also used for seasoning sake wine. Dried leaves are a tea substitute. China, Japan. TANAKA; T41M

#### *Acanthopanax senticosus* - \**Eleutherococcus senticosus*

*Acanthopanax sessiliflorum* - *Manshu-ukugi* {S}. Young leaves are boiled as a vegetable, older ones are used as a tea substitute. The

bark makes wine much fancied by the Chinese. China. TANAKA; C95, G66, M35M{PL}, N84

*Acanthopanax sieboldianum* - *Ukogi*, *WU-chia* {PL}. Young leaves are boiled and eaten, having a delicious, somewhat fragrant flavor. Also used as a tea substitute. A liquor is brewed from the plant. China, Japan. TANAKA; B9M, D95, E87, N84, R78{S}

*Aralia cordata* - *Udo*, *Japanese asparagus*, *Tu-huo* {PL}. Blanched shoots are crisp and tender with a unique lemon-like flavor. When used in salads, they are peeled, cut into shavings, and soaked in ice water for an hour before serving with French dressing. To prepare as asparagus or for soup, boil in several changes of water first. A favorite of David Fairchild, the famous plant explorer. Japan. FAIRCHILD 1938, FERNALD, HAWKES [Cul], LARKCOM 1991, SHURTLEFF 1975, TSUJI [Re], UPHOF; A61, A61{S}, B28, N84, Q24{S}

*Aralia elata* - *Japanese angelica tree*, *Turup* {S}. The young, tender leafy shoots are considered a great delicacy in Korea where they are parboiled and used like asparagus or fried in batter. In northern Japan, they are boiled with the leaves of *Zanthoxylum piperitum* and eaten as a tasty salad. Sometimes available in Korean markets. Eastern Asia, cultivated. MILLON, NOH, PEMBERTON, YASHIRODA; D95{PL}, E7M, G66, H4{PL}, H29M{PL}, K63G, N71M, N84, P49, R78

*Aralia nudicaulis* - *Wild sarsaparilla* {PL}. The rootstock is often used as an ingredient in *root beer*. Also used as a refreshing herbal tea. North America. FERNALD, MARGIN; B21P{DF}, F68T, J82{DF}, M16

*Aralia racemosa* - *American spikenard*, *Life-of-man*, *Pettymorrel* {S}. The roots are pleasantly aromatic and are one of the popular ingredients of *root beer*, imparting a licorice flavor. Menomoni Indians prepared a dish of the roots mixed with wild onion, wild gooseberry, and sugar. Berries are made into jelly. North America. FERNALD; A61, A61{PL}, B28{PL}, E14T{DF}, E33M{PL}, GO{DF}, 131, J39M, J39M{PL}, J82, K18M{DF}, M82M{DF}, N84, 053M, Q24, R53M{PL}, etc.

*Aralia spinosa* - *Hercules' club*, *Devil's walking stick*, *Angelica tree* {S}. Young unfolding leaves, before the prickles form, are gathered and used as a potherb. They are chopped finely, flavored with vinegar, and served with rice. North America. FERNALD, GIBBONS 1979; B51, B68{PL}, E48{PL}, D47M, F85, H4{PL}, K38, K63G, M92{PL}, N37M{PL}, N84, P5, P38

*Eleutherococcus senticosus* - *Siberian ginseng* {S}. Young leafy shoots are eaten as a potherb, often mixed with boiled rice. Dried leaves are used as a substitute for tea. Becoming popular as a ginseng-like food tonic, with various parts of the plant available as extracts, tinctures, capsules, tablets, teas, etc. Eastern Asia. FLAWS 1994, FRAWLEY, LEUNG, TANAKA; E14T{DF}, F37T{DF}, F68T, F78{PD}, G66, G73{DF}, J82, J82{DF}, K18M{DF}, K63G, ZJ4{DF}, 053M, P5, R53M, R53M{PL}, etc.

#### *Nothopanax fruticosum* - *Polyscias fruticosa*

#### *Panax fruticosum* - *Polyscias fruticosa*

*Panax ginseng* - *Asiatic ginseng*, *Renshen*, *Insam* {S}. The sliced young roots are eaten raw like carrot sticks, candied, fried, dipped in honey as a snack, in tossed or spicy salads, made into *kimchi*, or added to other dishes like *sangxae tang*—chicken stuffed with glutinous rice, jujubes, chestnuts, and ginseng. Whole roots are often aged in bottles of liqueur. Pieces of dried root can be chewed like candy or brewed into an excellent tea, called *insam cha* in Korea. One of the principal food tonics of Asia, available as numerous supplemental products such as powders, extracts, chewing gum, etc. *Ginseng-Up* is a carbonated beverage made from ginseng. Fresh roots are occasionally available in Korean markets. Eastern Asia, cultivated. FLAWS 1995, LEE, F. 1988 [Be], LEE, F. 1992 [Nu, Re], LEUNG, MILLON [Cul, Re], NOH [Be], TAN [Re], TANAKA; B21P{DF}, C27G{PD}, E14T{DF}, F68T, F85, G19P{DF},

*G66*, 191 {PL}, J82, K18M{DF}, K63G, L34{DF}, N7D{PD}, N40{PR}, N84, R53M{PL}, R47, etc.

*Panax japonica* - *Japanese ginseng* \ *Bamboo ginseng* {ED}. The dried, aromatic roots are used in tonic teas and liqueurs. One of the ingredients of *Mu #16* tea, a blend of sixteen mountain-grown herbs formulated by George Ohsawa, the founder of macrobiotics. Eastern Asia. LEE, F. 1992, TANAKA, YASHIROEA; E60P, E66T, G47B, M15M, N84{S}, R53M{S}, R53M{PL}

*Panax notoginseng* - *Tienchi ginseng*, *Sanchi ginseng*, *Thin chat* {DF}. The tuberous, fleshy roots are dried and eaten in Chinese tonic soups, especially with chicken. They impart a distinctive, bittersweet flavor that is much appreciated by some. China, cultivated. HSU, LEE, F. 1992, LEUNG, TAN [Re], TEEGUARDEN; E2M, G19P, H36, L34

#### *Panax pseudoginseng* - *Panax ginseng*

*Panax quinquefolius* - *American ginseng* {PL}. Aromatic roots are candied and used as a masticatory. Leaves and roots are brewed into a pleasant tea. Also considered a food tonic similar to Asiatic ginseng, but somewhat more bitter, and milder in its effects. Available in supplemental powders, extracts, tinctures, candies, tonic drinks, etc. North America, cultivated. FERNALD, GIBBONS 1966b, HEDRICK 1919, LEE, F. 1992, LEUNG, MARCIN, TIERRA; A36, A36{S}, A83M, A83M{S}, C43M, E33M, F37T, F78, F78{S}, F78{PR}, F78{PD}, G68{S}, K18M{DF}, K22, M82M{DF}, N7T, R47, etc.

#### *Panax schinseng* *Panax ginseng*

*Panax trifolius* - *Dwarf ginseng* {PL}. Bulb-like roots when boiled in salted water, become very palatable, either as a hot vegetable or eaten cold like salted nuts. North America. FERNALD; A51M

*Polyscias fruticosa* - *Ming aralia* {PL}. The young leaves and tops are steamed and eaten as greens, cooked with fish and meat, or added to soups as a seasoning. They have an aromatic flavor reminiscent of parsley. Southeast Asia. HEDRICK 1919, OCHSE, OOMEN, UPHOF; G96,157, N84, 093{S}

*TYevesia palmata* - *Bhotala*, *Snowflake bush* {S}. Flower buds are eaten cooked. Himalayan region. TANAKA; A79M, C9M, F85, G20{PL}, G96{PL}, N84, 093, Q32

#### ARAUCARIACEAE

*Araucaria angustifolia* - *Parana pine*, *Brazilian pine* {S}. The nutritious seeds are eaten. Flavor of the kernel is mealy and somewhat sweet, resembling the taste of sweet potatoes. Also yields a gum which is consumed. Brazil, Argentina. KUNKEL, MENNINGER; E29{PL}, F85, G66,183M{PL}, K38, K63G, N84, 093

*Araucaria araucana* - *Monkey puzzle*, *Chile pine* {PL}. Starchy seeds, called *pi hones*, are eaten fresh, boiled, roasted, or made into an alcoholic beverage. Chile, Argentina. HEDRICK 1919, UPHOF; B74, B94{S}, D95, E87, H4, 174, I83M, J61M, M7M, NO, N84{S}, 053M{S}, 093{S}, P49{S}, R78{S}, etc.

*Araucaria bidwillii* - *Bunya bunya* {S}. The kernel of the seed is starchy and delicious, having the texture of a waxy boiled potato, with a flavor of chestnuts and pine nuts. It is eaten raw, boiled, roasted, in sauces or soups, deep-fried like a small potato, glazed, used as stuffing, or ground into flour. The wood and the shell of the nut are used for smoking meats and fish, imparting a delicious flavor. Germinated seeds produce an underground *earth nut*, which has a crisp texture and a coconut-like flavor. Australia. CRIBB, MENNINGER, NOEL, ROBINS [Cui, Re]; A79M, C9M, H4{PL}, I83M{PL}, K63G, M7M{PL}, N79{DF}, 032M{DF}, 094, P5, P38, Q32, Q46, R33M

#### ARECACEAE (PALMAE)

*Acanthorrhiza aculeata* - \* *Cryosophila nana*

*Acrocomia aculeata* - *Gru gru palm*, *Macauca* {S}. The sweet pulpy portion of the fruit is eaten. Also made into palm wine and a sago-like starch. An important source of kernel oil in parts of Brazil. Often found in drier regions, where conventional oilseed palms do not thrive. Tropical America. MENNINGER, PESCE, WILLAN; C9M, K47G, N84

*Acrocomia mexicana* - *Falmito de coyol* {S}. The tender leaf base is eaten raw, boiled, roasted, or pickled. Fruits are eaten or made into an oil similar to coconut oil, called *oil of coyol*. Sweet sap from the trunk is fermented into a palm wine, *vino de coyol*. Seed kernels are edible. Central America. MENNINGER, TANAKA, UPHOF, WILLIAMS, L.; K47G

*Acrocomia sclerocarpa* - *Gru gru nut*, *Palmeira mucaja* {S}. Young leaves are eaten as a vegetable. The sweet kernel is eaten or manufactured into a cooking oil. Pulp of the fruit is edible, having the flavor of apricot. Tropical America. HEDRICK 1919, PESCE, TANAKA; K47G

*Acrocomia totai* - *Total*, *Mboocayapalm* {S}. The seed kernel oil, when refined, is suitable for edible purposes. An important source of cooking oil in Bolivia and Paragu<sup>^</sup>. South America. MENNINGER, UPHOF; E29{PL}, K47G, N84

*Aiphanes caryotifolia* - *Chascara*, *Mararay* {PL}. Oily seeds are eaten or used in jams and confiture. Colombia to Brazil. DUKE, KUNKEL; A41G, A79M{S}, D87E, E29, I84M, K47G{S}, N84{S}, Q12, R33M{S}, R78M{S}

#### *Allagoptera arenaria* - \* *Diplothemium maritimum*

*Areca catechu* - *Betel nut*, *Pan* {S}. Thin slices of the seed kernel are made into a quid, smeared with slaked lime, wrapped in a fresh leaf of *Piper betle*, and chewed as a stimulating masticatory. It causes the lips, tongue, and teeth to become red, and if used frequently, black. Young leaves, inflorescences, and the sweet inner part of the shoots are eaten as vegetables. Skin of the fruit is edible. Southeast Asia, cultivated. ALTSCHUL, JACQUAT, MENNINGER, ROSENGARTEN; D87E{PL}, F85, I12{PD}, I12{PL}, I81M{DF}, I81M{PL}, K47G, N84, Q12, Q46, R33M

#### *Areca sapida* *Rhopalostylis sapida*

*Arenga ambong* - *Ambung* {S}. The heart of the stem produces a *sago* starch. Buds are edible. Philippines. BROWN, W., TANAKA; D87E{PL}, I84M{PL}, K47G, N84, Q12, R33M

*Arenga engleri* - *Formosan sugir palm* {S}. Young leaves and buds are eaten. Pith of stems yields a starch. Sap from the inflorescence is made into sugar. Taiwan. TANAKA, WESTER; A41G{PL}, C9M, D87E{PL}, D43{PL}, F85, I28{PL}, I84M{PL}, K47G, N84, P5, Q12, R33M

*Arenga pinnata* - *Sugar palm*, *Gomuti palm* {S}. Pith of stems furnishes a starch used in pastries or *tjendol*, a kind of syrup. Sap from the inflorescence is sweet and can be drunk fresh, boiled down to a sugar called *gula*, fermented into *tuwak*, distilled into *arrak*, or made into vinegar. Buds are cooked as a vegetable or pickled. The white, immature seeds are made into preserves (*kolang kaleng*), and *es campur*, a refreshing dessert of mixed fruit served with sweet syrup and ice. Malaysia. EISEMAN, HESSELTINE, MACMILLAN, OCHSE, UPHOF; A41G{PL}, F85,184M{PL}, K47G, N84, 093, Q12, R33M

#### *Arenga tremula* - *Arenga ambong*

*Astrocaryum murumuru* - *Palmeira murumuru* {S}. The juicy, fleshing covering of the fruit is eaten. It is said to have a pleasant aromatic flavor reminiscent of melon. Seed kernels are the source of an oil, called *murumuru oil* or *murumuru fat*, which is considered equal to that of the Babassu palm. It is used in the production of margarine and may serve as a substitute for cocoa butter. The seeds are exported to Europe and other areas. Brazil. HEDRICK 1919, PESCE, UPHOF; K47G

*Astrocaryum tucuma* - *Palmeira tucuma*, *Tucum* {S}. Both fruits and kernels are the source of an oil, *tucuma oil*, similar to coconut oil. The yellow fruit pulp has a flavor similar to apricot and is fermented into *tucuma wine*. South America. BROUK, CAVALCANTE, TANAKA, UPHOF; K47G

*Attalea cohune* - *Orbignyia cohune*

*Bactris gasipaes* - *Guilielma gasipaes*

*Bactris maraja* - *Marajah palm* {S}. The pulp of the fruit has a pleasant, acid flavor and is eaten fresh or brewed into a wine. Brazil. HEDRICK 1919, TANAKA, WILLAN; K47G

*Beccariophoenix madagascariensis* - *Monarana* {PL}. The Betsimisaraka people of Madagascar apparently prepare a sweet drink from the sap of the trunk. Madagascar. UPHOF; A41G, D87E, I83M, I84M, K47G{S}, N84{S}

*Borassus aethiopicum* - *Black rhum palm* {S}. The terminal bud or *palm-cabbage* is eaten raw in salads, or cooked as a vegetable. The fresh sap is a refreshing drink and yields one of the best palm wines and a sugar. Immature seeds contain a sweet juice consumed like coconut water, and after solidifying is like tender coconut meat. The thick, fleshy growth of the first underground leaf, called *mouroutehi* is a highly esteemed vegetable of the Hausas. The starchy, tuberous portions of germinated seeds are used as a tasty vegetable. They are produced in home gardens in Gambia by burying the seeds. The oily fruits are also eaten. Eastern Africa. FOX, E, TANAKA, VON MAYDELL; F85, I84M{PL}, K47G, N84

*Borassus flabellifer* - *Palmyra palm*, *Kaong*, *Taal* {S}. Sweet sap from the inflorescence is drunk as a beverage. It also produces palm wine, a sugar called *gur Jaggery* or *namtaan*, molasses, candy, and vinegar. Young fruits are pickled. Pulp of mature fruits is eaten or made into *punatoo*. Immature jelly-like seeds are eaten, added to *halo-halo*, or canned for export. Inflorescences are added to soups and curries. Sprouted seedlings are peeled and eaten raw, sun-dried or cooked. They also yield a starch made into gruel with rice, herbs, chilis, and fish. In Guatemala, the leaves are used for wrapping tamales, steamed fish, farmer's cheese, etc. The terminal bud is eaten. Salt is prepared from the leaves. Tropical Asia. BANERJI [Cu], GELLE [Re], JACQUAT, MARKS [Re], MENNINGER, MORTON 1988, PASSMORE [Re], UPHOF; C34G{PD}, D87E{PL}, E29{PL}, I8M{PD}, K47G, N84, 093, Q46

*Brahea armata* - \**Erythea armata*

*Brahea dulcis* - *Palma dulce* {PL}. The fruits, called *michire* or *miche*, are sweet and edible. Mexico. UPHOF; A41G, 128, 174, K47G{S}, N51, N84

*Brahea edulis* - *Erythea edulis*

*Butia capitata* - *Jelly palm*, *Pindo palm* {S}. Orange fruits are sweet, aromatic, with somewhat the flavor of apricots. They can be eaten fresh or made into jellies, jams, cakes, pies, etc. Sometimes found in specialty markets. Brazil, cultivated. RICHARDSON, M. [Re], TANAKA; A41G{PL}, A79M, C9M, D43{PL}, D57{PL}, E29{PL}, H4{PL}, I83M{PL}, 053M, P5, R33M

*Butia yatay* - {S}. Terminal buds are eaten as a vegetable. Fruits are used for making brandy. Kernels are also edible. Argentina to Paraguay. TANAKA, UPHOF; D43{PL}, K47G, N84, 053M, 093, P5, P17M, Q32

*Calyptronoma dulcis* - {S}. Flowers are used for making candy. Cuba. KUNKEL; F85, D87E{PL}, K47G

*Caryota cumingii* - *Fish-tail palm* {S}. Pith of stems are a source of *sago* starch. Buds are also edible. Philippines. BROWN, W., TANAKA; D87E{PL}, F85, I84M{PL}, K47G, Q12, R33M

*Caryota mitis* - *Smaller fish-tail palm* {S}. Slightly bitter buds are cooked and eaten with rice. Stems are a source of starch. Seeds are edible after removing the poisonous fruit wall. Southern Asia,

cultivated. BURKILL, MENNINGER, TANAKA; A41M, A79M, C9M, D43{PL}, E53M, K47G, N84, 093, P5, Q32, R33M

*Caryota rumphiana* - *Suwamkung* {S}. Terminal bud or *palm-cabbage* is eaten as a steamed vegetable with rice, in soups, or fried with coconut milk and spices. The stems are a source of *sago* starch. Indonesia. OCHSE, TANAKA; A41G{PL}, D87E{PL}, F85, I84M{PL}, K47G, Q12, R33M

*Caryota urens* - *Toddy palm*, *Fish-nil palm* {S}. Very young unfolding leaves are used as a vegetable. Juice of the trunk is made into sugar and an alcoholic beverage. Stems are a source of a starch. Southern Asia, cultivated. BURKILL, UPHOF; C9M, D43{PL}, I28{PL}, I84M{PL}, K47G, N84, 093, P5, Q12, Q18, Q32, Q46, R33M

*Chamaedorea costaricana* - *Pacaya* {S}. Young inflorescences are eaten raw in salads, dipped in egg batter and fried, boiled, or used in soups. Costa Rica. WILLIAMS, L.; A41G{PL}, C9M, F85, I84M{PL}, K47G, N84, 093, P17M, Q12, Q41, R33M

*Chamaedorea elegans* - *Collinia elegans*

*Chamaedorea graminifolia* - *Pacaya* {S}. Unopened flower clusters are eaten in salads, folded into egg batter and fried, or used as a boiled vegetable. Central America. TANAKA, UPHOF, WILLIAMS, L.; F85, K47G

*Chamaedorea pacaya* - *Pacaya*, *Boda* {S}. The immature male inflorescences are eaten raw in salads, boiled and served with salt and butter, added to soups, or dipped in egg batter and fried. Sold in local markets. Central America. FAIRCHILD 1947, WILLIAMS, L.; K47G, 093

*Chamaedorea tepejilote* - *Pacaya* {S}. The young inflorescences are taken from the spadices and eaten raw in salads, boiled, or fried in egg batter to form a fritter called *recado de pacaya*. Probably the best of the *Chamaedorea*s for this purpose. Usually cooked in several changes of water first to remove bitterness. Often used as a garnish for *fiambre*, a Guatemalan cold salad traditionally served on All Saints' D<sup>^</sup>. Occasionally available in bottles at Latin American markets. Mexico. HEDRICK 1919, MARKS [Re], WILLIAMS, L.; A41G{PL}, C9M, D43{PL}, D87E{PL}, F80, F85, I28{PL}, I84M{PL}, K47G, N84, P5, Q12, Q41, R33M

*Chamaerops excelsa* - *Trachycarpus fortunei*

*Chamaerops humilis* - *Palmetto*, *Dwarf fan-palm* {S}. The young shoots or suckers from the bottom of the plant, called *cafaglioni*, are eaten in Italy. Very young leaf buds are eaten as a vegetable. Dried fruits are also edible. Mediterranean region, cultivated. HEDRICK 1919, UPHOF; A41M, A79M, C9M, D43{PL}, D87E{PL}, H4{PL}, K38, K47G, 053M, P5, Q12, R33M

*Coccothrinax dulcis* - *Calyptronoma dulcis*

*Cocos coronata* - *Syagrus coronata*

*Cocos nucifera* - *Coco-palm*, *Coconut* {S}. Inflorescences are eaten as a vegetable; also the source of sugar, vinegar, and palm wine. Pulp of seeds is eaten raw, shredded, in desserts, or made into coconut oil, coconut milk (*santan*), coconut butter (*santan kanil*), *macaroons*, *ghee*, etc. Very young fruits are cooked in curries. The young mature-sized fruit or *water coconut* has jelly-like pulp that is considered a delicacy. Mature fruits yield *coconut water*, used as a refreshing beverage or as a tenderizing agent in stews and fondues. Terminal buds are eaten raw. The Nawasi cultivar has an edible husk. Coconut sport or *makapuno* is a delicacy that comes from a strain in which the coconut water is replaced with a thick curd. Another delicacy is the *coconut apple*, a spongy mass that forms inside a germinating seed at the expense of the water and albumen. The leaves are used to wrap foods before cooking. Scorched roots are a coffee substitute. Sprouted seeds are eaten like celery. Pith of stems is made into bread, added to soups, fried or pickled. *Onjom*, *tempeh bongrek*, *nata de coco* and *dageh kelapa* are fermented products made from coconut. *Nata de coco*, or *coconut gel*, is a

common ingredient of *halo-halo*—a bottled dessert that also contains aduki beans and sugar syrup. Cultivated. DUKE, FAIRCHILD 1930, GELLE [Re], JACQUAT, MACMILLAN, OCHSE, PASSMORE, ROSENGARTEN, ROUTHIER 1989 [Cul, Re], SHURTLEFF 1979, STEINKRAUS, TANAKA, UPHOF; A41G{PL}, A45{PD}, B60M{PR}, B60M{PR}, E21D{PL}, F85, I76T{PD}, N84, P17M, Q46

CULTIVARS {PL}

**Golden Malayan Dwarf:** (Golden Coconut) Small, attractive, golden-yellow nut. Dwarf, heavy yielding tree, much shorter than the typical coconut. Has a life expectancy half to one third that of common tall forms. Over 90% resistant to lethal yellowing disease. Introduced into Florida from the Malay Archipelago by an expedition sponsored by W.J. Matheson. I77G

**Green Malayan Dwarf:** Small, solid green nut. Dwarf, heavy yielding tree, half to one third the size of common tall forms; bears when about 4 or 5 years old with only 2 or 3 feet of bare trunk exposed. Full production of about 100 nuts per tree is reached in the ninth or tenth year. Tolerant to lethal yellowing disease. I77G, I84M

**King:** Distinct cultivar, said to have originated in Sri Lanka. Bears a yellow, ovoid fruit, called *tambili* in the immature stage when it is distinguished by its clear, sweet juice which furnishes a pleasant refreshing drink. Also esteemed for culinary purposes and *arrack*. Susceptible to lethal yellowing disease. BALASURIYA, MACMILLAN; T72M{S}

**Laccadive Dwarf:** Starts bearing after 2 1/2 to 3 years. Yields 250 nuts annually when mature. Color green and yellow. Excellent for tender, sweet coconut water. R0

**Makapuno:** Very distinct and desirable type whose interior is filled with soft, sweet, jelly-like flesh that can be eaten with a spoon. Originated in the Philippines where it is popular for making a delicious, delicate ice cream. There, Makapuno fruits sell locally for four times the amount of ordinary coconuts. T72M{S}

**Mavpan:** Large green nut, sometimes variegated with brownish or yellowish tints depending on the seed parents. Tree intermediate in size between the two parents; bears approximately 100 nuts beginning about the 5th year. Highly resistant to lethal yellowing disease. Malayan Dwarf x Panama Tall. Developed in Jamaica. I84M

**Panama Tall:** (San Bias) Notable for its unusually high yield of coconut milk. Tall tree, about 50% resistant to lethal yellowing disease. Widely grown in Jamaica. Originated on the Pacific coast of Panama; presumably introduced there from the Philippines. T72M{S}

**Red Malayan Dwarf:** Small, attractive, solid red nuts; tend to remain on the tree and not fall to the ground when ripe as the nuts produced by tall cultivars do. Dwarf, heavy yielding tree; comes into bearing much sooner than other types, when only 2 or 3 feet high. Tolerant to lethal yellowing disease. T72M{S}

**West Coast Tall:** Medium-sized nuts, somewhat variable in shape and color. Begins to bear 5 to 7 years after planting. Grows well in all soil types and is tolerant of soil moisture stress. Yields 60 to 80 nuts per year, 100 or more under irrigated conditions. Common tall cultivar grown extensively on the west coast of India. THAMPAN; R50

*Collinia elegans* - *Neanthe bella palm*, *Parlour palm* {S}. The young, unexpanded flower spikes are eaten like asparagus. Fruits are used as food by the Chinantecs, Zapotecs, and other Indian tribes. Central America, cultivated. HEDRICK 1919, UPHOF; A41M, A79M, C9M, D43{PL}, D87E{PL}, E53M, F85, I28{PL}, I57{PL}, K47G, 093, P5, Q32, R33M

*Copernicia cerifera* - *Copernicia prunifera*

*Copernicia prunifera* - *Carnauba* {S}. The trunk is the source of a *sago* starch and an edible gum. Roots are used as a substitute for

*sarsaparilla*. The young inflorescences are consumed. Seeds are used as a coffee substitute. Tropical South America. GENDERS 1977, KUNKEL, TANAKA; A41G{PL}, A79M, C9M, E8M{PL}, F85, I84M{PL}, K47G, R33M

*Corozo oleifera* - *American oil palm*, *Noli palm*, *Dende do para* {S}. Pulp of the fruit yields a reddish oil, similar to red palm oil, called *oil of corozo*, used for culinary purposes. The kernels contain a white oil that, when refined, is utilized for making margarine. Can be crossed with *Elaeis guineensis*, producing hybrids of low or medium stature. South America, cultivated. CAVALCANTE, DUKE, PESCE, TANAKA, UPHOF, ZEVEN; F85, K47G, N84

*Corypha elata* - *Buri palm*, *Gabang* {S}. Terminal buds are eaten raw, cooked with rice or made into pickles. Pith of stems is a source of *sago*. The sap yields a fermented drink (*tuba*), palm sugar, and vinegar. Kernels of young seeds are eaten or made into a sweetmeat. Southern Asia. BURKILL, MACMILLAN, OCHSE, TANAKA; F85, Q12, R33M

*Cryosophila nana* - {S}. Pulp of the fruit is eaten. It has abundant juice of a penetrating, sweet flavor that is well suited for making palm wine. Mexico. HEDRICK 1919; K47G

*Daemonorops draco* - *Dragon's blood palm* {DF}. The fruits exude a resin used commercially as a flavoring and colorant for non-alcoholic beverages. Malaysia. BURDOCK; GO, H36, K2, K18M, K47G{S}, L21T, M15M, N7D

*Diplothemium maritimum* - *Coast palm*, *Coco da praia* {S}. The fruit is eaten, being an ovate or obovate drupe with greenish-yellow, fibrous, acid-sweet flesh. Reportedly superior to the fruits of *Butia* if eaten at the dead ripe stage. Brazil. HEDRICK 1919; I84M{PL}, K47G

*Elaeis guineensis* - *African oil palm* {S}. The fleshy pulp of the fruit produces *red palm oil*, used in West African cuisine, especially red palm oil stew. Boiled and pounded nuts yield *palm nut butter* or *palm nut cream*, a thick red liquid popular in Ghana and Liberia for making palm butter soup and other traditional dishes. Seed kernels are the source of *palm kernel oil*, used as an industrial oil in the manufacture of margarine, shortenings, etc. In India and Malaysia it is made into *vanaspati*, a vegetable *ghee*. The kernels are also eaten raw, roasted, or cooked with cinnamon and sugar. A palm wine called *nsafUJuo* is made from the sap. Cultivated. CAMPBELL-PLATT, HEDRICK 1919, MENNINGER, TANAKA, UPHOF, WILSON, E.G. [Re]; A7{PD}, A41G{PL}, A79M, C9M, E29{PL}, F85, I84M{PL}, K47G, N84, 093, R33M

*Elaeis melanococca* - *Corozo oleifera*

*Erythea armata* - *Mexican blue palm* {S}. The fruit is edible. Mexico. TANAKA; A41M, A79M, C9M, D43{PL}, H4{PL}, H71, I28{PL}, I83M{PL}, I98M, I98M{PL}, J86{PL}, N84, 053M, R33M

*Erythea edulis* - *Guadalupe fan palm* {S}. Sweet pulp of the fruit is eaten. Young leaf-buds from the heart of the tree are used as a vegetable. Caribbean region. UPHOF; A41M, C9M, D43{PL}, H71, I28{PL}, I83M{PL}, I98M, I98M{PL}, K46{PL}, K47G, N84, 093

*Eugeissona utilis* - *Stilt-root palm* {S}. The stem yields an excellent starch, said to be superior to that of *Metroxylon rumphii*. The violet pollen grains are consumed with rice or sago as a dessert. Indonesia. UPHOF; K47G

*Euterpe edulis* - *Assaipalm*, *Para palm* {S}. The long, terminal bud is one of the sources of *hearts of palm*. A tropical delicacy, they are eaten raw in salads, sauteed in butter, or pickled like artichoke hearts. Fruits are used to make a beverage. Tropical South America. HEDRICK 1919, NATIONAL RESEARCH COUNCIL 1975a, TANAKA; A41G{PL}, K47G, N84, 093, P5, P17M, P38, Q12, R33M

*Euterpe oleracea* - *Cabbage palm*, /4<sup>^</sup> {S}. The pulp of the fruit is added to water to make a violet-colored beverage or juice. It is then consumed with tapioca and sugar, cassava meal and grilled fish or dried shrimp, as a porridge cooked with cassava meal, or as an ice cream or popsicle flavoring. Also the source of an edible oil. The terminal leaf-bud is eaten as *hearts of palm*, said to resemble artichoke. Tropical America, cultivated. CAVALCANTE, HEDRICK 1919, IDONE, PESCE, TANAKA; A41M, C9M, D87E{PL}, F85, K47G, N84

*Euterpe precatoria* - *Agai* {S}. The oily, grayish mesocarp is used in the preparation of a popular beverage similar to one made from the *Bacaba branca palm*, *Oenocarpus distichus*. It also yields a dark green oil with an agreeable flavor and aroma. The terminal buds are cut for hearts of palm. Similar to *E. oleracea*, but does not grow in clumps. Brazil. PESCE, TANAKA; I84M{PL}, K47G, N84

*Geonoma binervia* - *Pacuca* {S}. The young, tender inflorescences are cooked and eaten. Once common in the markets of Costa Rica. Central America. ALTSCHUL, UPHOF, WILLIAMS, L.; K47G

*Guilielma gasipaes* - *Pejibaye*, *Peach palm*, *Pupunha* {S}. The fruits, high in protein, are eaten roasted, boiled with salt and mixed with mayonnaise, or made into bread, cookies, and sweet *chichas*. The original inhabitants of Costa Rica slowly smoked the fruit to keep it fresh better and improve the flavor. Pejibaye soup is an exotic delicacy of Costa Rican nouvelle cuisine. Dried fruits are ground to a flour that is mixed with eggs and vegetables to make *torillas*. Seeds are the source of an edible oil, called *oil ofnmacanilla*. Kernels are eaten or made into a meal used to flavor milk drinks. A salt substitute is obtained by cooking the spadix. The young flowers may be chopped and added to omelettes. *Coquillo* is a palm wine prepared from the sap. A valuable source of *hearts of palm* because it produces multiple shoots. Tropical America, cultivated. ALMEYDA 1980 [Cu, Pro], DE CERDAS [Re], DUKE, IDONE, MENNINGER, MORTON 1987a [Cu], NATIONAL RESEARCH COUNCIL 1975a, SMITH, N., UPHOF; A41G{PL}, A79M, C9M, D87E{PL}, E21D{PL}, F85, H25M{PD}, I84M{PL}, K47G, L55J, N84, 019, R33M

#### CULTIVARS {S}

**Spineless:** Produces yellow or red-skinned fruits that are identical to those of other peach palms. However, the tree and leaves are entirely spineless. Ordinary strains are well-armed with rings of two inch long, needle-like spines which can make harvesting the fruits and hearts of palm very unpleasant. 019

*Heterospatha elata* - *Sagisi* {S}. Terminal buds are used as a vegetable. The seeds are chewed with betel nuts. Philippines. BROWN, W., BURKILL, UPHOF; F85, I84M{PL}, K47G, N84, Q12, R33M

#### *Hyphaene argun* - *Medemia argun*

*Hyphaene coriacea* - *Gingerbread palm* {S}. The pulp of the fruit is eaten. Also the source of a palm wine. Eastern Africa. FOX, F., UPHOF; A41G{PL}, C9M, D87E{PL}, K47G, Q12, N84, R33M

*Hyphaene natalensis* - *South African doum palm*, *Lala palm* {S}. The sap furnishes a palm wine that is said to taste like ginger beer when ripe. Bushmen relish the milk from the seed which has the flavor and color of coconut milk. The shoots of the germinated seeds are eaten as a vegetable. Southern Africa. FOX, F.; A41M, D87E{PL}, K47G, N84

*Hyphaene thebaica* - *Egyptian doum palm*, *Gingerbread palm* {S}. Terminal buds are used as a tasty cabbage. The thick, dark pulp of the fruit, having the scent of ginger bread, is made into molasses, cakes, drinks and sweetmeats. Unripe kernels, when properly prepared, are edible. The germinated seedlings just below the ground are used as a vegetable. Northern Africa. DAGHER, MENNINGER, UPHOF, VON MAYDELL; E29{PL}, F85, K47G

*Iriarteia ventricosa* - *Palmeira paxiuba barriguda* {S}. Heart of the shoots is eaten as *palm-cabbage*. The flowers yield an ash used as

a substitute for common salt. Guiana-Brazil. KUNKEL, TANAKA; K47G

*Jessenia bataua* - *Pataua palm*, *Seje* {S}. The fruits yield an excellent light greenish-yellow oil which is almost identical with olive oil. It is used in cooking or as a coloring for chocolates. A nutritious milk-like beverage is made by mixing the juice of the pulp with manioc meal. Northern South America. BALICK [Nu], CAVALCANTE, KUNKEL, PESCE, UPHOF; A41G{PL}, A41M, A79M, I84M{PL}, K47G, N84

*Jessenia polycarpa* - *Seje*, *Ibe* {S}. The violet-colored fruit, about the size of a pigeon's egg, has a thin, oily flesh that is sweet and edible. Its pulp yields a yellow oil, called *mantecca negra*, that closely resembles olive oil and is sold in markets of Colombia. The milky residue forms a nutritious beverage known as *vicutta*. Northern South America. DUKE, HEDRICK 1919, NATIONAL RESEARCH COUNCIL 1975a, PEREZ-ARBELAEZ, UPHOF; K47G

*Jubaea chilensis* - *Chilean wine palm*, *Coco de Chile*, *Honey palm* {S}. The sap from the trunk is fermented into palm wine, or boiled down to a syrup called *miel de palma* or *palm honey*. Fruits are candied. Edible kernels are called *cokernuts*, *pygmy coconuts*, or *coquitos* and have been introduced into the specialty foods market. They have a nutty taste raw and are also used in sweetmeats. Chile, cultivated. HEDRICK 1919, MENNINGER, UMANA-MURRAY, UPHOF; A41G{PL}, A79M, C9M, D43{PL}, D57{PL}, E13G{PD}, G5M{PD}, I28{PL}, I83M{PL}, N40{H2}, N84, P5, P38

#### *Jubaea spectabilis* - *Jubaea chilensis*

*Licuala spinosa* - *Ki pho* {PL}. Young leaves are used as a wrapping for glutinous rice desserts. The young shoots, either raw or cooked, are eaten with the Thai shrimp paste and chili sauce known as *nam phrik kapi*. Southeast Asia. JACQUAT; A41G, D87E, I84M, K47G{S}, N84{S}

*Livistona saribus* - *Tro* {PL}. Fruits are eaten after maceration in vinegar or a salt solution. Terminal buds are used as cabbage. Tropical Asia. BURKILL, UPHOF; C9M{S}, D43, D87E, I84M, K47G{S}, N84{S}, Q12{S}

#### *Lodoicea callipyge* - *Lodoicea maldivica*

*Lodoicea maldivica* - *Coco-de-mer*, *Double coconut* {S}. The immature seed contains a delicately-textured, translucent, jelly-like substance that is sweet and melting and much appreciated as a dessert delicacy, often served with a dressing of liqueur. Terminal shoots are eaten and are often preserved in vinegar. Seychelles. HEDRICK 1919, LIONNET, MENNINGER; N84

*Mauritia flexuosa* - *Buriti palm*, *Wine palm*, *Miriti* {S}. A juice prepared from the fruit pulp is consumed with sugar and cassava meal, or made into a sweet *doce de buriti*. The pulp also yields an edible oil. An edible starch is derived from the pith of the trunk. Potable sap from the inflorescence is drunk or made into palm wine or sugar. Tropical South America. CAVALCANTE, HEDRICK 1919, IDONE; K47G

*Mauritia martiana* - *Carana* {S}. A juice is prepared from the pulp of the fruit which has, to some people, a better flavor than that of miriti. It is consumed with cassava meal and sugar. Brazil. CAVALCANTE; K47G

#### *Mauritia vinifera* - *Mauritia flexuosa*

*Medemia argun* - *Argun palm* {S}. The fruits are consumed by the tribal peoples of North Africa. In Nubia they are buried for some time, after which they acquire a sweetish flavor somewhat reminiscent of coconut. North Africa. DARBY, UPHOF; A41G{PL}, A41M, K47G, N84

*Metroxylon rumphii* - *Spiny sago palm* {S}. The trunk yields *sago*, an important starch used in porridge, cakes, puddings, soups,

bread and pastries. Much is exported from Malaysia and Indonesia. In the Kai and Tanimbar Islands, the pith is roasted and eaten. Malaysia, Pacific Islands, cultivated. BURKILL, MASSAL, MAY, R. [Re], UPHOF; K47G, N84, 093

Metroxylon sagu - *Sago palm* {S}. The heart of the trunk is steamed, roasted, added to stews, or preserved. Also the source of a sago starch resembling tapioca, and used in much the same way. In India, sago starch is made into *papadams* and *idlis*. Ripe fruits, though astringent, are eaten as a delicacy by the native people. Terminal buds are steamed and eaten as a side-dish with rice, added to stews, or pickled. Southern Asia, cultivated. CAMPBELL-PLATT, MACMILLAN, OCHSE, REEJHSINGHANI 1973 [Re], TANAKA; K47G

Nannorrhops ritchieana - *Mazini palm* {PL}. Young leaves, inflorescences, and fruits are eaten. Arabia to India. TANAKA, WATT; A41G, 128, 184M, K47G{S}

Oenocarpus bacaba - *Bacaba vermelha, Red bacaba* {PL}. The fruit yields a colorless, sweet oil used to adulterate olive oil. Fruits are also used to prepare a cocoa-like drink. Guiana, Brazil. ALTSCHUL, HEDRICK 1919; D87E, K47G{S}

Oenocarpus distichus - *Bacaba branca, White bacaba* {PL}. The pulp of the fruit contains 25 % of a clear, yellow oil that can substitute perfectly for olive oil. *Bacaba branca*, a milky drink, and *bacaba vermelha*, a yellow-red beverage used pure or with sugar and cassava meal, are both produced from the fruit. These beverages are sometimes fermented into vinegar. Guiana, Brazil. CAVALCANTE, IDONE, PESCE, TANAKA, UPHOF; D87E, K47G{S}

Oenocarpus multicaulis - *Palmeira bacaba-y, Becabinha* {S}. Juice made from the fruit pulp is used as an oily beverage. The seeds are edible. Terminal buds are used as cabbage. Also the source of an edible oil. Peru, Brazil. CAVALCANTE, KUNKEL, TANAKA; D87E{PL}, K47G

Oncosperma filamentosum - *Anibong, Nibong, Gendiwung* {S}. The heart, or cabbage, is delicately white with a very sweet, nutty flavor. It can be used raw in salads, and when boiled it resembles asparagus or kale. Flowers are used to flavor rice. Malaysia. BURKILL, HEDRICK 1919, TANAKA; F85, K47G

Orbignya cohune - *Cohune palm* {S}. Seed kernels are the source of an oil used in cooking or the manufacture of margarine. Fruits are made into sweetmeats. Sap is used for winemaking. Central America. DUKE, MENNINGER, UPHOF; A41G{PL}, A79M, F85, K47G

Orbignya martiana - *Babassu* {S}. A cooking oil is extracted from the kernels. They are also eaten as a snack or made into a nut milk. The watery endosperm, *agua de coco*, is consumed as a beverage. Sap from the stem produces a palm wine. The palm heart or *palmito* is used as food. Ashes from burned stems are used as a salt substitute. Babassu flour is mixed with milk and sugar to produce a chocolate-like drink. Brazil. IDONE, MAY, P., PESCE, NATIONAL RESEARCH COUNCIL 1975a; K47G

Parajubaea cocoides - *Quito palm, Mountain coconut* {PL}. The sweet, fleshy kernels, about the size of a macadamia nut, are eaten raw as a delicious snack. They also yield an edible oil. Very popular locally. Ecuador, Columbia. NATIONAL RESEARCH COUNCIL 1989; A41G, A41M{S}, D87E, K47G{S}, N84, Q49M

Parajubaea torallyi - *Janchicoco* {PL}. The sweet, fleshy nuts are eaten or pressed for their edible oil. Also a source of hearts of palm. An endangered species. Bolivia. NATIONAL RESEARCH COUNCIL 1989; I84M, N84{S}

Phoenix canariensis - *Canary Islands date palm* {S}. Source of a sap used like *palm honey*, or syrup. The fruit is also edible. Canary Islands, cultivated. KUNKEL, TANAKA; C9M, D43{PL}, F80, F85, H4{PL}, K38, N84, 053M, P5, P5{PL}, Q32, R33M

Phoenix dactylifera - *Date palm* {S}. The ripe fruits are eaten out of hand, in breads, cakes, pastry, confectionery, *asseeda, Branston pickles*, etc. Traditionally they are stuffed with butter or nuts, baked, boiled with onions in milk, fried with eggs, made into date syrup, or used as a coffee substitute. The fruits develop and ripen in four stages: *kimri, khalal, rutab* and *tanr*. The male inflorescence is eaten as a delicacy. Unripe fruits are pickled. The seeds are occasionally eaten or pressed for their oil. Spathes are chewed, soaked in drinking water to improve its flavor, or distilled into a liquid that flavors hot or cold drinks. The pollen is eaten. Also the source of *hearts of palm, toddy, arrak*, and an edible manna. Cultivated. BARREVELD, DONKIN, NIXON [Cu], POPENOE, P., POPENOE, W. 1920; A79M, C9M, C34M{PD}, C81{PD}, D57{PL}, G3Z{PD}, H15T{PD}, I28{PL}, J82, K38, L50M{PD}, 053M, P17M, Q12, Q32, Q46, R33M, etc. (for cultivars see Date, page 358)

Phoenix paludosa - *Bengal date palm* {S}. Fruits are eaten in curries. The pith is edible. Southern Asia. BURKILL, TANAKA; F85, K47G, 093, Q12, R33M

Phoenix pusilla - *Inchu* {S}. The edible fruit is sweet and mealy, tasting like chestnuts. Also used to make palm sugar and an alcoholic beverage. Southern Asia. BURKILL, TANAKA, WATT; K47G, Q12, R33M

Phoenix reclinata - *Senegal date* {S}. The sap is fermented into a palm wine. Seeds are used as a coffee substitute. The terminal bud is used as a vegetable. Ripe fruits are sweet and tasty and are eaten raw. Tropical Africa, cultivated. FOX, F., HEDRICK 1919, TANAKA; C9M, D43{PL}, I28{PL}, K47G, N84, 053M, 093, P5, P17M, Q32, Q41, R33M

Phoenix sylvestris - *Wild date palm* {S}. Sap from the stem can be drunk as a beverage. It is also boiled down to a palm sugar, *jaggery*, or fermented into palm wine and distilled into *arrak*. The fruit is sometimes eaten. Southern Asia. MACMILLAN, PARMAR, C., TANAKA, UPHOF; C9M, D43, D87E{PL}, F85, I28{PL}, I84M{PL}, K47G, N84, 093, P5, Q41, R88

Pseudophoenix vinifera - {PL}. The saccharine juice obtained from the stem is fermented into a drink. West Indies. TANAKA; A41G, D87E, F85{S}, I84M, K47G{S}

Ptychosperma elegans - *Cabbage palm* {S}. Unexpanded leaves are eaten as a vegetable. Australia. TANAKA; A41G{PL}, F85, I84M{PL}, K47G, N84, 093, P5, Q12, Q32, R33M

Raphia farinifera - *Madagascar raffia palm* {PL}. The stem is the source of a sweet beverage, *harafa*. Also the source of a starch. Fruits and seed kernels are eaten. Boiled fruit pulp yields a yellow fat, *Raphia butter*, of good taste when fresh. Africa, Madagascar. HEDRICK 1919, MENNINGER, UPHOF; A41G, D87E, I84M, K47G{S}

Raphia hookeri - *Ivory Coast raffia palm, Giant raffia palm* {S}. The abundant sap of the young inflorescence yields an excellent palm wine, known as *mimbo* or *doka*. Stems are the source of a starch. Central buds are eaten as *palm-cabbage*. Tropical Africa, cultivated. CAMPBELL-PLATT, HEDRICK 1919, KUNKEL, STEINKRAUS, UPHOF; F85, K47G

#### *Raphia ruffia - Raphia farinifera*

Raphia vinifera - *Wine raffia palm, Bamboo palm* {S}. Sap from the flower stalks is brewed into a palm wine. It is also boiled down into a palm sugar. Fruit is edible, but somewhat bitter. Tropics. TANAKA; K47G

Rhopalostylis sapida - *Nika palm, Nikau palm* {S}. Young inflorescences are eaten. The terminal bud, or blanched heart is juicy and succulent, with an agreeably nutty flavor even when raw. New Zealand. COLENSO, HEDRICK 1919; C9M, D43{PL}, I28{PL}, I83M{PL}, N84, 093, P5, Q12, Q49M, R33M

*Roystonea elata* - *Florida royal palm* {S}. The edible fruits fall to the ground when ripe. Terminal bud is used for cabbage. Southeastern North America. MORTON 1977; /77{PL}, K47G, N84, Q12, R33M

*Roystonea oleracea* - *Cabbage palm* {S}. The terminal bud, of a white color and delicate flavor, is boiled as a vegetable or made into pickles. Pith of the stem yields a starch. West Indies. HEDRICK 1919; A41G{PL}, C9M, F85, K47G, N84, 093, P5, Q12, R33M

*Roystonea regia* - *Cuban royal palm* {S}. The terminal bud, or cabbage, is consumed as a vegetable in some parts of the West Indies. Fruits are also edible. In the Dominican Republic, a very popular candy known as *Raspadura* is wrapped with the bark of the crownshaft sheath, locally called *yagua*. *Raspadura de leche* is made with milk and *Raspadura de melao* with *melao syrup*, a molasses-like product. Caribbean region. MORTON 1977, RAMIREZ DE CARIAS [Re], UPHOF; I84M{PL}, K47G, 093, P5, P17M, Q12, Q18, Q32, Q41, etc.

*Sabal etonia* - *Scrub palmetto*, *Scrub cabbage* {PL}. Terminal bud, or cabbage, is used as a vegetable. The fruits are also eaten. Southeastern North America. MORTON 1977; A41M{S}, B32, D43, H4, H14M, K47G{S}, N37M, N84{S}, Q12{S}

*Sabal minor* - *Dwarf palmetto* {S}. The pith of the stem is edible. Southern North America. HEDRICK 1919; D43{PL}, F85, H4{PL}, I28{PL}, N37M{PL}, 053M, 093, P5, Q32, R33M

*Sabal palmetto* - *Cabbage palmetto*, *Swamp cabbage* {S}. The pulp of the fruit is very sweet and prune-like in flavor. It is eaten raw, made into syrup, or dried and made into bread. Terminal bud is a delicacy raw or cooked. The pith of the upper trunk is chewed for the sweetish juice, made into a pumpkin-like pie, or boiled with raisins and syrup as a pudding. Ashes serve as a salt substitute. Southeastern North America. HAWKES [Re], MORTON 1977, POLVAY [Pre, Be], QUINTANA 1994 [Re]; A79M, C9M, D43{PL}, F80, H4{PL}, I28{PL}, N37M{PL}, N84, P5, Q32, R33M

*Sabal texana* - *Texas palmetto*, *Palma huichira* {S}. The fruit is eaten. Formerly, the heart was dried and pounded into a meal. Southwestern North America. LATORRE 1977b; A80M{PL}, F85, N37M{PL}, 093, Q12, Q32, R33M

*Salacca conferta* - *Salak hutan*, *Asampayo* {S}. The intensely acid pulp of the fruit is used to season curries, or it is boiled and made into a sweetmeat. Malaysia. BURKILL, HEDRICK 1919, TANAKA; K47G, N84

*Salacca edulis* - *Salak* {S}. Considered one of the finest palm fruits for eating out of hand. The tear-drop shaped fruit has distinctive brownish scales and yellow-white pulp that is slightly crisp with a delicious blend of acids and sugars. Also eaten cooked with spices, pickled, or preserved in salt water and sugar. Seeds are edible. Indonesia, cultivated. EISEMAN, HEDRICK 1919, MENNINGER, UPHOF; E8M{PL}, E29{PL}, K47G, N84, 019, R78M

#### CULTIVARS

**Gondak:** On the island of Bali, where the best salak grow, this is one of the two leading cultivars. Self-pollinating, can produce fruit on single trees, without the aid of a pollinator. WHITMAN; U27T

**Nanaka:** One of the two best cultivars grown in Bali. Bears fruit without the aid of pollen from another tree, whereas salak originating outside of Bali produce both male and female trees. WHITMAN; U27T

*Salacca wallichiana* - *Kumbur* {PL}. The seeds are used as an acid flavoring in curries. Malaysia. BURKILL; D87E, K47G{S}

*Salacca zalacca* - *Salacca edulis*

*Scheelea butyracea* - *Wine palm*, *Palma real* {S}. The terminal buds are cooked and eaten as a vegetable. Sap from the trunk yields a good palm wine or *toddy*. Seeds are eaten and are also the source of an edible oil. In Panama, they are mashed and mixed with roasted

green plantain, forming a dish called *sango*. Tropical South America. DUKE, PEREZ-ARBELAEZ, TANAKA; K47G

*Scheelea macrocarpa* - *Coroba* {S}. Seeds are edible, though the kernels are extremely hard. Also the source of an edible oil. South America. MENNINGER, UPHOF; K47G

*Scheelea preussii* - *Corozo* {S}. The terminal bud is eaten, either raw or cooked. Oil from the seed is said to be edible. Central America. UPHOF, WILLIAMS, L.; K47G

*Serenoa repens* - *Saw palmetto* {PL}. Fruits are edible. Florida pioneers once made a carbonated soft drink from the juice of the berries and called it *Metto*. Produces several delicious palm hearts the size of a walnut. All but one can be harvested without killing the tree. Seeds are edible. Southeastern North America. GIBBONS 1979, MORTON 1977, UPHOF; A41G, A41M{S}, D87E, F85{S}, H14M, I28, I83M, I84M, K47G{S}, N37M, N84{S}, R33M{S}

*Syagrus coronata* - *Licuri palm*, *Nicuri*, *Ouricuru palm* {PL}. Pulp of the fruit is consumed by the natives. Kernels are the source of an oil used in the manufacture of margarine. The pith of the stem is used to make bread. Brazil. HEDRICK 1919, UPHOF; A41G, D87E, F85{S}, I84M, K47G{S}

*Trachycarpus fortunei* - *Chinese windmill palm* {S}. The young inflorescence is eaten in much the same way as bamboo sprouts. Fresh flowers and the terminal bud are also apparently consumed. China, cultivated. ESSIG, HEDRICK 1919, TANAKA; A79M, C9M, D43{PL}, H4{PL}, H71, K38, L91M, NO{PL}, N37M{PL}, 053M, P5, R33M

*Washingtonia filifera* - *California fanpalm* {S}. The berry-like, black fruits have a thin, sweet pulp that tastes somewhat like dates or butterscotch. They are eaten fresh, dried, or made into jellies and drinks. Seeds are ground into meal for making bread or porridge. Terminal bud is eaten roasted. Southwestern North America. CLARKE, KIRK, MEDSGER, UPHOF; A41M, C9M, D43{PL}, D87E{PL}, F80, I33, K38, 053M, Q12, R33M

*Zalacca conferta* - *Salacca conferta*

#### ARISTOLOCHIACEAE

*Aristolochia serpentaria* - *Virginia snakeroot* {PL}. The aromatic, dried roots yield an essential oil reminiscent of valerian and ginger that is used as a flavoring for alcoholic beverages. Eastern North America. BURDOCK; G73{DF}, N84

*Asarum canadense* - *American wild ginger* {PL}. Flowers and rootstocks have a fragrance and taste suggestive of ginger and can be used as a flavoring. Candied wild ginger is prepared by boiling in sugar water until a syrup forms. The roots are then rolled in granulated sugar, while the syrup can be used on ice cream and other desserts, or mixed with water to form a beverage that is a digestive aid. Eastern North America. ANGIER, FERNALD, GIBBONS 1962, HALL [Pre, Re]; BO, C9, C43M, D75M, E33M, F51, G89, K18M{DF}, K85, M77M, N7T, N9M, N9M{S}

*Asarum caudatum* - *Long-tailed wild ginger* {PL}. Rootstocks can be used as a ginger substitute. Leaves are brewed into a tea. Western North America. KIRK, UPHOF; A51M, B92, D95, E63M, E87, G60, I39, I98M, J26, K79, L59P

#### ASCLEPIADACEAE

*Asclepias incarnata* - *Swamp milkweed* {PL}. Unopened flower buds were made into soup with deer broth, added to cornmeal mush, and dried and stored for winter use, by the Menominee Indians. Young fruits are boiled and eaten. North America. YANOVSKY; B51{S}, E7M{S}, F20M, F80{S}, G47M{S}, G89, H61M{S}, H63, I11M, J40, J40{S}, J42, J42{S}, J43{S}, K53{S}, N9M, N9M{S}, etc.

*Asclepias speciosa* - *Showy milkweed* {S}. Young shoots are boiled and eaten like asparagus. Tender tops of older plants are



steamed as a potherb. The gum was used for chewing. Flower buds young fruits, roots, and raw flowers are also used. North America. CLARKE, FERNALD, HARRINGTON, H.; D95{PL}, E61{PL}, J25M, J39M, L55J, N84

*Asclepias syriaca* - *Common milkweed* {S}. In the spring the new shoots, while still young and tender, are cooked and eaten like asparagus. The leaves before they become tough are steamed like spinach. Unopened flower clusters are a broccoli substitute. If picked at the proper moment the young pods resemble okra when cooked. Sprouted seeds are eaten. North America. FERNALD, GIBBONS 1962 [Pre, Re], HARRINGTON, H., KINDSCHER; C43M, E7M, F80, H61M, J40, J42, M34M, N9M, N9M{PL}, N84, 053M

*Asclepias tuberosa* - *Butterfly-weed, Pleurisy root* {S}. Tender shoots can be eaten cooked like asparagus. The Sioux Indians prepared a crude sugar from the flowers, but this technology seems to have been lost. Some authors report that the tubers are edible, others say they are poisonous. Leaves and inflorescences are also eaten. North America. FERNALD, HARRINGTON, H., HEDRICK 1919, MEDSGER, UPHOF, YANOVSKY; B51, C9{PL}, C9M, E7M, E33M{PL}, F80, G47M, G89, I77M{PL}, J40, J40{PL}, K53, N9M, N9M{PL}, 053M, etc.

*Ceropegia bulbosa* - *Khapparkadu* {PL}. Succulent leaves and stems are acidic and are eaten stewed in curries. Tuberous roots are eaten after the bitterness is removed by boiling. India. TANAKA, TATE, WATT; L26

*Fockea angustifolia* - *Water root, Khoa, Kghoa* {PL}. The swollen rootstocks have whitish, watery flesh with a nutty flavor and are eaten raw when young or used for making jam and preserves. Southern Africa. FOX, E, TATE; N84

*Fockea edulis* - *Kambro* {PL}. The large tubers have been used to make a *konfyt*, as an alternative to watermelon. Southern Africa. FOX, F.; E48, G18, G94, H52, I47M, N84{S}, 053M{S}, Q41{S}, R88{S}, S28M{S}

*Gymnema sylvestre* - *Australian cow-plant* {DF}. The leaves are occasionally eaten. They have the unusual ability to temporarily cause the taste buds to suppress all sensitivity to sweet substances. Tropics. INGLET, LOVELOCK, MARTIN 1975, UPHOF; K18M

*Pergularia daemia* - *Leshwe* {S}. The leaves, stalks and flowers are cooked and eaten as potherbs. India. FOX, F., TANAKA; N84, S28M

*Telosma cordata* - *Yeh-lai-hsiang, Bunga siam* {PL}. In Thailand, both the flowers and leaves are eaten. The fleshy roots are made into a sweetmeat by the Chinese in Java. Tropical Asia. BURKILL, TANAKA, UPHOF; E78M, F85{S}

#### ASPARAGACEAE

*Asparagus acutifolius* - *Wild asparagus, Triguero* {S}. The young, tender shoot tips have a uniquely bitter, aromatic flavor. They are excellent in omelets, grilled, or seasoned with oil and lemon juice. Preferred over regular asparagus by some gourmets because of its stronger flavor. Mediterranean region. BIANCHINI, DOMINGO, GRAY, P. [Cul], HEXAMER, KREMEZI 1993 [Re]; F85

*Asparagus aphyllus* - *Prickly asparagus, Sporangia* {S}. In Greece, the slightly bitter young shoots are gathered from the wild and eaten raw or cooked. Mediterranean region. HEDRICK 1919, NIEBUHR; Z25M

*Asparagus cochinchinensis* - *Tenmondd* {S}. Tuberous roots are eaten after preserving in sugar. Fruits also said to be edible. South-east Asia. ALTSCHUL, TANAKA; F85, N84

*Asparagus officinalis* - *Asparagus* {S}. Young shoot tips are eaten boiled, steamed, sauteed, stir-fried, pickled, etc. Lower part of shoot

can be used in soups. Blanched or white asparagus is preferred by some for its more delicate flavor. Pencil-thin shoots, known as *sprue*, are used frequently in Italy, often with the addition of grated Parmesan cheese. Seeds are used as a coffee substitute. Cultivated. HEDRICK 1919, SPENCER, UPHOF; B63M{P£}, H25M{PR}, H73{PR}, L55J, N7G, N84, R47. (for cultivars see *Asparagus*, page 291)

#### ASPLENIACEAE

*Asplenium bulbiferum* - *Pikopiko* {PL}. Roots and young uncurled shoots are used as food. New Zealand. KUNKEL, NATUSCH; 128, M42, N84{S}

*Asplenium nidus* - *O-tani-watari* {S}. Leaves are parboiled and eaten. Ash from burned leaves is used as a substitute for salt. Tropics. CROFT, KUNKEL, TANAKA; I28{PL}, K47M, N84, 033, P17M

#### ASTERACEAE {COMPOSITAE}

*Achillea atrata* - *Achillea noire* {S}. Used in the same way as musk yarrow in the preparation of *iva liqueurs*. Europe. UPHOF; N84

*Achillea decolorans* - *Garden mace* {PL}. The aromatic leaves are used as a substitute for tea. Also used as a flavoring for soups and stews, potato salad, etc. Europe. C43M, E61, F35M, F37T, H51M, J82, L90J, M82, P92, R49, R53M

*Achillea erba-rotta* ssp. *moschata* - *Musk yarrow* {S}. Source of a liqueur, called *esprit d'iva, iva liqueur*, or *iva wine*, produced in Italy. In Switzerland, *iva bitter* is produced. Europe. TANAKA, UPHOF; N84, 053M, Q24, R49{PL}

*Achillea ligustica* - *Milfoil* {S}. In England, the herb forms one of the main ingredients of an old-fashioned cordial, called *lovage*—along with the garden lovage (*Levisticum officinale*), and tansy (*Tanacetum vulgare*). Europe. GRIEVE; F85

*Achillea millefolium* - *Yarrow, White yarrow* {S}. Young leaves are occasionally eaten in salads, cooked as a vegetable, or added to soups and sauces. In Germany, they add a characteristic flavor to *grundonnerstag suppe*. The leaves and flowers are brewed into an aromatic tea. In parts of Sweden, the herb is employed as a substitute for hops in the preparation of beer. Yarrow is said to make an excellent *kombucha* drink when combined with elderflower, raspberry leaves, dandelion and stinging nettle. An essential oil, derived from the flowering tops, is used commercially for flavoring soft drinks and alcoholic beverages. Northern temperate region, cultivated. FRANK, GRIEVE, HEDRICK 1919, LOVELOCK, MARCIN, MICHAEL [Re], MORTON 1976, PAINTER [Cul, Re], TIETZE, UPHOF; A97{PL}, C67M{PL}, F80, G59M, G68, G84{DF}, H46{DF}, H80, 111M{PL}, K22{PL}, N11M, R47

#### CULTIVARS {PL}

**Pink:** (Rosea) Very aromatic foliage. Brilliant clusters of deep-pink flowers. Also good in dried arrangements, although the flowers lose their shape. C67M, D11T, F32D, G68{S}, 139, J76, K22, K85, N19M, N84{S}

*Achillea moschata* *Achillea erba-rotta* ssp. *moschata*

*Achillea nana* - *Glacier chamomile* {S}. Used in the preparation of *iva liqueurs*. Europe. UPHOF; N84, 053M

*Anacyclus pyrethrum* - *Pellitory of Spain* {S}. Source of an essential oil used in liqueurs. Roots are sometimes used for chewing. Mediterranean region. UPHOF, ZEVEN; N84, 046, R53M, R53M{PL}

*Anthemis cotula* - *May-weed, Dog femel, Mansanilla* {S}. An aromatic herb used for flavoring in Peru. Also used for making an herbal tea similar to chamomile, the dried leaves and flowers being employed. Northern temperate region. ALTSCHUL, ROOS-COLLINS; M34M, N84

*Anthemis nobilis* - \**Chamaemelum nobile*

*Anthemis tinctoria* - *Golden Marguerite, Yellow chamomile* {S}. The golden flowers are occasionally dried and used for making tea. Eurasia. REILLY; A2, C43M, C43M{PL}, E7{PL}, E61{PL}, E81M, F37T{PL}, G68, J5M{PL}, L56{PL}, L94M, M82{PL}, N23, R32, R53M, R53M{PL}, etc.

*Arctium lappa* - *Great burdock, Wild gobd* {S}. Roots are sliced, boiled, and eaten as a vegetable. The peeled leaf-stalks and tender, young leaves are boiled and served like spinach or asparagus. Leaf-stalks are also parboiled and used as a substitute for cardoon. The pith of the flower-stalk can be eaten raw in tossed salads, boiled as a potherb, or made into a confection. Seeds can be sprouted and eaten like bean sprouts. Eurasia, naturalized in North America. ANGIER, FERNALD, GIBBONS 1962 [Re], GRIEVE, LARKCOM 1984, MACNICOL; A2, D40G, D92M, Mi5M{DF}, N71M, 048, 053M, S55

*Arctium lappa* 'Esculenta' - *Gobd, Japanese burdock* {S}. Very young roots can be peeled and used in salads like radishes. Older roots are stir-fried, sauteed, roasted, added to soups and stews, or cooked with tofu, yuba, etc. One of the ingredients of *tekka*, a miso-based condiment. In Japan, both the stems and roots are pickled. Before use, the roots are shredded or cut into thin strips, and soaked in water to remove any strong flavors. Dried roots are a popular ingredient of *namul*, the seasoned vegetable dishes of Korean cuisine. BELLEME 1993, HALPIN [Cu, Cul], HARRINGTON, G. [Cul], HERKLOTS, NOH [Pre, Re], SCHNEIDER 1986 [Cul, Re], SHURTLEFF 1975 [Pre, Re]; A2, B49, C43M{PL}, C82, D3M{PR}, E56{PD}, E60P{PD}, E66T{DF}, F80, F88{DF}, F88{PD}, G33, G44M{PR}, G47B{DF}, G47B{PD}, I9M{PD}, I81T{PR}, K49M, N84, etc.

CULTIVARS

**Mitova Shirohada:** Thick, smooth, uniform roots, up to 3 feet in length. White, tender, and with good flavor. Matures relatively early. Can be sown in either the spring or fall. C20M, 053M

**Nonava:** Long, brownish roots; about 3/4 inch in diameter when grown under ideal conditions; relatively soft with slow fiber development; good flavor. Q3

**Sakiaake:** 120 days. Rapid-growing, solid roots are flavorful, smooth, and white in color. Matures earlier than other cultivars and becomes 2 feet long or more and 3/4 to 1 inch in diameter without becoming pithy. A leading cultivar in Japanese markets. L77D

**Takinogawa Long:** 150 days. Long, smooth, slender root; 30 to 36 inches in length, about 1 inch in diameter; flesh is light-yellow, with very little fiber. Largest diameter is attained when grown in deep soils. Petioles are reddish colored. Mild, bittersweet flavor. The most popular cultivar grown in Japan. C95, D55, E59Z, G6, 139, 199M, J73, J82, J82{PL}, K49T, K73, L3J, N84, S63M

**Watanabe Early:** 120 days. A very rapid grower, producing long, slender roots about 30 inches long and 1 to 1/12 inches in diameter, with tender, fine-textured flesh of good flavor. Very popular in Japan. C20M, K73, L3J, M46, S63M

*Arctium minus* - *Burdock, Beggar's buttons* {S}. The young leaves and leaf-stalks are eaten as potherbs. Young flower stalk is peeled and eaten raw, used as a salad, or cooked as asparagus. Peeled and sliced roots can be eaten with sesame seeds and soy sauce. Roasted and ground roots are used as a coffee substitute. Eurasia, naturalized in North America. HARRINGTON, H., MABEY, MEDSGER, MICHAEL [Pre, Re]; A2, F85, H94M{PL}, L55J, L94M, M34M, N84, 048

*Arctotheca calendulaceum* - {S}. Said to be used in cooking. The pollen is much appreciated. Southern Africa. KUNKEL; F85, N84, S28M

*Artemisia abrotanum* - *Old man, Southernwood* {PL}. The young, bitter shoots and leaves are sometimes employed as an ingredient of beer. In Italy, they are used to flavor cakes and confec-

tions. Also brewed into a tea. Eurasia. HEDRICK 1919, MICHAEL [Pre, Re], MORTON 1976, PAINTER, UPHOF; C9, C43M, C67M, C81M, E14T{DF}, E61, F32D, G73{DF}, 139, J66, J76, K85, M82, N7D{DF}, N19M, etc.

*Artemisia absinthium* - *Wormwood* {PL}. The herb has been used in the preparation of a liqueur, *absinthe*, now banned in many countries. Also employed for flavoring other alcoholic beverages including dry *vermouth* and *muse verte*, as well as bitters. At one time it was a common substitute for hops in beermaking. The flowering tops are used in continental Europe to counteract the greasiness of goose and duck dishes. Eurasia, cultivated. CAMPBELL-PLATT, CORNELL, GIBBONS 1962, GRIEVE, LEUNG, MABEY, MORTON 1976, UPHOF; A49D{DF}, A97, C3{S}, C67M, D92M{S}, E14T{DF}, F80{S}, K18M{DF}, K22, K85, L36M{DF}, N19M, N42, R47{S}

*Artemisia afra* - *African wormwood* {PL}. The herb is used in some parts of Africa in the same way that *A. absinthium* is used. Southern Africa. UPHOF; C43M, D92M{S}, E61, H94M, J76, J82{S}, K22, K85, L90J, N42, N84{S}, S28M{S}

*Artemisia annua* - *Sweet wormwood, Sweet Annie* {PL}. In China, the plant is used as a medium for growing *Aspergillus* employed in brewing wine. Eurasia, cultivated. TANAKA; C43M, C43M{S}, C67M, D40G{S}, D92M{S}, E7M{S}, F35M, F80{S}, K22, K85, L7M{S}, M35, N19M, N42, R47{S}, etc.

*Artemisia asiatica* - *Nishi-yomogi* {PL}. In Japan, the leaves are pounded with steamed glutinous-rice to give it flavor and color. The resulting cake or dumpling is known as *yomogi-mochi*. The young leaves are eaten with barley. Eastern Asia. ALTSCHUL, TANAKA; C43M, F32D, G80, L90J

*Artemisia dracunculus* - *Russian tarragon, Wild tarragon* {S}. The oily seeds were eaten by the Indians of Utah and Nevada. Leaves were baked between hot stones and consumed with salt water. The leaves are also eaten in salads or used as an inferior substitute for French tarragon. North America. LARKCOM 1984, LATHROP, MASEFIELD, YANOVSKY; B1M, C43M{PL}, C82{PL}, C85M, E91G, 191, J20, L90J, N84, S55

*Artemisia dracunculus* 'Sativa' - *French tarragon* {PL}. The young, licorice-flavored tips and leaves are added to salads, vinegar, pickles, sauces, *Dauphin* cheese, etc. Fresh or dried leaves are essential ingredients of *bearnaise*, *tartare*, and *bechamel* sauces. Tarragon mustard is one of the most popular mustards in France. The young shoots are cooked and eaten as a potherb. In the Near East, cooked or raw, they are served as an appetizer. In Belarus, they are preserved by dry salting. Eurasia, cultivated. CAMPBELL-PLATT, BOLOTNIKOVA, DE SOUNIN, GRIEVE, HEDRICK 1919, MASUI, ROOT 1980a, ROOT 1980b [Cul], VILMORIN; A7{DF}, A49D{DF}, C9, C43M, C67M, C82, C94M{DF}, H90G{ED}, 139, J82, K22, K85, L17{DF}, L90J, M35, M82, N19M, etc.

*Artemisia frigida* - *Fringed wormwood* {PL}. Leaves are used by the Hopi Indians for flavoring sweet-corn. North America, Northern Asia. KIRK, LATHROP, UPHOF; C43M, E66M{S}, G66, G89M, H94M, I47{S}, J25M, J25M{S}, L90J, N19M, N84{S}

*Artemisia genipi* - *Spiked wormwood* {S}. The herb is used in the preparation of *eau d'absinthe*. Europe. HEDRICK 1919; A61, A61{PL}, K22{PL}, M82{PL}, N84, Q24

*Artemisia glacialis* - *Genepi des glaciers* {S}. The herb is used for flavoring *vermouth* and liqueurs. Europe. UPHOF; H98{PL}, N84, 053M

*Artemisia indica* - *Artemisia asiatica*

*Artemisia japonica* - *Otoko-yomogi* {S}. Young plants are boiled, fried or stir-fried and used as a potherb or added to soups. Also used like *A. princeps* for coloring and flavoring *mochi*. Eastern Asia. TANAKA, YASHIRODA; 199M, K49T

*Artemisia judaica* - *Semen contra*, *Graines a vers* {S}. Used as a condiment and for flavoring liqueurs. Mediterranean region, Southwest Asia. TANAKA, UPHOF; F85

*Artemisia lactiflora* - \**Artemisia vulgaris*

*Artemisia laxa* - \**Artemisia umbelliforme*

*Artemisia ludoviciana* - *Louisiana wormwood*, *White prairie-sage*, *Cudweed*, *Estafiate* {PL}. Leaves and flower-heads are used as a seasoning, or made into tea. Leaves are also used as a garnish for wild game and pork dishes. Chopped leaves can be added to sauces and gravies. Seeds are also eaten. North America. CROWHURST 1973, HUTSON 1987 [Cul], YANOVSKY; C43M, C67M, E66M, F93G, G89M, H70M, I47{S}, J25M, J25M{S}, J39M, J39M{S}, J41M, J43{S}, M82, N19M, etc.

*Artemisia maritima* - *Sea wormwood*, *Levant wormseed*, *Santonica* {S}. The herb is used for flavoring. Eurasia. UPHOF; J82, R53M{PL}

*Artemisia mutellina* - \**Artemisia umbelliforme*

*Artemisia pallens* - *Davana* {PD}. The flowers yield an essential oil employed as a flavoring in commercial candy, chewing gum, beverages, baked goods, puddings, and frozen dairy products. Asia. BURDOCK; GO, N84

*Artemisia pontica* - *Roman wormwood*, *Petite absinthe* {PL}. Used for flavoring aperitifs and cordials, and also for the preparation of *Pontic vermouth*. Southern Europe. BROUK, GRIEVE, MORTON 1976; C67M, F32D, H94M, J82, K22, K85, L90J, M35, M82, N19M, N84, R53M

*Artemisia princeps* - *Japanese mugwort*, *Yomogi*, *Ssuk* {PD}. The leaves and young seedlings are eaten in salads and soups, after the bitterness has been removed. After being boiled briefly, the leaves are pounded into glutinous-rice dumplings (*mochi*). They impart a delightful color, aroma, and flavor. Mugwort *mochi* is widely available at natural foods stores in North America. Mugwort soba is also popular in natural food and macrobiotic cuisines. Also widely used in Korean sweets such as the festive *half-moon rice cakes*. Eastern Asia. HOMMA, MILLON, NOH [Cul, Re], PEMBERTON, TANAKA, YASHIRODA; E56{DF}, E56, G47B, I19M

*Artemisia spicata* - \**Artemisia genipi*

*Artemisia stelleriana* - *Beach wormwood*, *Old woman*, *Shiroyomogi* {PL}. Leaves are used for flavoring rice dumplings. Northern temperate region. TANAKA; B9M, B28, C9, E30, J24, J37M, J82, K22, K85, L22, L56, M82, N19M, N84{S}

*Artemisia umbelliforme* - *Alpine wormwood* {S}. The herb is used for the preparation of a tea and liqueur, often with the addition of absinthe. Southern Europe. UPHOF; A61, A61{PL}, N84, 053M, Q24

*Artemisia vulgaris* - *Mugwort* {PL}. Young shoots and leaves are an indispensable condiment for fatty poultry such as geese and ducks, as well as fat pork, mutton, and eel. In Japan, they are boiled and eaten as a potherb, or used to give flavor and color to festival rice-cakes, *mochi* and *dango*. Dried leaves and flowering tops are added to country beer, or steeped into tea. At one time in China the leaves were used for wrapping glutinous rice dumplings eaten during the Dragon Boat Festival, called *mugwort perfumed dumplings*. Northern temperate region. COTTERELL, FERNALD, GRIEVE, LAUNERT, MARCIN, MORTON 1976, ROOT 1980b [Cul], UPHOF; A97, B55M{DF}, C43M, C67M, D40G{S}, D92M{S}, E61, F80{S}, K85, L36M{DF}, N84{S}

#### CULTIVARS

**White:** (Yomogi-Na, Junn Jiu Choi, White Wormwood, Ghostplant) Tall, showy plant with pale-green, trifoliate leaves and distinctive 8 to 10 inch long, reddish-purple leaf stalks. Height 3 to 5 feet. Produces spikes of creamy flowers in late summer. Has a strong, rather resinous or "floral" taste similar to chrysanthemum leaves. Used in soups or fried as a side dish. DAHLEN [Cul, Re];

C9, C43M, C81M, D69, E61, F32D, H51M, H63, H94M, J5M, J76, K22, M82, L66, L90J, N84{S}, etc.

*Aster scaber* - *Shirayama-giku*, *Cham-chui* {S}. The young plants are parboiled or steamed and used like spinach or watercress, especially in Korean cuisine. When dried, they are reconstituted then seasoned with soy sauce and sesame oil. Dried leaves are widely available in Korean stores, while fresh plants are occasionally seen. Eastern Asia, cultivated. MILLON, PEMBERTON; V29M

*Asteropterus gnaphalodes* - *Geelblommetjeste* {S}. In the Cedarburg area of South Africa, the leaves are used for making an aromatic pleasant-flavored tea. Southern Africa. FOX, E, UPHOF; N84, S28M

*Atractylodes macrocephala* - *Bai zhu* {DF}. The rhizomes are eaten in numerous Chinese tonic foods including soups, cakes, and specialty rices or *peng*. Also made into a porridge called *congee* or *jook*, often with pork tripe, sesame oil and soy sauce. One of the ingredients of *Mu #16* tea, and *Dragon Herbal*. Eastern Asia. FLAWS 1995, LEUNG, TEEGUARDEN; E2M, E14T, E60P{PD}, E66T{PD}, F37T, G19P, G47B{PD}, G73, H36, L21T, L34, M15M{m}, N7D, N84{PL}

*Balsamita major* - *Costmary*, *Bible-leaf*, *Alecost* {PL}. Young, tender leaves are chopped and used sparingly in salads. They are also used as a seasoning for ale and beer, sauces, stuffings, soups, poultry, and stews. Whole leaves can be laid in cake pans to flavor cakes while baking. Rower petals are used for conserves. The dried leaves are often brewed into tea. Southwest Asia, cultivated. GRIEVE, LARKCOM 1984, LATHROP, MACNICOL, MORTON 1976; C9, C43M, C67M, E61, F35M, J66, J76, J82, K22, K85, L90J, M53, N19M, N84

*Balsamorhiza deltoidea* - *Puget balsam-root* {S}. Young, tender, aromatic roots may be eaten like carrots, or they can be candied like elecampane. Boiled young leaves make a good potherb. The flower-stalks are cooked and eaten as a vegetable. The rich, oily seeds are eaten like sunflower seeds. Western North America. GIBBONS 1979, YANOVSKY; E15, N84

*Balsamorhiza hookeri* - *Hooker's balsam-root* {S}. The roots are eaten raw or cooked. Seeds are also consumed. Western North America. HEDRICK 1919, MEDSGER, YANOVSKY; E67T{PL}, 147, P10

*Balsamorhiza sagittata* - *Arrowleaf balsam-root*, *Oregon sunflower* {S}. Young shoots and leaves are eaten raw in salads or boiled as a potherb. The seeds are roasted and ground into flour for breadmaking. Roots are eaten raw, cooked, or roasted and used as a coffee substitute. Rathead Indians baked them in a fire pit, like camass, for at least three days. The young, immature flower-stalk can be peeled, and the tender inner portion eaten raw, like celery. Western North America. HART, HEDRICK 1919, KIRK, KUNKEL, YANOVSKY; A12M, A61, C43V, C95, E15, E66M, E67T{PL}, F44, F85,147, J26{PL}, K62, L3J, N84, 053M, Q24, etc.

*Bellis perennis* - *English daisy* {S}. Flower petals of the cultivated forms, and the whole flowers of the wild plant are eaten in salads. Flower buds can be eaten in sandwiches, soups, and salads. Preserved in vinegar, they serve as a substitute for capers. The leaves are occasionally used as a potherb. Eurasia, cultivated. HEDRICK 1919, LARKCOM 1984, LAUNERT, LEGGATT [Re], MACNICOL [Re]; A16, B30{PL}, E9IG, F80, 191, J82, L91M, K85{PL}, M82{PL}, N7IM

*Berlandiera lyrata* - *Chocolate flower* {S}. Flowers are used for seasoning foods. Western North America. YANOVSKY; D92M, E61{PL}, F44M{PL}, H94M{PL}, 147, J25M, J25M{PL}, L13, L55J, L91M, N7M, N84, Q24

*Bidens pilosa* - *Spanish needles*, *Beggar's ticks* {S}. The young shoots and leaves are eaten raw or steamed, added to soups and stews, or dried and stored for future use. Also used as a substitute

for tea. In the Philippines, the plant is used in the preparation of a rice wine, called *tafei* or *sinitsit*. Cosmopolitan. CRIBB, FCK, F., MARTIN 1975, UPHOF, VAN EPENHUSEN; F37T{PL}, G73, J82{PL}, L77D, N84, P38

*Blumea balsamifera* - *Ngai camphor* {S}. The camphor-scented leaves are occasionally eaten with various foods as an aromatic condiment. Sold in local bazaars. Southeast Asia. UPHOF; N84

*Borrichia frutescens* - *Jamaican samphire* {PL}. The leaves are apparently eaten in salads or as a potherb. Tropical America. LOVELOCK; B61M{S}, D87G, H4, N84{S}

*Cacalia atriplicifolia* - *Pale Indian-plantain* {S}. Young leaves are eaten as a potherb. North America. KUNKEL; B29, G47M, J39M, J39M{PL}, J40, J43, N84

*Cacalia hastata* var. *orientalis* - *Yobusuma-so* {S}. Young plants and tops are parboiled and eaten in soups, fired, used as a potherb, or stir-fried. Eastern Asia. TANAKA; V29M

*Calendula anensis* - *Kinsen-ka, Souci des Champs* {S}. Young shoots and leaves are boiled and eaten. The flower-heads are pickled. In the Sinai and Negev desert areas, the Bedouins use the leaves as a condiment for clarified butter (*samin*). Mediterranean region, Southwest Asia. BAILEY, C., KUNKEL, TANAKA; JV77M, N84, 053M

*Calendula officinalis* - *Pot marigold* {S}. Fresh flower petals are chopped and sprinkled on tossed salads. When dried, they have a more concentrated flavor, and are used for seasoning soups, puddings, cakes and cookies, and for coloring butter and cheese. Both flowers and petals can be used for tea, the flower-petal tea being less bitter. Pot marigold is sometimes employed as an adulterant of saffron. Southern Europe, cultivated. BRYAN [Cu, Cul], GRIEVE, HEDRICK 1919, LARKCOM 1984, LEGGATT [Re], MACNICOL [Re], MORTON 1976; A97{PL}, C9M, C67M{PL}, D92M, E14T{DF}, E63D, I81T{PR}, K22, K53, M53{PL}, M82{PL}, N19M{DF}, N71M, R47

CULTIVARS

**Hen and Chickens:** An unusual form in which the normal orange double flower is surrounded by smaller secondary flowers arranged in sun and planet form, having stalks emerging from just beneath the petals of the central parent bloom. Suitable for culinary use. N84, 053M, Q34

**Kablouna Gold:** (Kablouna Yellow) A very distinct and unique form of calendula, especially recommended for culinary use. Plants are 18 to 20 inches tall; free flowering. Blooms are about 2 inches across. Flowers form a crested center, reminiscent of a miniature honeycomb, concealing the eye. In some the center extends 2/3 of the way to the tips of the single petals. C95, K66, N84, Q34

**Kablouna Mix:** Mixture of gold, orange, and lemon poly-petaled flowers some with radiant dark centers. Easy to grow. Can be cut from early summer to frost. Does well in cool summer areas. A2, C53, C92, D68, E81M, K49T

*Carduus eriophorus* - \**Cirsium eriophorum*

*Carduus nutans* - *Musk thistle* {S}. The pith of the flowering stem is said to be delicious when boiled for a brief time in salted water and dressed. The dried flowers are used in some countries as a rennet to curdle milk. Eurasia. FERNALD; M34M, N71M, N84, 048, 053M

*Carlina acanthifolia* - *Acanthus-leaved thistle* {S}. The receptacle of the flowers may be used like that of an artichoke. Mediterranean region. HEDRICK 1919; D92M, L91M, N84, 053M, Q24

*Carlina acaulis* - *Dwarf car line-thistle, Silver thistle* {S}. Flower receptacles are boiled and eaten like artichokes in some mountainous regions of Europe. In the Alps they are known as *chardousse*, in the Cevennes as *cardavelle*, and to the Germans they are *wild artichokes*. The leaves can be used to curdle milk. Europe. BREMNESS, LOVELOCK, TANAKA; D92M, E61{PL}\E87{PL},

E91G, F35M{PL}, F80, J82, K63G, L91M, N71M, N84, 053M

*Carlina vulgaris* - *Carlina thistle* {S}. The receptacle of the flowers can be eaten in the same manner as an artichoke. Eurasia. HEDRICK 1919; D92M, E61{PL}, N71M, N84, 048, 053M, Q24

*Carthamus tinctorius* - *Safflower, Mexican saffron* {S}. Dried flowers are the source of a red and a yellow dye used for coloring butter, liqueurs, and confectionery. In the food industry it serves as an adulterant of saffron. The slightly bitter petals can be cooked with rice. Seeds are fried and eaten in chutney, or used as a substitute for rennet in coagulating milk. Also the source of an edible oil widely utilized in salads, cooking, margarine, etc. Leaves can be eaten as a potherb or seasoned with soy sauce. Eurasia, cultivated. BARASH [Re], GRIEVE, ROOT 1980b [Cul], TANAKA, UPHOF; A7{DF}, C43M, D92M, E7M, E14T{DF}, E61, F37T{PL}, F80, G68, J66M{DF}, J73, K22, M46, N84

CULTIVARS

**Penvigei:** 95-100 days. Improved oilseed type from Hungary. Flowers may also be used as a substitute for saffron. Grows to 4 feet tall. Golden ochre flowers. L3J

*Centaurea cyanus* - *Cornflower, Bachelor's button* {S}. The flowers are eaten as a vegetable, used as a garnish, made into jelly, or added to beer. They also yield a blue dye used for coloring sugar and gelatine. Mediterranean region. LEGGATT, MACNICOL, TOOMRE [Re]; A2, C9M, Fil, F44, F59, H80, I15M, J88, M47M, N11M, N23, N71M, 053M, R47

*Centaurea nigra* - *Lesser knapweed, Hardhead* {S}. Flower petals have been used in salads. Europe, naturalized in North America. MABEY; A61, A61{PL}, D92M, F80, N71M, N84, 053M, Q24, R32

*Centaurea solstitialis* - *Yellow star thistle* {PD}. Source of a heavy-bodied, very sweet honey with an excellent almond candy-like flavor and a whitish color tinged with greenish-yellow, similar to olive oil. At one time a very common honey in California, but becoming rarer. Europe, naturalized in North America. CLEMSON, PELLETT; B54M, D7, G58, H80M, I43T, J70D

*Chamaemelum nobile* - *Roman chamomile, English chamomile* {PL}. Fresh or dried flowers are made into a pleasant-tasting tea. In Spain, they flavor *manzanilla sherry*. The whole herb is used in making herb beers. The small sprigs, gathered at the proper time, can be used to lend a subtle flavor to cream sauces, butter, honey, and sour cream. Eurasia, cultivated. BRYAN [Cul, Re], GRIEVE [Cu], MACNICOL, MARCIN, MORTON 1976, PAINTER, UPHOF; C67M, C82, D92M{S}, E61, J66, J73{S}, J76, J82, K85, M35, M53, N19M

CULTIVARS

**Flore Pleno:** Double flowered form of common Roman chamomile with pure white, pom-pom like flowers produced all summer. It is said that this cultivar is much less bitter than others, and thus makes a tastier herbal tea. Grows to about 12 inches in height. E61, G96, H29M, 757, J82, K22, L94M, M82, N84, R49

**Lawn:** Low growing, dense mat with strong, sweet odor; 2 inches high. Produces many flowers, which can be used for tea. This is the English lawn chamomile so long used for benches and flagstone filler. The flowers must be removed to make a successful lawn. K22, K85, R32{S}, S55{S}

**Treneaue:** More compact and tight growing than Lawn chamomile; 1 to 2 inches high. Very sweet, apple-scented foliage. Does not produce flowers, so requires no cutting for a successful lawn. Withstands quite acid soil. Probably originated as a sport from the Buckingham Palace lawns in 1932. C9, C43M, E61, F35M, J82, K85, L56, N84, R32, R49, R53M, S55

*Chamomilla aurea* - *German chamomile, Hungarian chamomile* {PL}. The dried flower-heads are brewed into an excellent, aromatic tea. Also used for flavoring fine liqueurs of the French type, such as *Benedictine* and *D.O.M.*. Source of an essential oil utilized by the food industry for enhancing fruit flavors in ice cream, candy,

baked goods, and chewing gum. Mediterranean region. MORTON 1976, UPHOF; A97, C3{S}, C67M, D92M{S}, G0{DF}, I81T{PR}, J20{S}, J66, J76, J82{S}, K22, K22{S}, K54{PD}, K85, M82, N19M, R47{S}, etc.

#### CULTIVARS {S}

**Bodegold:** Erect, sturdy, uniform plants with larger flowers than common types. Higher than normal essential oil content, up to 0.7%. Blooms 2 weeks earlier than other selections. Yields 700 pounds of flowers per acre. Improved strain from Germany, developed for commercial production. Also popular with home gardeners. E81M, J82, K66, M82{PL}, N84

**Bona:** Small, very sweet blossoms, easy to harvest. Essential oil content very high, 0.9 to 1%. Earliest to flower, a week earlier to full flower than Bodegold. Height 14 to 18 inches. G6

#### *Chrysanthemum halsamita* - *Balsamita major*

*Chrysanthemum coronarium* - *Garland chrysanthemum*, *Shun-giku*, *Chop suey greens*, *Ssukka* {S}. The aromatic leaves and tender stems are parboiled and seasoned with soy sauce, miso, or ground sesame seeds. They are also eaten raw in salads, stir-fried, made into fritters, or used as a seasoning for soups and *sukiyaki*. Koreans use them as a wrapping for *pulgogi*, rice, and *kochujang*. In Japan, a fragrant pickle, *kikumi*, is made with fresh chrysanthemum petals. The flowers can also be blanched briefly and added to salads, or prepared as tempura. Sprouted seeds are eaten as a winter snack. Eurasia, cultivated. BREMNESS, COST 1988 [Cul, Re], HALPIN, HARRINGTON, G. [Cu, Cul], HERKLOTS, KRAFT [Re], LARKCOM 1980, MACNICOL [Re], MILLON [Re], PAINTER [Re], TANAKA; A79M, B49, C9M, C43M{PL}, C53, C82, C95, D92M, E63D, F44, G6, G33, J76, J76{PL}, O53M, R47, etc.

#### CULTIVARS

**Bicolor:** Fine-leaf form with attractive, dissected leaves. Very aromatic. Bicolored petals of sunflower yellow and creamy yellow make a striking edible garnish for salads and soups. Can be planted spring through fall. N7G

**Flavon:** Medium-sized, attractive green leaves with a pleasant flavor. Excellent in salads or cooled with fish. Very easy to grow; can be grown year round; slightly spreading growth habit. Q3

**Flore Pleno:** Double flowered form with pom-pom like flowers in various shades. Predominantly yellow, with a few white and bi-colored petals. Grows about 3 feet tall. Excellent in salads and soups. Also suitable for wreath making. C95, N84

**Large Leaved:** 35 days. Large, oblong leaves, moderately lobed; dark-green in color; thick, tender, very smooth. Traditionally used for stir-frying or for adding to soups; rich aromatic flavor. Plant in early spring or fall. Very popular in southern China and Taiwan. C20M, D55, H49, K49M, L59, L79G, Q39, Q34, S70

**Maiko:** Dark-green, aromatic leaves. Used for *ohi-tashi* and *yosenabe*, and as a potherb to be boiled with meat. Can be harvested 50 days after sowing, or when about 8 inches tall in temperate areas. Very vigorous grower; prolific producer of lateral shoots; prefers cool weather conditions. Best sown between summer and early fall. C20M, S63M, TIM

**Round Leaved:** Large, broad, dark green leaves; only slightly lobed; broad, flat leafstalks. Good aroma. Very popular in Japan for soup and other dishes. Usually grown in summer and fall. C20M, D55, N84, S63M, TIM

**Small Leaved:** (Serrate Leaved) 35 days. Similar to Large Leaved, but the leaves are smaller and deeply serrated, and the flavor is slightly milder. Spreading, branching plant gives high yields. Grows well in cool, humid climates. This type is very popular in Japan for use in *sukiyaki* and *yosenabe*. C20M, D55, G13M, H49, K10, K49M, K73, L59, L79G, N84, S63M, S70

*Chrysanthemum indicum* - *Mother chrysanthemum* {PL}. Flower-heads are pickled in vinegar. Also used as a tea or for perfuming tea. Young leaves are eaten fried or boiled. The seeds are

edible. Eastern Asia. ALTSCHUL, TAN\KA, VAN DUONG; C9, K22, N81{S}, N84{S}

#### *Chrysanthemum leucanthemum* - \**Leucanthemum vulgare*

*Chrysanthemum* x *morifolium* - *Ryori-giku*, *Edible chrysanthemum*, *Ju hua* {PL}. The flower-heads are boiled and served as a salad with fish or tofu, and seasoned with vinegar or soy sauce. They are also prepared as tempura, pickled, dried, or added to soups. The aromatic leaves are used in fritters or made into a tea. Flowers or flower petals can also be brewed into a tangy, aromatic tea. For a sweeter tea, the petals only are used. Also used for perfuming China tea. Eastern Asia, cultivated. CLARKE [Re], GESSERT, LEGGATT [Re], MARCIN, TAN\KA, VAN DUONG, YASHIRODA [Pre, Re]; A7{DF}, B30, B73M, C9, E14T{DF}, E97, F53M, G16, G19P{DF}, G73{DF}, H44M{P}3, I91{S}, K22, L34{DF}, L88D{PD}, N7D{DF}, etc.

#### *Chrysanthemum parthenium* - \**Tanacetum parthenium*

*Chrysanthemum segetum* - *Corn marigold*, *Tung-hao* {S}. Young shoots are consumed as a vegetable in some parts of Asia, especially in China. Eurasia. UPHOF; N71M, N81, N84, O48, O53M, R32, S55

*Chrysanthemum* x *superhum* - *Shasta daisy* {S}. Leaves are sometimes used as a cool season salad green. Cultivated. A25, A53M, B28{PL}, C43V, C69, C97, D11T{PL}, G89M{PL}, K63G, L22{PL}, L41, L42, M47M, M82{PL}, N7G, N23, R47, etc.

*Chrysothamnus nauseosus* var. *graveolens* - *Chamisa blanco* {PL}. The flowers can be brewed into a delicious, aromatic, golden-colored tea. Often sold in herb shops, along with other herbal teas selected for their flavor. Western North America. G89M

*Cicerbita alpina* - *Mountain sow-thistle* {S}. The bitter stem is peeled and eaten raw by the Laplanders. Europe. HEDRICK 1919; N84, O53M, Q24

*Cichorium endivia* - *Endive*, *Escarole*. Leaves are eaten raw in salads, boiled, steamed, sauteed, braised, or cooked in soups and stews. Broad-leaved types make an excellent wrapping for other foods. The mature plants are sometimes blanched before harvesting to reduce the bitter flavor. In Java, they are pickled in brine. Eurasia, cultivated. CARCIONE [Re], CUSUMANO [Cul, Re], LARKCOM 1984, VILMORIN [Cu]; (for cultivars see *Endive*, page 362)

*Cichorium intybus* - *Chicory* {S}. The somewhat bitter leaves are eaten raw in salads, boiled, steamed, braised, or used in soups and stews. Some types are grown for their blanched shoots, others for their roots, which are eaten as a vegetable or used as a substitute for coffee. Wide-leaved forms can be used as wrapping. The attractive blue flowers can be used in salads, fresh or pickled. In Turkey, a chewing gum called *dagsakizi* is prepared from the sap. Eurasia, cultivated. FERNALD, GIBBONS 1962 [Re], HALPIN [Cu, Cul], HARRINGTON, H., LARKCOM 1984, MACNICOL [Re], OZTURK, UPHOF, VILMORIN [Cu]; C9M, D92M, E7M, F59, G47M, H61M, H80,115M, J76{PL}, M47M, N7G, N11M, N23, Q24. (for cultivars see *Chicory*, page 334)

*Cirsium arvense* - *Canada thistle* {S}. The young shoots and flower stalks are boiled and eaten as a vegetable. Roots can be eaten raw or cooked. The herb has been used to coagulate milk. Northern temperate region. LAUNERT, UPHOF; M34M, N71M, N84

*Cirsium eriophorum* - *Woolly-headed thistle* {S}. Young leaves and shoots are eaten as a salad. The young stalks, peeled and soaked in water to remove the bitterness, are said to be excellent, either boiled or baked in pies in the same manner as rhubarb. The pulpy receptacles are eaten like those of the artichoke. Eurasia. GRIEVE, HEDRICK 1919; F85, N84, O48

#### *Cirsium lanceolatum* - \**Cirsium vulgare*

*Cirsium oleraceum* - *Meadow cabbage, Cabbage thistle* {S}. Very young succulent parts of the plant are cooked and used as a vegetable in some regions of Russia and Siberia. The swollen rootstock, gathered before the plant flowered, was formerly used as a table vegetable. Eurasia. HEDRICK 1919, UPHOF, VILMORIN; *N71M*, N84, 053M

*Cirsium palustre* - *Marsh thistle* {S}. The young shoots and peeled flower-stalks are eaten raw in salads, or boiled and served as a vegetable. Eurasia. FERNALD, GRIEVE, HEDRICK 1919, LARKCOM 1984; *N71M*, N84, 048

*Cirsium vulgare* - *Common thistle, Bull thistle, Bur thistle* {S}. Young flower-stalks and roots are boiled and eaten as a vegetable. The young leaves can be soaked overnight in salted water and then cooked and eaten. Receptacles are cooked and served like artichokes. The dried flowers are used as a substitute for rennet in curdling milk for cheesemaking. Roasted seeds are occasionally eaten. Eurasia, naturalized in North America. CLARKE [Re], FERNALD, HARRINGTON, H.; M34M, *N71M*, N84

*Cnicus benedictus* - *Blessed thistle* {S}. The herb is used for flavoring. In Germany, it forms an ingredient of *kolner klosterpillen*. An extract of the plant is added to bitters and *Benedictine*. Mediterranean region. LEUNG, TANAKA, UPHOF; A2, C43M, C43M{PL}, D92M, F24D, G80{PL}, J82, M82{PL}, N84, S55

*Cnicus eriophorus* - *Cirsium eriophorum*

*Cnicus oleraceus* - *Cirsium oleraceum*

*Cnicus palustris* -> *Cirsium palustre*

*Conyza canadensis* - *Canada fleabane, Horseweed, Hime-mukashi-yomogi* {S}. In Japan, the young leaves and seedlings are eaten boiled, cooked with rice, or dried for future use. Source of an essential oil used commercially for flavoring candy, condiments, and soft drinks. North America. ALTSCHUL, FOX, F., MORTON 1976, TANAKA; F68T, F85, J43, M34M, N84, 048

*Coreopsis cardaminifolia* - *Cress-leaved tickseed* {S}. A decoction of the herb was used as a beverage by the Zuni Indians. North America. UPHOF, YANOVSKY; V85M

*Cosmos caudatus* - *Margarita, Kenikir* {S}. In Indonesia, the young leaves and tops are eaten raw, cooked, added to stews, or mixed with grated coconut and oriental radish. The leaves are also mixed with rice to prepare yeast. Tropical America. BURKILL, JACQUAT, OCHSE; F85, J82

*Crassocephalum crepidioides* - *Ebobo, Okinawan spinach* {S}. Young leaves and shoots are used as a potherb, fried, or mixed in *khao yam*. The leaves are fleshy, tinged with purple and have a somewhat mucilaginous quality and nutty flavor. Has become quite popular on the island of Okinawa and in Hawaii. In Thailand, the roots are eaten with chili sauce or cooked in fish curry. Tropical Africa, cultivated. DALZIEL, JACQUAT, JOSSELIN [Re], TANAKA, VAN EPENHUSEN; F85, H29{PL}

*Crepis capillaris* - *Smooth hawkbeard* {S}. The leaves are eaten; either raw or cooked. In Friuli, Italy they are gathered in the spring and mixed with more than fifty other wild greens in a traditional dish known as *pistic*. Europe, naturalized in North America. PAOLETTI; N84

*Crepis setosa* - *Rough hawkbeard* {S}. Young leaves are collected in the spring and used like those of *C. capillaris* in the Friulian ritualistic dish known as *pistic*. Europe, naturalized in North America. PAOLETTI; V84T, V87

*Cynara cardunculus* - *Cardoon* {S}. The blanched leaf-stalks are eaten boiled, batter-fried, braised, sauteed, pickled, or used in soups and stews. In Italy, raw strips are dipped into olive oil or *bagna cauda*, a hot anchovy and garlic dip. The root is thick, fleshy, tender, and of an agreeable flavor. It can be cooked like carrots or parsnips. The young leaves and stalks were eaten as a salad in

ancient Rome. Flower receptacles can be eaten like artichokes. Dried flowers are used as a substitute for rennet in making *Serra de la Estrela, Serena, Caciotta*, and *Torta del Casar* cheeses. Cultivated. BIANCHINI, CUSUMANO [Cul, Re], HALPIN [Cu, Cul], HEDRICK 1919, KOSIKOWSKI, KRAFT [Re], MACNICOL [Re], ROBINSON, R. 1995, SCHNEIDER 1986 [Pre, Re], VILMORIN [Cu]; B71G{PD}, C43M, C43M{PL}, C82, E13G{PR}, E61, E61{PL}, F35M{PL}, G68, J73, L13P{PD}, L99{ED}, N40{PR}, N54{PD}

#### CULTIVARS

**Gigante d'Inaeanolì:** Very uniform Italian cultivar. Large, fleshy, very tender white stalks, completely free of spines; gray-green leaves. Somewhat resistant to dry growing conditions. Planted in April and May for harvesting in the fall. Q11M

**Gigante di Romagna:** Very large, tender stalks, completely free of spines. Long toothed, silver-grey leaves. Often reaches 4 to 5 feet tall. Harvested in December. Decorative as well as useful. B49, C53, G53M, R32, S17, S55

**Ivorv Coast:** Ornamental as well as useful. Leaf stalks are harvested in late fall or winter for use as a cooked vegetable. Also makes striking dried flowers if harvested in midbloom. N7G

**Large Smooth:** Select strain, much improved over the old artichoke-leaved type. Smooth, thick, heavy stalks. Almost twice as heavy as older forms. Grows to 6 feet tall. Requires rich soil. C92, DIT, G57M, G71, J82, N52

**Plein Blanc Inerme:** 100 days. Large, smooth, fleshy solid white stalks. Completely free of spines. Grows 3 to 5 feet high with an equal diameter. Blanches readily. An excellent home garden type from France. E63D, N84, P59M

**Tenderheart:** 120-150 days. Plants grow 3 to 4 feet tall with deeply cut leaves, multiple side-branches, and a heavy flower-head with purple bristles. Blanched stalks of the inner leaves are tender and are used as a winter vegetable. 90 days from transplants. C69, G93M, I18M

**White Ivorv:** Very large, broad, slightly indented, ivory white leafstalks; self-blanching; spineless. Long, broad cut edges similar to artichoke leaves. Harvested from May to December, after the stalks have self blanched. Popular European cultivar. Q34

**White Thornless:** 180 days. Large, broad, ivory white stalks; smooth and thick; completely spineless. Tall, vigorous plant. D74B, N84

*Cynara humilis* - *Wild artichoke, Coque* {S}. In Morocco, the dried flowers are employed as a rennet in coagulating *raipe*, a type of sweetened junket or yogurt. The flower receptacles are used in the preparation of a popular *tagine* (stew). Mediterranean region. WOLFERT 1973 [Pre, Re]; Z19

*Cynara scolymus* - *Artichoke* {S}. The fleshy receptacles (sometimes called crowns), and the floral bracts are eaten raw, boiled, steamed, baked, fried, stuffed, marinated, etc. Small, or *baby artichokes*, that form on the lateral shoots are pickled, preserved in oil, or used in soups, stews, and omelettes. When marinated, they are sold as *artichoke hearts*. In Italy, the dried receptacles are utilized in soups. The tender, inner portion of the flower stalk has a sweet, nutty flavor and is eaten raw or cooked. Flowers are used as a substitute for rennet. The young leaf-stalks, which were once known as *artichoke chard*, are blanched and eaten like cardoon. For their renowned dish *Carciofi alla Giudia*, the ancient Roman Jews devised an ingenious technique for cleaning artichokes so that all inedible parts were removed. The Italian edible snail called *municedda* is said to develop a delicate flavor after feeding on young artichoke leaves. Also used in the preparation of a liqueur called *cyna*. Cultivated. BIANCHINI, BRYAN [Cul, Re], BURR, CARCIONE, GRAY, P. [Pre, Re], GRIEVE [Re], HACKETT, MACHLIN [Pre, Re], VILMORIN [Cu]; A76{P£}, C95, D76, D76{PL}, E42M{PD}, E42M{PR}, R47

## CULTIVARS

**Cal Green Globe:** Improved Green Globe type. Deep green, globe-shaped heads, lacking in purple tinge. Nearly free of sharp spines. Vigorous and prolific, often producing heads the first year from seed. B49

**Emerald:** Direct seeded type adapted to a wide range of growing conditions. Uniform, attractive, glossy green heads; ovoidal in shape; thornless; large, deep heart; thick, most flesh with a nutty flavor. Produces buds on long stems for easy harvest. Can be grown as an annual or perennial. Developed by D. Palmer Seed Co. I85

**Green Globe:** Large heads, nearly round, and with a dusky, purplish tint; thick, highly flavored scales. Receptacles are very fleshy, more so than in most cultivars. Plants grow 4 to 6 feet high, 6 to 8 feet wide. Mature plants may yield 12 to 20 buds each. The standard cultivar, valued for its ability to produce uniform plants from seed. C44, C92, E38, E42M{PL}, E42M{PD}, E42M{PR}, E97, F15{PR}, G68, G71, L89

**Green Globe Improved:** 180 days. Much improved strain. Large, globe-shaped heads; deep-green throughout, no purple tint; 2 to 4 inches in diameter. Consistently heavy-bearing plants, 4 1/2 to 5 feet tall; the number of sharp spines greatly reduced making it easy to harvest. Like Green Globe, produces heads the first year from seed. A88M{PL}, B49, C20M, C54, DIT, F82, I67M, J20, K71, L91M, Q34

**Gros Vert de Laon:** Large, broad, thick, fleshy receptacles; pale green, slightly tinged with violet at the base; spineless. Silvery-gray leaves with reddish ribs, especially at the base. Vigorous plant of medium height, reliably productive. Reproduces fairly well from seed. An old French heirloom, at one time widely grown around Paris. VILMORIN; N84, P59M

**Imperial Star:** 150 days. Large, uniform, glossy medium-green heads; thornless bracts, slow to spread open at maturity. Excellent flavor and tenderness. Compact plants. Widely adapted but commonly used as a very fast maturing, direct-seeded annual crop for the coasts, inland valleys and even desert areas of the West. Developed by the University of California. B75, DIT, D11M, DIIMPL, D12, D68, E63D, F70, F70{PL}, G6, G93M, I91, J9M, K23{PL}, K66, etc.

**Northern Star:** The first Green Globe type artichoke bred for overwintering and a spring harvest. Good uniformity, better than most Green Globe strains. Has survived sub-zero temperatures without protection. Grown as a biennial, the seed being sown in spring and early summer for harvesting the following spring. Developed by Tim Peters. J9M

**Purple de Jesi:** Produces the small artichokes the French and Italians eat raw or "cru" when the heads are very young and tender. Also good steamed. Medium-large, spineless green heads, markedly tinged with reddish-purple. Q34

**Purple Sicilian:** Produces the small, deep purple artichokes the French and Italians eat "cru" or raw, when very young and tender. Also good steamed. Heat tolerant, but not cold resistant; mulch if temperatures drop below freezing, or over-winter in large tubs. K49M

**Violetto di Chioaia:** (Violetto) Produces a flavorful and attractive purple head, decorative enough for the flower border. More elongated than the Green Globe type. Some heads will be green from this seed, so select the best before planting out. These selected plants can then be propagated by division. C53, B75, I18M, J20, K23{PL}, L89, N84, Q11M, Si 7, S55

**Violetto di Romaana:** (Purple Romanesco) Produces large, globe-shaped, greenish violet heads that are spineless. B8, Q11M

*Dahlia pinnata* - *Garden dahlia* {S}. The tubers are eaten as a vegetable in some parts of Mexico. Flower petals can be eaten in salads. A sweet extract of the tuber, marketed as *Dacopa*, is used as

a beverage or flavoring. It is mixed with hot or cold water or milk, or sprinkled on ice cream. Its naturally sweet, mellow taste is said to combine the characteristic flavors of coffee, tea, and chocolate. Central America, cultivated. HEDRICK 1919, UPHOF; A25G{PD}, C95, L34{PD}, L69{PL}, N84, P38, R47

*Elephantopus mollis* - *Elephantopus scaber*

*Elephantopus scaber* - *Mao-ti-tan-t's'ao*, *Elephant's foot* {S}. The young leaves are eaten like spinach. In Nepal, powder made from the plant is added to *marcha*, a fermentation cake used in the preparation of local beers and alcoholic drinks. Tropics. MANANDHAR, TANAKA; N84

*Emilia sonchifolia* - *Floras paint brush*, *Yieh-hsia-hung* {S}. The young, not yet flowering plant is eaten in salads, soups, or steamed and consumed as a side dish with rice. Frequently sold in the native markets of Java. Tropics, weedy. CRIBB, JACQUAT, OCHSE, TANAKA; N84

*Erechtites valerianifolia* - *Brazilian fireweed* {S}. In Indonesia, the flowering tops are eaten raw, or steamed and served with rice. Tropical America. BURKILL, CRIBB, OCHSE; N84

*Erigeron canadensis* - \* *Conyza canadensis**Farfugium japonicum* - \* *Agularia kaempferi*

*Galinsoga parviflora* - *Quickweed*, *Gallant soldier*, *Guascas* {S}. The leaves, stems, and flowering shoots are cooked and eaten as a potherb, or added to soups and stews. In Colombia, the herb is sold in jars, dried and ground into a green powder. It is used there to flavor soups and stews, especially those made with chicken. The fresh juice can be drunk mixed with tomato or other vegetable juices. South America, naturalized in North America. CRIBB, FERNALD, GIBBONS 1979, HARRINGTON, H., LAUNERT, ORTIZ 1979; F85, M34M

*Grindelia squarrosa* - *Resinweed*, *Gum plant* {S}. The fresh or dried leaves are used to make an aromatic, slightly bitter but pleasing tea. A sticky, resinous sap that covers the leaves can be used as a chewing gum substitute. Western North America. KINDSCHER, KIRK; F80, H61M, N84

*Guizotia abyssinica* - *Niger seed*, *Ramtil* {S}. The seeds are eaten fried, used as a condiment, or mixed with honey and flour and made into sweet cakes. Also the source of an edible oil used in cooking, as a substitute for *ghee*, or an adulterant of sesame oil. In Ethiopian cooking, it is used in place of *niter kibbeh*, a clarified, spiced butter. Sold as *thistle seed* for feeding birds in the United States. Tropical Africa. BIANCHINI, UPHOF, VON WELANETZ, WATT; DIT, F80, F85, K27M, L3J, N84

*Gundelia tournefortii* - *Cardi*, *Accoub*, *Hacub*, *Kenger* {S}. The leaves, thick stems, undeveloped flower buds, and roots are all eaten. They are said to combine the flavors of artichoke and asparagus. Roots and stems can be peeled and eaten raw. Stems are often cooked with chick peas or wheat berries. The buds are excellent boiled and sauteed in butter, like artichoke. The roots are considered more flavorful than salsify or scorzonera. Seeds are dried, ground and used as a coffee substitute, called *kenger coffee*. Highly prized in Lebanon, Syria and other areas where it is sold in local markets. Middle East. HEDRICK 1919, KARAOGLAN [Re], LOVELOCK, OZTURK, PAILLIEUX, UPHOF; N84, Q24

*Gynura bicolor* - *Velvet plant* {PL} Young leaves and shoots are eaten as a vegetable or cooked in soups. In Japan, the succulent foliage is eaten flavored with a sauce of sake, shoyu, and vinegar. Indonesia. HEDRICK 1919, LARKCOM 1991, YASHIRODA; E48

*Gynura crepidioides* - \* *Crassocephalum crepidioides**Gynura procumbens* -+ *Gynura sarmentosa*

*Gynura sarmentosa* - *Bdu ddt, Rau hung lui, Purple passion plant* {PL}. The leaves are used as a condiment or eaten as a vegetable. Tropical Asia. BURKILL, UPHOF, VAN DUONG; E48, G96, 157

*Helianthus annuus* - *Sunflower* {PD}. The seeds are eaten raw, boiled, roasted, salted, or made into sunflower butter, nut milks, and *tempheh*. In the Ukraine, they are used for making a type of *halava*. Also the source of an edible oil used in salads, cooking, margarine, etc. Young seedlings, called *sunflower lettuce*, are popular with natural foods enthusiasts. The flower receptacles can be steamed and served like artichokes. Ground seeds are sometimes added to soups. The bittersweet flower petals can be cooked with pasta or other foods. The boiled seeds are mixed with water and honey to form the refreshing Ethiopian beverage called *suff*. Germinated seeds are blended with water and fermented into *seed yogurt* or *seed cheese*. The young petioles are eaten grilled and seasoned with oil and salt. Roasted hulls of seeds are used as a substitute for coffee. Produces a yellow honey with a rich, distinct buttery flavor that is excellent for baking. North America, cultivated. BARASH [Re], BIANCHINI, COLE, C. 1990 [Re], CRANE 1975, HEDRICK 1919, HEISER 1976, HUGHES, P. [Re], KULVINSKAS, MACNICOL [Re], MORSE [Re], ROSENGARTEN, SHUKTLEFF 1979, UPHOF, WILSON, G; C94M, G0{DF}, H80M, K37P, K54, L14G, M63M, N54. (for cultivars see Sunflower, page 548, see also Sprouting Seeds, page 524)

*Helianthus annuus* ssp. *lenticularis* - *Wild sunflower* {S}. Parched seeds are ground into meal and used in breads, cakes, and rich soups. The roasted shells, after the starch has been removed, or the roasted seeds are used in preparing a coffee-like beverage. An edible oil can be extracted from the pounded seeds. North America. ANGIER, FERNALD, GIBBONS 1962, HARRINGTON, H., KINDSCHER, MEDSGER, TURNER 1979 [Pre, Re]; A2, A12M, C6M, F44, F59, I15M, J25M, M34M, M47M, N7G, N84

*Helianthus giganteus* - *Giant sunflower* {S}. The seeds were ground into flour, mixed with corn meal and used for making bread by the Choctaw Indians. North America. UPHOF; D92M, J41M, J41M{PL}, J43, N84

*Helianthus x laetiflorus* (*H. rigidus* x *H. tuberosus*) - *Showy sunflower* {S}. Natural hybrid. The edible tubers are said to have a flavor indistinguishable from that of the Jerusalem artichoke. North America. GIBBONS 1979, MEDSGER; D92M, G47M, J39M, J39M{PL}, J40, J42, J42{PL}, J43, M77M{PL}, N84, 053M, Q24

*Helianthus maximilianii* - *Maximilian's sunflower* {S}. Tubers may be eaten raw, roasted, or boiled. North America. KIRK, YANOVSKY; B38, F80, I11, I11M{PL}, 147, J25M, J25M{PL}, J41M{PL}, K49Z, L41, L66{PL}, M25, N84, Q24

#### CULTIVARS

**Prairie Gold:** Perennial sunflower with Jerusalem artichoke-like tubers which are edible but not very productive. The Land Institute in Salina, Kansas is investigating their oil-seed potential as part of a non-tillage permaculture system. K62

*Helianthus tuberosus* - *Jerusalem artichoke, Sunchoke, Topinambour* {PL}. The inulin rich tubers are eaten raw in salads, steamed, fried, baked, pickled, pureed, or used in soups, casseroles, and pies. Commercially, they are used in the preparation of low-starch *artichoke pasta*. Jerusalem artichoke flour, high in inulin and *fructo-oligosaccharides*, can be added to baked goods, salad dressings, juices, smoothies, or sprinkled on cereal. Roasted tubers are used as a substitute for coffee. Sometimes marketed as sunchoke, although this name was originally given to the hybrid between the Jerusalem artichoke and the common sunflower, which has been investigated as a possible sugar crop. North America, cultivated. ANGIER, FERNALD, GIBBONS 1962, HALPIN [Cu, Cul], HEISER 1976, HERKLOTS, KINDSCHER, MURRAY, SCHNEIDER 1986 [Pre, Re], VILMORIN [Cu]; A25G{PD}, B31{PD}, B73M, C43M, C82, D65, D68, E13G{PR}, E31{PD}, F17{PD}, F97M{PD}, G16, G71, H15T{PD}, H42, I66{PD}, L14G{PD}, N40{PR}, etc.

#### CULTIVARS

**Brazilian:** Large, white-skinned tubers produced in abundance. Matures in mid to late September. Very tall, vigorous plants occasionally reaching 12 feet in height. J9M

**Carson:** Large, fairly uniform tubers with purplish skin. Selected for its mild, sweet, nutty flavor and crisp texture. Extremely prolific plant, about 6 feet tall. Originally from Mike Carson of Grand Forks, British Columbia. K17M

**Challenger:** The most productive cultivar among dozens tested by researchers at Agriculture Canada. Not a strong bloomer. H24

**French Mammoth White:** (White Mammoth) Large, knobby, white-skinned tuber; difficult to clean; matures late; does not store well. Tall, vigorous plant; height 8 to 10 feet; heavy yielding. Standard knobby type cultivar. K49M

**Fuseau:** 95 days. Large, tapered, sweet potato-like tubers; 4 to 5 inches long, 1 to 1 1/2 inches in diameter; skin tan-colored, very smooth and entirely free of the knobs that characterize the common types and makes cleaning difficult. Matures early, about a week later than Stampede. Height 7 to 9 feet. Tubers are very elongated even in sandy soil. An old French cultivar. A91, J99G, K20M, K49M, R32

**Golden Nugget:** Long, thin tubers; shaped somewhat like an elongated radish or carrot; 3 to 3 1/2 inches long, 1/2 to 1 inch in diameter; skin very smooth, free of knobs, dark reddish-orange in color. Excellent for pickling. Non-aggressive growth habit. Produces heavy crops of consistently small tubers. Matures within a week of Stampede. K49M

**Jack's Copperclad:** Long, plumb, knobby tubers. Attractively colored with copper and rose Very good flavor. Tall plants, about 10 feet in height. High yielding. F73D, N84

**Long Red:** Large, tapered, sweet potato-like tubers; similar to Fuseau. Glossy, red-colored skin. K20M, K49M

**Maaenta Purple:** Large, brilliantly colored tubers born in abundance. Very dark purple with dark-pink splotches. F73D, N84

**Red:** Elongated, red-skinned tubers with a sweet nutty flavor. Bushy plants that grow 4 to 8 feet tall with small, sunflower-like blossoms. Matures in midseason. Very prolific. A91, 160, J5M, M82

**Red Fuseau:** An attractive maroon-red version of Fuseau. Smooth, elongated roots that are easy to clean. Loses its color when cooked. Matures early in the season. Sweeter than Stampede. Large, vigorous plant that spreads rapidly. Red coloration is not noticeable on the above ground plant. E24, J99G, M16

**Skoroelka:** Selected strain originating in Russia. Very large, fat, knobby tubers. Attractively colored with cream and lavender. Produces good crops in a fairly concentrated set. F73D, N84

**Smooth Garnet:** (Garnet) Long, medium-sized, ruby-red tubers; smooth and free of knobs. K49M, N24M

**Stampede:** 90 days. A special high-yielding, extra-early strain. Flowers in July and matures more than a month before common cultivars. White-skinned tubers are large, often weighing over 1/2 pound each. Relatively dwarf; height about 6 feet. Winter hardy in severe cold. Developed by Indians in northern Ontario who selected plants for earliness and tuber size. E24, G6, H24, J9M, J99G, M16, N24M

#### *HeUchrysum angustifolium* -\**Helichrysum itaUcum*

*Helichrysum arenarium* - *Everlasting* {S}. The spicy, aromatic, dried yellow flowers keep their color well, and are often added to commercial herbal teas for color. Eurasia. D92M, J82, N84, 053M, Q24



*Helichrysum italicum* - *Curry plant* {PL}. The finely chopped or minced leaves may be used to flavor omelettes, scrambled eggs which are not cooked for long, or stuffed eggs. Flower-heads are used for tea. Also the source of an essential oil and extract, which are used to enhance fruit flavors in candy, ice cream, baked goods, soft drinks, and chewing gum. Southern Europe. MORTON 1976, PAINTER [Re]; A97, C9, C43M, C67M, F35M, G96, H94M, J66, J76, J82, K22, K85, M35, M53, R53M, etc.

#### CULTIVARS

**Dwarf:** (Nana) A more dense, dwarf strain of curry plant, only growing to about 11/2 feet tall. Has a fine scent, nice color and attractive, yellow-bronze flowers. Excellent in containers. C43M, E61, G96, H29M, J57, J66, K22, K57, L94M, M35, N42, N84, R53M

*Helichrysum petiolatum* - *Licorice plant, Silver licorice* {PL}. The roots have a distinct licorice-like flavor and can be used for culinary purposes. Cultivated. F15M, G96, H51M, H94M, J82, K57, M35, M82, N84{S}

*Hypochoeris radicata* - *Spotted caCs-ear* {S}. The young leaves can be eaten raw in salads, boiled and served like spinach, or briefly wilted in hot bacon grease or peanut oil. Europe. CRIBB, FOX, E, GIBBONS 1979, MABEY; N71M, N84, 053M

*Inula crithmoides* - *Golden samphire* {S}. Young leaves are occasionally eaten as a potherb. The fleshy leaves and young shoots were formerly pickled in vinegar, and added to salads as a relish. They were often used as an adulterant of true samphire, *Crithmum maritimum*. Europe. BURR [Cu], GRIEVE; V85, W59M, W88M

*Inula helenium* - *Elecampane, Horse-heal, Elf dock* {PL}. The root is made into candy, sweetmeats, and syrup. Also used for flavoring puddings, fish sauces, beer, cordials, *vermouth*, and French and Swiss *absinthe*. The young, bitter leaves were used as a potherb by the ancient Romans. Eurasia, cultivated. FERNALD, GIBBONS 1966b [Re], GRIEVE [Cu], MORTON 1976, UPHOF; C43M, C67M, D92M{S}, E61, E61{S}, F35M, F80{S}, I81T{PR}, I81T{DF}, J76, K85, N71M{S}, 053M{S}, R47{S}

*Ixeris dentata* - *Nigana, Ssumbagwi* {S}. Whole young plants are gathered and eaten raw or used as *namul*, a seasoned vegetable dish. The roots are boiled and eaten. Recently brought into cultivation in Korea. Eastern Asia. PEMBERTON, TANAKA; V29M

#### *Lactuca alpina* - *Cicerbita alpina*

*Lactuca indica* - *Indian lettuce, Indian salad* {S}. The leaves are eaten raw in salads, steamed, or added to soups. In Indonesia, they are used for wrapping and frying fish, especially eels. Asia, cultivated. HERKLOTS, OCHSE; N84

*Lactuca perennis* - *Peiennial lettuce* {S}. Young or blanched leaves are used as salads in some parts of southern Europe. They are also occasionally eaten boiled like spinach or endive. Europe. BURR, UPHOF, VILMORIN; N84

#### *Lactuca saligna* - *Lactuca indica*

*Lactuca sativa* - *Lettuce*. The leaves are widely eaten raw, especially in tossed salads and sandwiches. Also boiled as a potherb, pickled, braised, sauteed, fried, pureed, or used in soups and stews. Larger leaves can be used as natural cups for seafood or fruit salads. In the Middle East, the bulghur wheat salad *tabouli* is wrapped in lettuce leaves and eaten out of hand. Sprouted seeds can be used in salads and sandwiches. Cultivated. CARCIONE, FELL 1982b, HERKLOTS, LARKCOM 1984 [Cu], OCHSE, ROOT 1980a, ROUTHIER 1993, VILMORIN [Cu]; (for cultivars see *Lettuce*, page 409)

*Lactuca sativa* Angustana Group - *Celuce, Asparagus lettuce, Chinese lettuce* {S}. Young leaves are eaten raw in salads, cooked, preserved, or served with miso. The thick, tender stem is crisp and juicy, with a flavor variously described as being like that of lettuce, celery, artichoke, asparagus, squash, or chard. It is peeled, sliced,

and eaten raw, braised, sauteed, pickled, stir-fried or cooked in soups. DAHLEN [Pre, Cul], FELL 1982b, KRAFT [Re], HALPIN [Cu, Cul], HERKLOTS, TANAKA, VILMORIN; B49, C27G{PD}, D11M, D27, D55, F70,139, K49M, L42, L91M, M46, 053M, R47, S63M

#### CULTIVARS

**Majesty:** Long, greenish-white stem, 2 1/2 to 3 inches in diameter; crispy, light-green flesh; suitable for pickling Young leaves can be added to salads or used as a green vegetable. Vigorous, fast-growing plant, resistant to *Cercospora* leaf spot. Q39

**Narrow Leaf:** Very long, narrow leaves; 2 inches wide, 12 inches or more long. The pointed leaves have a very decorative, drooping habit. Originated in southern China. E83T, PIG

**Red:** (Cracoviensis) 45-50 days. A form of asparagus lettuce with reddish stems and bronzy leaves. When young, forms a rosette with heavy reddish-purple accenting. Bolts rapidly but retains a buttery flavor. Grown and used in the same way as the common form. VILMORIN; D68, F73D, N7G

**Round-Leaved:** Slightly crumpled leaves, more or less the shape of Romaine lettuce leaves; somewhat darker green than Narrow Leaf. Similar growth habit. Originated in Taiwan. E83T

#### *Lactuca scariola* - *Lactuca serriola*

*Lactuca serriola* - *Prickly lettuce, Wild lettuce, Compass plant* {S}. The young, tender leaves make a very good salad, cut in pieces with a little chopped onion and served with French dressing. As a potherb, it needs very little cooking and is excellent when served with a hot dressing of melted butter and vinegar. Seeds are the source of Egyptian *lettuce seed oil*, a semi-drying, pleasant-flavored oil used in foods. Eurasia, naturalized in North America. GIBBONS 1966b, MEDSGER, UPHOF; N71M, N84, 048

*Lapsana communis* - *Nippelwort* {S}. The young leaves are eaten raw in salads and sandwiches, cooked like spinach, or added to omelettes, soups, and casseroles. They are said to have a bitter, or radish-like taste. Eurasia. HEDRICK 1919, LAUNERT [Re]; N71M, N84, 048

*Leontodon autumnalis* - *Fall dandelion* {S}. The leaves are added to salads or cooked in a variety of ways like spinach. A traditional favorite in Italy, especially for salads. When used as a cooked vegetable, the first cooking water is usually discarded. Eurasia. CRET; N71M, NU, Q24

*Leontodon hispidus* - *Rough hawkbit* {S}. Young leaves are eaten in salads. Roasted roots have been recommended as a substitute for coffee. Eurasia. MABEY, UPHOF; N71M, N84, 048, 053M

*Leucanthemum vulgare* - *Oxe-eye daisy* {S}. The young leaves are finely chopped and eaten in salads, sandwiches, omelettes, or added to soups. Pungent in flavor, they should be used sparingly or mixed with other salad plants. The flower-heads can be used in the same way as dandelion for home winemaking. Eurasia, naturalized in North America. FERNALD, GIBBONS 1979, LAUNERT; B39M, B39M{PL}, D11T{PL}, F44, F80, G0{DF}, G47M, H61M, J82, M47M, N7D{DF}, N9M, N9M{PL}, N11M, N23, etc.

#### *Leyssera gnaphaloides* - *Asteropterus gnaphaloides*

*Ligularia kaempferi* - *Silveredge, Tsuwabuki, Japanese silver leaf Wild butterbur* {S}. Petioles are boiled in water to remove the harsh flavor, skinned of their outer bark, and used for adding flavor to salads and other dishes, or otherwise served like those of *Petasites japonicus*. Japan. SHURTLEFF 1975, TANAKA, YASHIRODA; F85, H4{PL}, N84

#### *Ligularia tussilaginea* - *Ligularia kaempferi*

*Madia sativa* - *Chile tarweed* {S}. Seeds are eaten raw, roasted, dried, or used for *pinole*. The crushed seeds are a good addition to soups. Also the source of a sweet, edible oil, called *madia oil*, used as a substitute for olive oil. Western North America, South Amer-

ica, cultivated. GIBBONS 1979, HEDRICK 1919, KIRK, MEDS-GER, TANAKA; F80, N7G, N84

*Matricaria chamomilla* - *Chamomilla aurea*

*Matricaria matricarioides* - *Pineapple-weed* {S}. The fresh or dried leaves and flowers make a pale golden, pineapple-scented tea when steeped in hot water. The pineapple flavor is enhanced if the flowers are left in the tea when drinking. Western North America. GIBBONS 1979, NORTON, PETERSON, L., ROOS-COLLINS; E7M, N84, 048

*Matricaria recutica* •\* *Chamomilla aurea*

*Onopordum acanthium* - *Scotch thistle*, *Cotton thistle* {S}. The fairly large flower receptacles can be cooked and eaten like those of the artichoke. Tender young shoots are peeled, boiled, and served like cardoon or burdock. An oil expressed from the seeds has been used for culinary purposes. Floral parts are used as an adulterant of saffron. Mediterranean region. FERNALD, GRIEVE, HEDRICK 1919, LAUNERT, UPHOF; C43M, C43M{PL}, D92M, H21, L56{PL}, L91M, M82{PL}, N71M, N84, 053M, Q24, S55

*Pectis angustifolia* - *Chinchweed* {DF}. The leaves and young shoots are eaten raw, cooked or after having been dried. Also used as a seasoning for other foods, having a strong lemon-like aroma. Western North America. ALISCHUL, KIRK, YANOVSKY; N29

*Petasites frigidus* - *Sweet coltsfoot* {S}. The young leaves are mixed with other greens and used as a potherb by the Eskimos in Alaska. Young stalks and flower heads are cooked and eaten. Roots are roasted and eaten. Western North America. HELLER, KUNKEL, UPHOF; C95, E15, F88M, N84

*Petasites frigidus van palmatus* - *Petasites palmatus*

*Petasites japonicus* - *Fuki*, *Sweet coltsfoot*, *Butterbur* {PL}. The leafstalks are boiled and seasoned with salt or soy sauce, pickled and used in winter soups, or preserved in miso and sake lees. The flowerbuds have a slightly bitter yet agreeable flavor and are prized as a vegetable and condiment in Japan. They are eaten while still green with miso or boiled down in soy sauce. The leaves are used for wrapping tofu and glutinous yam in the Japanese dish known as *naruto-dofu*. Eastern Asia, cultivated. HOMMA, LARKCOM 1991, SHURTLEFF 1975, SHURTLEFF 1976 [Re], TANAKA, TSUJI [Pie], UPHOF, YASHIRODA [Cu, Cui]; B28, F35M, 174, J37M, M16, N37M

*Petasites japonicus* 'Giganteus' - *Akita-buki*, *Giant sweet coltsfoot* {PL}. Leafstalks are parboiled and seasoned with soy sauce or candied. They are occasionally canned. The flower buds are eaten as a vegetable or used as a condiment. Similar to *P. japonicus*, but with much larger leafstalks. Eastern Asia, cultivated. HOMMA, LARKCOM 1991 [Cu], TANAKA; A61, B77, C74, D95, E61, 174, K22, K85, M77, M87, M92

CULTIVARS

Varieaatus: Similar to the above, but the leaves are variegated with patches of creamy yellow. Requires some shade. Hardy in Zone 5. D95, E61

*Petasites palmatus* - *Palmate butterbur*, *Sweet coltsfoot* {S}. The young flower-stalks, before the flowerbuds appear, can be boiled until tender and seasoned with salt and butter. The flowerbuds are also cooked and eaten. Leafstalks are peeled and eaten raw. Ash of the plants is used as a substitute for salt. North America. FERNALD, GIBBONS 1979, TANAKA, YANOVSKY; A2, D95{PL}

*Picridium vulgare* - *Reichardia picroides*

*Picris echioides* - *Common ox-tongue* {S}. The very young leaves are tender and slightly sweet and can be mixed with other greens or cooked alone. In France and Italy, they are often an ingredient of vegetable soups. Europe. CRETTE, WOLFERT 1998; N84

*Pluchea indica* - *Indian sage*, *Lontis* {S}. Young leaves, shoots and inflorescences are eaten raw in tossed green salads, steamed and

served as a side-dish with rice, added to soups, or mixed with hot pepper sauce. Also used as a condiment. Tropical Asia, Australia. MARTIN 1975, OCHSE; F85, N84

*Polymnia sonchifolia* - *Yacon*, *Llacon*, *Strawberry jicama*, *Bolivian sunroot* {PL}. The sweet, juicy tubers, when properly grown, can be eaten out of hand like a fruit. Otherwise they can be sliced and added to tossed salads, or shredded and mixed with other sweet roots such as carrots and sweet potatoes in cold salads. The tubers are sweeter after they have been cured in the sun, although some of their crisp texture may be lost. In the Andes, the grated pulp is squeezed through a cloth to yield a sweet, refreshing drink. The juice is also concentrated to form dark-brown blocks of sugar called *chancaca*. Leaves are said to be edible. Andean South America, cultivated. HERKLOTS, KUNKEL, NATIONAL RESEARCH COUNCIL 1989, UPHOF; D57, E13G{PR}, 174, K67, L55J, N84, Q49M, R49

*Porophyllum ruderales* - *Papalo quelite*, *Quillquiha* {S}. The leaves are eaten raw in salads, added to guacamole, or with tacos. They have a very distinctive, pungent aroma and flavor which some have compared to cilantro. In Bolivia they are chopped finely and added to local stews and a delicious salsa made with tomatoes, onions and locoto chile. The Mexican name is derived from *Papalotl*, Nahuatl for "butterfly". Central America. CARDENAS, QUINTANA 1994 [Re], VON REIS; A2, C95, D92M, E81M, F68T, F73D, F80, F86G, I74{PL}, J82, K49T, L77D, L94M, N84

*Ratibida columnaris* -> *Ratibida columnifera*

*Ratibida columnifera* - *Coneflower*, *Mexican hat* {S}. The leaves and flower-heads may be brewed into a pleasant tea. Western North America. KIRK, YANOVSKY; A53M, C43V, D47M, F59, G47M, H80, 111, J25M, J41M{PL}, J88, K62, L41, N11M

*Reichardia picroides* - *French scorzonera* {PL}. The leaves have a very mild, slightly sweet, agreeable flavor, and while young and tender, are mixed in salads. One of the ingredients of *gerbi* and *preboggion*. Gerbi is a mixture of greens and herbs gathered from the wild in the Cinque Terre region of the Italian Riviera, and then eaten with beans and potatoes and a dressing of olive oil and lemon juice. Preboggion, from the Genoa province, is a mixture of wild greens which serve as filling for a ravioli-like dumpling known as *pansotti*. Roots are also eaten. Macaronesia, Mediterranean region. ANDREWS, C. 1996 [Re], BURR [Cu], HEDRICK 1919, VILMORIN; R49

*Salmea* sp. - *Palito de Chile* {S}. Young leaves are cooked and eaten with beans. Tender tips of the stems can be eaten raw. Shrub to 3 feet tall with white flowers. Oaxaca, Mexico. THEODOR-OPOULOS; F80

*Santolina chamaecyparissus* - *Lavender cotton*, *Grey santolina* {PL}. The aromatic leaves can be used for flavoring broths, sauces, meats, fish, grain dishes, etc. Southern Europe, cultivated. BRYAN [Cu, Re]; A97, B28, C43M, C67M, D92M{S}, J76, J82{S}, K22, K85, M35, M82, N19M, 053M{S}

*Saussurea lappa* - *Costus*, *Kuth*, *Mu Xiang* {DF}. Aromatic roots are occasionally used as a spice. They have a characteristic penetrating odor reminiscent of violet, orris and vetiver. Also the source of an essential oil used in the food industry for flavoring baked goods, gelatins and puddings, beverages, candy and confectioner's frosting. Himalayan region. ATAL, KUNKEL, LEUNG; E14T, F37T, G19P, G73, N7D

*Scolymus hispanicus* - *Spanish salsify*, *Cardillo*, *Golden thistle* {S}. The fleshy roots are eaten boiled, mashed, baked, or used as a substitute for coffee. Young, tender leaves and blanched leaf-stalks are consumed in salads. They are much appreciated in Madrid where they are prepared as a cooked vegetable dressed with olive oil, salt and vinegar. Flowers are used to adulterate saffron. Mediterranean region. BURR, HAWKES, HEDRICK 1919, KUNKEL, ORGAN [Cu, Cu], SEVILLA 1997b, TANAKA, VILMORIN; W88M, X54, Y89M

*Scolymus maculatus* - *Spotted golden thistle*, *Tagarnina* {S}. Young leaves are eaten in salads, cooked as a potherb, or added to casseroles and omelettes. The roots are boiled and eaten. Mediterranean region. HEDRICK 1919, KUNKEL, SEVILLA 1997b; V84T, W88M

*Scorzonera deliciosa* - *Scorzonera undulata ssp. deliciosa*

*Scorzonera hispanica* - *Black salsify*, *Mock oyster*, *Coconut root* {S}. The long, blackish roots are eaten boiled, steamed, baked, batter-fried, or cooked in soups and stews. Young, tender shoots, known as *chords*, can be added to tossed salads. The flower buds, whether raw or cooked and cooled, can be eaten as a salad. The yellow flower petals have their own distinct flavor and may be sprinkled on a salad. Also used in the French dish *omelette aux fleurs de salsifis*. Roasted roots are used as a coffee substitute. Mediterranean region. FELL 1982b, HALPIN [Cu, Cul], KRAFT [Re], MACNICOL [Re], SCHNEIDER 1986 [Pre, Re], UPHOF, VILMORIN; B49, D11M, F70, 139, J82, K49M, N40{PR}, 053M, Q34, R47, S55

#### CULTIVARS

**Duplex:** Very long, cylindrical roots, 8 to 10 inches in length; blunt ended; deep black skin; creamy white flesh with a delicious flavor; quality excellent. High yielding. Should be planted early in rich, deeply worked soil. C85M

**Flandria:** 80 days. A new cultivar introduced by a distinguished European breeder. Very uniform, cylindrical roots, about 12 inches long; tapered to a point; smooth, dark black skin; tender white flesh. The flavor is nut-like, mild, and somewhat reminiscent of coconut. Very productive. Somewhat susceptible to bolting. P59M

**Giant Black Russian:** (Geante Noire de Russie) Very long, thin, coreless, smooth black roots with large shoulders characterize this European market growers selection. Reaches 15 inches or more in length. Smooth, firm texture; rich flavor. Deep, loose soil is required for best production. E63D, G68, L3J, N84, Q11M

**Giaantia:** 120 days. A select European strain. Roots are long and cylindrical and relatively stout. The flavor is rich, and the texture smooth and firm. Delicious raw. G6

**Lanae Jan:** (Long John) 115 days Very uniform, smooth, thick, heavy-yielding roots. Long and cylindrical, with black skin and white flesh. Bolt resistant. Selected strain from Europe. G6, K50, N81, P59M, S61M

**Maxima:** Roots are 11 to 13 inches long, cylindrical with a blunt end. Production capacity is very good. Has performed very well in Dutch Official Cultivar Testing. N84, R32

**Omeaa:** An improved type with very long, slender, black roots and a short top. More productive and of better quality than standard sorts. Despite the great length of the root, it is easy to dig up. *RIIM*

*Scorzonera undulata ssp. deliciosa* - *Delicious scorzonera* {S}. The sweet, delicious roots are widely used in Sicily for making various confections. They are candied in sugar or made into syrups, jams, sorbets, ice creams, refreshing orchata-like beverages, tea, juleps and jasmine-perfumed ices. Mediterranean region. HEDRICK 1919, PAILLIEUX; W59M

*Silphium laciniatum* - *Rosinweed*, *Compass plant* {S}. The resinous exudation that forms on the upper parts of the flower-stalk has been used as a chewing gum. North America. FERNALD, MEDSGER; G47M, G89, H63{PL}, H70M, H70M{PL}, J39M, J39M{PL}, J40, J40{PL}, J41M{PL}, J42, J42{PL}, J43, N37M{PL}

*Silybum marianum* - *Milk thistle* {S}. Young leaves are trimmed of prickles and eaten raw or boiled. The stems can be peeled, chopped, and used in salads, or soaked in water to remove the bitterness and then stewed like rhubarb. Young flower receptacles are boiled and served like those of artichoke. Seeds are roasted and used as a coffee substitute. The roots are also edible, either raw or cooked.

Mediterranean region. CLARKE, GRIEVE, LARKCOM 1984, MABEY, UPHOF; A26, A97{PL}, C43M, C43M{PL}, C95, D92M, F24D, F80, K2, K22{PL}, M15T{PL}, M82{PL}, 053M,

*Solidago canadensis* - *Canada goldenrod* {S}. Seeds were eaten by Indians of several tribes. The leaves can be used for tea. North America. MARCIN, UPHOF; A2, D11T{PL}, D47M, E15, F68T, F85, F86G{DF}, F88M, 147, J25M, J42, L94M, N71M, N84

*Solidago graminifolia* - *Fragrant goldenrod* (S). Fresh or dried leaves are used as a substitute for tea. The flowers yield a thick, heavy-bodied, deep golden yellow honey with a strong aroma and a more pronounced flavor than clover honey. North America. CRANE 1975, PELLETT; B29, B51, D17{ED}, J39M, J39M{PL}, J42, J42{PL}, N84

*Solidago missouriensis* - *Missouri goldemod* {S}. Young leaves are eaten in salads or cooked as a potherb. The dried leaves and the dried, fully expanded flowers make good tea. North America. KIRK, YANOVSKY; B29, B29{PL}, J43, N84

*Solidago odora* - *Sweet goldenrod* {PL}. The dried leaves and dried, billy expanded flowers are used for brewing an aromatic anise-flavored tea, known as *Blue Mountain Tea*. North America. FERNALD, GIBBONS 1962, MARCIN MEDSGER, WEAVER 1993 [Re]; B61M{S}, C43M, D92M{S}, E61, G0{DF}, H61M{S}, I11M, K22, K85, M77M, N84{S}

*Solidago suaveolens* - *Solidago odora*

*Sonchus arvensis* - *Field sow-thistle* {S}. The young shoots and leaves are eaten in salads, added to curries, or cooked like spinach and served with rice. Roots are used as a substitute for coffee. In Indonesia, an improved type is grown for its leaves. Eurasia. CROWHURST 1972, HARRINGTON, H., LAUNERT, OCHSE, TANAKA; N84

*Sonchus asper* - *Prickly sow-thistle*, *Puha tiotio* {S}. The tender leaves and flowering tops may be used raw in salads or cooked and served like spinach. The stems should be bruised and the bitter, milky juice washed out before eating or cooking. Eurasia. CRIBB, KIRK, OCHSE, PAINTER [Pre, Cul]; N84, 048

*Sonchus oleraceus* - *Common sow-thistle* {S}. Young leaves are employed as an ingredient of salads, boiled like spinach, or cooked in soups, souffles, frittatas, and porridges. The young stalks are peeled of their outer skin and boiled and served like asparagus. The roots are also used as food. New Zealand Maoris chewed the milky sap as gum. Eurasia. CLARKE [Re], COLENSO, CRIBB, FOX, E, FULLER [Re], GRIEVE, MEDSGER, MICHAEL [Re]; N84

*Spilanthes acmella* - *Toothache plant*, *Alphabet plant*, *Australian cress* {S}. The young leaves and shoot tips, either raw or steamed, are eaten as a side-dish with rice. Tropics. OCHSE, TANAKA; A2, A26, C43M{PL}, C95, F37T{PL}, F68T, F80, F85, F86G, H94M{PL}, I81T{PR}, I81T{DF}, J82, K49T, L55J, L77D, M82{PL}, etc.

*Spilanthes acmella* 'Oleracea' - *Para cress*, *Brazil cress*, *Jambu*, *Brede mafane* {S}. The leaves, when mixed with salads, impart to them a pungent flavor, and have the effect of stimulating the action of the salivary glands and numbing the lips and tongue. Very popular in Brazil where it is essential, along with manioc juice or *ucupi*, to Amazonian soup dishes such as *pato no ucupi* and *taacca*. Has become the favorite vegetable of the Europeans of Antananarivo, Madagascar, and is a main ingredient of *roumazave*, the Malagasy national dish. Also cooked in coconut milk curry. Milder in flavor and with larger purple leaves than toothache plant. IDONE [Re], JACQUAT, OCHSE, TANAKA, VIARD, VILMORIN; C81M, C95, D68, F24D, G6, I81T{PR}, I81T{DF}, 199M, K49T, K57{PL}, L3J, L77D, N42{PL}

*Spilanthes oleracea* - *Spilanthes acmella*

*Stevia rebaudiana* - *Sweet-herb of Paraguay, Sugar leaf* {PL}. Leaves contain stevioside, a substance three hundred times sweeter than sucrose. In South America, the dried leaves are ground for use as a sweetener or soaked in water and the liquid employed in making preserves. *Stevia* tea bags are used for brewing tea, or they can be added to other beverages such as lemonade and fruit drinks. The leaves are sometimes chewed by those wishing to reduce their intake of sugar. Herbal tea manufacturers utilize the powdered herb as a sugar substitute. Paraguay, Brazil. INGLETT, KIRKLAND [Re], MORTON 1976; A25G{DF}, C43M, E56{DF}, F16, F85{S}, G96,139,166{DF}, 174, J61M, J82, M32G{EC}, M82, R53M

*Stevia serrata* - *Sweet leaf, Roninowa* {PL}. In Mexico, the leaves are used as a catalyst in the fermentation of *tesguino*, a slurry-like alcoholic beverage made from germinated corn or corn stalk juice. Also apparently suitable for use as a sugar substitute. Southwestern North America to Central America. STEINKRAUS; I37M, I83M

*Tagetes anisatum* - *Anise marigold* {S}. The herb can be used as a tarragon-like seasoning, being very similar in flavor and aroma to *T. lucida*. Dried flowering tops make a pleasant anise-flavored tea. Tropical America. D92M

*Tagetes erecta* - *Aztec marigold* {S}. The dried flowers are the source of a yellow dye occasionally used for coloring butter and cheese. Also used as an adulterant of saffron. The flowers of some cultivars can be eaten. In Thailand, the strongly aromatic leaves and the flower buds are eaten raw with *lon too jieow*—z coconut milk and fermented soybean sauce. Central America. JACQUAT, MORTON 1976, TANAKA; A26, C95, F86G, I99M, K49T, L89, N84, 053M

CULTIVARS

**Yellow Climax:** The petals of the mild-flavored flowers can be used as colorful garnishes. B75

*Tagetes filifolia* - *Irish lace marigold, Hierba anis* {S}. The plant has the scent of anise and is used for flavoring or for making a very pleasant tea. Cultivated. KUNKEL, THEODOROPOULOS; D92M, F80, J82{PL}, N84

*Tagetes lemmonii* - *Copper Canyon daisy* {PL}. The foliage is occasionally used as a flavoring, having a very strong, distinctive flavor somewhat reminiscent of lemon and mint. Also brewed into a pleasant, aromatic tea. Southwestern North America. BUCHANAN; B92, C98M, C98M{S}, E61, F93G, H94M, J66, L13{S}, L55J{S}, N37M, N51, N84{S}, Q34

*Tagetes lucida* - *Mexican tarragon, Sweet marigold, Sweet mace, Pericon* {PL}. The leaves and flowers are used as a substitute for tarragon in seasoning soups, sauces, vinegars, dressings, salads, herbal butters, etc. Dried leaves and flowering tops are brewed into a pleasant anise-flavored tea. Mexico. HEDRICK 1919, HUTSON 1987 [Re], MORSE, MORTON 1976, VILMORIN; A26{S}, C43M, C67M, D92M{S}, E61, F35M, F73D{DF}, F80{S}, F93G, G96,116{DF}, I81M{DF}, J73{S}, J82{S}, K22, N51, etc.

CULTIVARS

**Sweetie:** Has a more pronounced tarragon-like flavor than the standard seed grown types. Bright golden flowers. Compact, bushy growth habit. Sensitive to frost. Introduced by Nichols Garden Nursery. 139

*Tagetes minuta* - *Muster John-Henry, Mexican marigold* {S}. The dried leaves are used as an aromatic seasoning for soups, broths, meats, and vegetables. Source of an essential oil used commercially in ice cream, candy, baked goods, gelatin desserts, and soft drinks. South America. FERNALD, MORTON 1976; A26, C43M{PL}, C95, D92M, E81M, I99M, J82, K22, K49T, L94M, N84, 053M, PIG, R47, S55, etc.

*Tagetes patula* - *French marigold, Imeretian saffron* {S}. Leaves are used as a condiment in Africa. The dried flowers serve as an adulterant of saffron or as coloring for butter and cheese. In Georgia, they are an important ingredient of *khmeli-suneli*, a famous spice mixture which flavors *kharcho*, a popular beef soup. Often added to

Georgian sauces containing walnuts and vinegar, to prevent the vinegar from turning the walnuts an unsightly purplish-black. Flowers are said to be used in refreshing drinks. Central America. GOLDSTEIN [Re], KUNKEL, MARGVELASHVILI, MORTON 1976, WOLFERT 1994a [Cui, Re]; A7{DF}, I99M, J82, K22, K49T, L7M, N84, 053M, R47, S55

*Tagetes tenuifolia* - *Lemon marigold, Signet marigold* {S}. The flowers of some cultivars have a pleasant citrus-like flavor and can be used sparingly as a garnish, in salads and sandwiches, or added to desserts and wines. Central America. K22, 053M

CULTIVARS

**Golden Gem:** Sister strain of Lemon Gem, but with butter yellow flowers. Similar compact, mounded habit and intriguing lemon-like aroma and flavor. Lacy foliage. Suitable for bedding, window boxes and hanging baskets. Excellent for borders. C53, D92M, E24, H33M, K49Z, N84, 053M

**Lemon Gem:** Floriferous, single, forget-me-not type flowers with a bright lemon-yellow color. Both leaves and flowers have a lemon-like aroma and flavor. Excellent in hot pudding sauces Very early, compact, ball-shaped plant with fine, lacy foliage. B75, C53, D11M, D68, E7M, E63D, E81M, E91G, F70, H33M, 139, 177, J82, K49M, K66, L79, L91M, etc.

**Lulu:** Compact, mound-shaped plants; 8 inches tall; covered with small, lemon-yellow single blooms that are very good in salads; fern-like foliage. Excellent for rockeries. H42, 177, K49M, L42, N81

**Ornament:** A prolific flowering cultivar with very attractive maroon flowers. Excellent citrus-like aroma and flavor. Well suited for use in salads or as a garnish. Has also been used in potpourris. Small, lacy plant, blooms over a very long period; small, single flowers. 177, N81

**Paprika:** Attractive, intense reddish-orange to maroon flowers, sometimes edged with gold. Refreshing citrus-like flavor and aroma. Excellent in salads and as a garnish. Small, lacy plant; thin, slender foliage; small, single flowers. D92M, 177, M82{PL}, N84

**Tangerine Gem:** Dime size, golden orange single flowers make unique cut flowers for small arrangements. Both the petals and leaves have a tangerine-like fragrance and flavor. Compact, dome-shaped plants have lacy, fern-like foliage. Excellent for borders. C53, D11M, D68, D92M, E81M, E91G, F70, G6, G16, H33M, H49,177, K49M, L42, L89, L94M, M82{PL}, Q34, S55, etc.

*Tanacetum parthenium* - *Feverfew* {PL}. Dried flowers are used as tea, or in wine and certain pastries. One of over thirty different herbs and spices included in *Norfolk Punch*, a non-alcoholic herbal beverage formulated by Monks of Norfolk, England. Eurasia, cultivated. UPHOF; A97, C43M, C67M, D92M{S}, F80{S}, J76, J76{S}, J82, K2{PD}, K22, K85, M82, N19M, N84{S}, 053M{S}, R47{S}, etc.

CULTIVARS

**Golden:** (Yellow) Very similar to the species, but with a yellow tint to the leaves, and a more compact growth habit. C43M, D92M{S}, E81M{S}, F35M, H51M, H94M, J66, J76, J76{S}, J82, L22, L56, M82, R53M, R53M{S}, etc.

*Tanacetum vulgare* - *Tansy, Bitter buttons* {PL}. The young, aromatic leaves are finely chopped and used in salads, puddings, cakes, fritters, fish-dishes, etc. Tansy-cheese is made by steeping the herb and pouring the extract into the milk before the curds are made. The juice extracted from the leaves was used to flavor omelettes known as *tansies*, traditionally eaten on Easter as a remembrance of the bitter herbs eaten at Passover seders. Flowers have a unique flavor and are eaten or used for garnishing. The leaves and flowering tops are brewed into a bitter, somewhat lemon-flavored tea. Eurasia, cultivated. FERNALD, GRIEVE, LEGGATT [Re], MABEY, MACNICOL [Re], MARCIN, MICHAEL [Re], ROOT 1980b; A97, C3{S}, C43M, C67M, D92M{S}, F80{S}, J76, J76{S}, K22, K85, M53, N19M, R47{S}

## CULTIVARS

**Fernleaf:** (Curled, Crispum) More decorative than the common form with deeper green, more delicate foliage and larger orange-yellow flowers. Compact, lacy, fern-like leaves. Good as an ornamental garnish. Lower growing, height 2 to 2 1/2 feet. Will spread slowly to fill any allotted space. Doesn't flower as frequently. B28, C9, C43M, E61, F24D, F32D, F35M, J76, J82, K22, K85, M82, N19M

*Taraxacum officinale* - *Dandelion*, *Pissenlit*, *Radicchiello* {S}. Young leaves are eaten in salads, boiled, steamed, sauteed, fried, braised, etc. The roots are eaten raw, or cooked and served like salsify. The blanched leaf-stalks, or crown, can be eaten raw or as a cooked vegetable. Dandelion wine is made from the flowers. One of over thirty different herbs and spices included in *Norfolk Punch*, a non-alcoholic herbal beverage formulated by Monks of Norfolk, England. The unopened flower-buds, while still inside the crown, are eaten in pancakes, omelettes, and fritters. Roasted roots are ground and used as a substitute for coffee. The flowers are used as an ingredient in the Arabic cake called *yublo*. Both the leaves and roots are brewed into tea. The open blossoms are steeped like tea and the resulting liquid is boiled with sugar to make dandelion jelly. Sprouted seeds can be eaten. Northern temperate region, cultivated. The pollen can be used a food coloring. CUSUMANO [Cu, Re], GIBBONS 1962, HALPIN [Cu, Cul], HARRINGTON, H., LEGGATT [Re], LINSKENS, MACNICOL [Re], MARCIN, MICHAEL [Re], UPHOF, VILMORIN [Cu]; A2, C25PIDF), C56G{PD}, C82, C82{PL}, D3M{PR}, E13G{PR}, F86G{PD}, G73{PD}, I81T{PR}, K2{PD}, K18M{PD}, K22, N40{PR}, N71M, N84, etc.

## CULTIVARS

**Ameliore a Coeur Plein:** A very distinct cultivar, surpassing the wild plant not so much in the size as in the very great number of the leaves, which form a regular tuft or clump, instead of a plain rosette. It yields a very abundant crop without taking up much ground, and blanches very easily and, indeed, almost naturally. VILMORIN; C53, E63D, N84, P59M, S55, S95M

**Broad Leaved:** (Thick-Leaved, Cabbage-Leaved) 95 days. Large, broad, dark-green leaves; more deeply lobed along the axis of the leaf than those of the wild dandelion; thick and tender. Easily blanched plants are semi-erect, forming a rosette of leaves. In rich soil, each plant spreads 18 to 24 inches across. Doesn't go to seed as quickly as the French types. E38, G57M, G71,139, J82, L42, N84, O53M, R47

**Fullheart Improved:** 48 days. Improved French strain, much larger than the Italian types. Large, savoyed leaves, some up to a foot long. Can be harvested throughout the year with succession planting. J20, S95M

**Vert de Montmaanv:** (Vert de Montmagny Ameliore) 92 days. Large, long, dark green leaves; well lobed and denticulated; large, well-filled hearts; may be blanched or not. Smaller, compact plants; vigorous and productive. Best sown in early spring or fall. C95, G68,177, K73, L42, N84, S95M

*Taraxacum camphoratus* - *Camphor bush*, *Hottentot tobacco* {S}. The camphor-flavored leaves are chewed. Also a substitute for tea. In Kenya, the roots are eaten in tonic soups. South Africa. GACHATHI, KUNKEL, UPHOF; F85, N84, S28M

*Thelesperma ambiguus* - *Thelesperma filifotta*

*Thelesperma filifolia* - *Showy Navajo tea* {S}. Leaves and flowers are used as a substitute for tea. Western North America. G89M{PL}, 111, J25M, M25, M82{PL}, N84

*Thelesperma gracile* - *Navajo tea*, *Cota*, *Greenthread* {S}. The leaves and dried flowers are used as a substitute for tea. The color of the tea is greenish-yellow to dark yellow-red, and when properly made it is delicious with just a hint of mint in its aftertaste. Flower buds can also be eaten. Western North America. GIBBONS 1979,

HARRINGTON, H., HUGHES, P., KIRK; C98M, C98M{PL}, J25M, L3J, L55J, R47

*Thelesperma longipes* - *Navajo tea*, *Cota* {DF}. Dried leaves and flower heads can be brewed into an excellent, flavorful tea. Western North America. HARRINGTON, H.; 116

*Thelesperma megapotamicum* - *Thelesperma gracile*

*Tragopogon dubius* - *Goat's beard* {S}. The young stems, when a few inches high, and the bases of the lower leaves are used as potherbs. Young roots are eaten raw or cooked. Northern temperate region. FERNALD, HARRINGTON, H., KIRK; E5T, L55J, M34M, N84

*Tragopogon majus* - *Tragopogon dubius*

*Tragopogon porrifolius* - *Salsify*, *Oyster plant*, *Vegetable oyster* {S}. Roots are eaten raw in salads, boiled, baked, sauteed in butter, added to soups, or grated and made into cakes. The young shoots (<chords), flower buds, and flowers may be eaten in salads, either raw or cooked and cooled. Flowers are also pickled. Young flower-stalks are cooked and dressed like asparagus. Sprouted seeds can be used in salads and sandwiches. The milky latex from the roots was used as chewing gum by British Columbia Indians. Mediterranean region, cultivated. CUSUMANO [Cu, Re], GRIEVE [Re], HALPIN [Cu, Cul], HAWKES [Re], HEDRICK 1919, LARKCOM 1984, UPHOF, VILMORIN [Cu]; B49, C95, E13G{PR}, E38, K49M, L55J, N40{PR}, N84, R47

## CULTIVARS

**Improved Mammoth Sandwich Island:** 120 days. Smooth roots with sweet, tender, snow-white flesh. Has a mild, pleasing flavor said to resemble that of oysters. Stores well. E97

**Mammoth Sandwich Island:** 120 days. Long white roots grow 8 inches long or more, measure 1 to 1 1/2 inches across at the shoulder, slightly tapering and uniform; creamy white flesh. May be left in the ground over winter for early spring use. Requires a long season but is easy to grow. Introduced before 1894. A2, A16, A25, B75M, C85M, D11M, F70, G71,184, L3J, M46, O53M

*Tragopogon pratensis* - *Goat's beard* {S}. The flowering stems, including the buds, are cooked and served like asparagus. Young leaves, shoots, and diced roots can be used in salads. The fully developed taproot is blanched, peeled, and cooked and eaten like salsify. The whole herb may be cooked in soups and stews. Eurasia, naturalized in North America. FERNALD, LAUNERT [Re]; C95, F68T, H61M, N71M, N84, O48

*Tussilago farfara* - *Coltsfoot* {PL}. The young leaves, flower buds, and young flowers can be eaten in salads, soups, or as a potherb. Fresh or dried leaves and flowers are used for preparing an aromatic tea. The slender rootstock is candied in sugar syrup. A delicious country wine is made from the flowers. Ash from the leaves is used as a salt substitute. Northern temperate region. CROWHURST 1972 [Re], FERNALD, GIBBONS 1966b, GRIEVE, HALL [Pre, Re], LAUNERT [Re], MACNICOL [Re], MARCIN, MICHAEL [Pre, Re]; C43M, C67M, E61, F35M, G96, J5M, J82, L90J, L94M, M16, M82, N9M, N9M{S}, R53M

*Urospermum picroides* - *Sow thistle*, *Zochos* {S}. The leaves are eaten in some parts of the Mediterranean and Middle East, especially in soups and stews. In Greece, they are considered very good for making *hortopita*, a popular vegetable pie consisting of seven different wild greens including sweet, sour, bitter and aromatic types chosen to complement one another. Mediterranean region. CRET, KREMEZI 1993 [Re], MARTIN 1975; V84, V84T, V85M, W59M, Y18

*Vernonia amygdalina* - *Bitterleaf* *Ewuro* {S}. The young, leafy shoots are eaten as a potherb or used in soups. They are occasionally squeezed before use to reduce the intense bitterness. Finely cut and dried leaves are sold in local markets. Young twigs are chewed as a stomachic tonic and appetite stimulant. Very popular in parts of Africa. Some cultivated forms are nearly free of bitterness. Tropical

Africa. MARTIN 1975, OOMEN, UPHOF, VAN EPENHUSEN [Cu]; N84, S28M

*Vernonia cinerea* - *Ash-colored fleabane* {S}. The slightly bitter leaves are eaten as a potherb or added to soups. A powder made from the plant is added to millet or rice flour in the preparation of *marcha* or *mana*, a fermentation cake used in the Himalayas for brewing local beers and other alcoholic beverages, Old World Tropics. CRIBB, FCK, R, MANANDHAR, OCHSE; F68T, N84

*Wedelia biflora* - {S}. The leaves are stuffed with grated coconut, rolled, and then either steamed or boiled. In the New Hebrides, the leaves are used for wrapping fish, to which they impart flavor. A tea is made from the leaves and roots. Polynesia. ALTSCHUL, BROWN, W., MASSAL; N84

#### ATHEROSPERMATACEAE

*Atherosperma moschatum* - *Tasmanian sassafras* {S}. The bark, either fresh or dried, is made into a pleasant tasting tea. Australia, Tasmania. CRIBB; N84

#### *Laurelia aromatica* - *Lauretia serrata*

*Laurelia serrata* - *Peruvian nutmeg* {S}. Fruits and leaves are used as a spice in some parts of Peru. Chile, Argentina. HEDRICK 1919, KUNKEL, UPHOF; Z25M

#### ATHYRIACEAE

*Diplazium esculentum* - *Kuware-shida*, *Pako* {PL}. Very young leaves are eaten raw in salads, steamed and eaten with rice, or used as an attractive garnish. They are often an ingredient of *gado gado*. In Thailand, they are blanched and eaten with *nam phrik* or fried. Tropical Asia. BROWN, W., BURKILL, JACQUAT, OCHSE, PASSMORE; E48, M42

#### AVERRHOACEAE

*Averrhoa bilimbi* - *Bilimbi*, *Kamia*, *Cucumber tree* {S}. Very acid fruits are pickled like cucumbers, candied, preserved in syrup, eaten as a relish with meat or fish, or used in curries, marmalade, chutneys, jams, jellies, and lemonade-like drinks. Flowers are made into conserves. Southeast Asia, cultivated. GARNER [Pro], GELLE [Re], HEDRICK 1919, MORTON 1987a, OWEN [Re], POPENOE, W. 1920, STURROCK, UPHOF; A79M, F85, G73, N84, S97M{PL}

*Averrhoa carambola* - *Carambola*, *Starfruit* {S}. Juicy fruits of the sweet type can be eaten out of hand, dried, sliced into fruit and vegetable salads, or used in ices, sherbets, drinks, Bavarian creams, mousses and other desserts. Sour types or slightly underripe fruits are pickled, cooked with fish and poultry or made into relish, *rujak*, and jelly. The acid flowers are eaten in salads or made into conserves. Leaves have been eaten as a substitute for sorrel. In Bali, they are eaten with coconut milk sauce. Cultivated. CUSUMANO [Cul, Re], EISEMAN, GARNER [Pro], HEDRICK 1919, HUTTON [Re], MORTON 1987a, POPENOE, W. 1920 [Cu], RICHARDSON, M. [Re], SCHNEIDER 1986 [Re]; A7{DF}, A79M, B60M{PR}, D3M{DF}, E13G{PR}, E29{PL}, F85, G5M{PD}, H55{PD}, I12{PL}, L14G{PD}, L54{PD}, L97G{DF}, N40{PR}, N40{DF}, N84, 093, P38, Q32, Q46, S97M{PR}, etc.

#### CULTIVARS {GR}

**Arkin:** Uniform fruit, 4 to 5 inches long, with small wings; bright yellow to yellow-orange skin and flesh; very sweet, juicy, firm flesh with few seeds; keeps and ships very well. Tree partially self-fruitful; bears heavily from October to December in Hawaii, earlier in Florida, from December to March in California. The leading commercial cultivar. D57, 112, 177G, N53M, Q93

**Fwana Tung:** Fruit 5 to 8 inches long, with long wings; pale yellow skin and flesh; very sweet and juicy, firm flesh with few seeds; ripe when wing edges are still green. Beautiful starry shape when cut in slices. Bears heavily from October to January in Hawaii. Originated in Florida as a seedling of a Thai variety. D57, E8M, G2M, 177G, N53M, Q93, S97M

**Honey:** (B-17) A superior new selection from Malaysia with honey sweet fruit. However, the tree requires cross pollination to set good crops. E8M

**Kajana:** Fruit 4 to 5 inches long; bright yellow skin and flesh; sweet, juicy, firm flesh with few seeds. Beautiful star shape when cut in slices. Bears heavily from October to December in Hawaii. J22

**Kari:** Sweet, juicy, pleasantly-flavored fruits, an attractive orange-yellow when ripe; excellent, crisp texture. Selected seedling of Sri Kembangan. Slightly less elongated and pointed, with less green-edged wings. Developed at the University of Hawaii Poamoho Experiment Station, Oahu. E8M, G2M, 112, 177G, J22, N53M

**Maha:** Roundish fruit with light yellowish-white skin; white flesh; low acid content; sweet and crunchy. Originated in Hawaii. Q93, S97M

**Sri Kembangan:** (Kembangan) Elongated pointed fruit, 5 to 6 inches in length; bright yellow-orange skin and flesh; juicy, sweet, firm flesh with few seeds, flavor rich and sweet; dessert quality excellent. Bears heavily from September to January in Hawaii. Originated in Thailand. D57, E29, J22, N53M, Q93

**Wheeler:** Medium to large, elongated fruit; orange skin and flesh; mildly sweet flavor. Tree a very heavy bearer. Q93

#### AVICENNIACEAE

*Avicennia germinans* - *Black mangrove*, *Honey mangrove* {PL}. A salt is collected from the leaves and roots that is said to be better than that from other mangroves. The flowers are the principal source of mangrove honey. Tropical seacoasts. DUKE, MORTON 1977; A79M{S}, D87G, F73, N84

#### BALANITACEAE

*Balanites aegyptiaca* - *Desert date*, *Egyptian myrobalan*, *Soapberry tree* {S}. The fruits are eaten fresh, dried, or made into syrup and alcoholic beverages. Seed kernels are eaten raw or dried, added to soups, or made into a kind of bread. Also the source of an edible oil, *zachun oil*. Leaves and flowers are used as vegetables. Drier Africa to Southwest Asia. MENNINGER, UPHOF, VON MAYDELL, ZEVEN; F85, Q46

#### *Balanites maughamii* - *Balanites wilsoniana*

*Balanites wilsoniana* - *Torchwood*, *Mkonga* {S}. Fruits are sometimes eaten. Seeds are the source of a clear oil, similar to olive oil. Tropical Africa. FCK, F., MENNINGER, UPHOF; N84, S28M

#### BALSAMINACEAE

#### *Impatiens biflora* -+ *Impatiens capensis*

*Impatiens capensis* - *Jewelweed*, *Spotted touch-me-not* {S}. The succulent stems, while still young and tender, can be cut up and cooked like green beans or served with cream sauce in the manner of asparagus. North America. GIBBONS 1966b, MEDSGER; D47M{PL}, F85, J39M, N9M, N9M{PL}, N84

*Impatiens glandulifera* - *Jewelweed* {S}. Raw seeds, having the taste of nuts, are eaten or pressed for their edible oil. The leaves are used as a vegetable. India, cultivated. KUNKEL, TANAKA, WATT; F35M{PL}, F80, N84

*Impatiens pallida* - *Pale jewelweed* {S}. The crisp young shoots, after five minutes of simmering in boiling water, are excellent when added to sukiyaki, chow mein, and other Oriental dishes. When eaten as a vegetable on their own, they should be cooked in one or two changes of water and then served with butter or vinegar. North America. CROWHURST 1972, GIBBONS 1979; D47M{PL}, J39M, N9M, N9M{PL}, N84

## BAMBUSACEAE

*Arundinaria gigantea* - *Southern cane, Large cane* {PL}. Seeds are eaten as a cereal or ground into a flour. The young sprouts are used like bamboo shoots. North America. FERNALD, HEDRICK 1919, MEDSGER, PETERSON, L.; A79, G87T, H4, I29T, I45M, M16, M33M

*Bambusa arundinacea* - *Spiny bamboo, Thorny bamboo* {S}. Young sprouts are edible. They should be cooked in two changes of water to remove the bitterness. In Thailand, a fermented vegetable product, *naw-mai-dong*, is prepared from the shoots. The sugary sap is made into a popular drink. Seeds are also edible. Tropical Asia, cultivated. STEINKRAUS, TANAKA, YOUNG 1954, YOUNG 1961; M5M{PL}, Q18, Q46

*Bambusa bambos* - \* *Bambusa arundinacea*

*Bambusa beecheyana* - *Sinocalamus beecheyana*

*Bambusa multiplex* - *Leleba multiplex*

*Bambusa oldhamii* - \* *Leleba oldhamii*

*Bambusa vulgaris* - \* *Leleba vulgaris*

*Cephalostachyum pergracile* - *Wa-ciaw, Khaao loam* {PL}. The thin inside membranes of the internode stems are used as casings for a popular Thai dessert called *khaao laam*—a mixture of glutinous rice, adzuki beans, coconut milk, sugar and salt. After the internodes are grilled or baked, the membrane becomes attached to the filling and the two are eaten together, the bamboo giving a specific fragrance to the dish. The slightly bitter shoots are occasionally eaten. Tropical Asia. ALTSCHUL, ANDERSON, E.F., JACQUAT, WATT; M5M

*Dendrocalamus asper* - *Buloh betong, Delingpetung* {PL}. Very young shoots, before they emerge from the soil, are tender and sweet. They are cooked and eaten as a vegetable, pickled in vinegar, preserved in salt, or cut into strips and used as a substitute for macaroni in soups. India, cultivated. BURKILL, OCHSE, ROSS [Re]; D43, M5M

*Dendrocalamus latiflorus* - \* *Sinocalamus latiflorus*

*Dendrocalamus strictus* - *Male bamboo, Bans* {S}. The young shoots are cooked as a vegetable. Seeds are also eaten. Source of an edible manna that can be used for cooking or making sweetmeats. India, cultivated. DONKIN WATT; MIJ{PL}, M5M{PL}, N84, O53M, Q18, Q46, R88

*Gigantochloa hasskarliana* - *Awitela* {PL}. The young shoots are cooked and eaten as a side dish with rice. They are also used in the preparation of soups and stews. Highly esteemed in Indonesia for their sweet, flavorful qualities. Tropical Asia. OCHSE; M5M

*Indocalamus tessellatus* - *Large-leaved bamboo, Zong ye zhu* {PL}. Has the largest leaves of any bamboo, often measuring 24 inches in length and 4 or more inches in width. In China, they are used for wrapping pyramid-shaped glutinous rice dumplings called *zongzi*, eaten during the Dragon Boat Festival on the fifth day of the fifth lunar month. Also used for lining the bottoms of pans when cooking rice cakes, meat patties and other dishes, the cooked foods absorbing the flavors of the bamboo leaves. Dried leaves are available at Oriental markets. China. COTTERELL [Re], LEE, G. [Re]; A78, A79, B76, D43, G87T, H4, I29T, I45M, I77G, J68, MIJ, M5M, M16, M16M, N37M, etc.

*Leleba multiplex* - *Hedge bamboo, Bring tjendani, Horai-chiku* {PL}. Young shoots, though bitter, can be eaten if they are harvested before they emerge from the soil, and then parboiled in water. Tropical Asia. OCHSE, TANAKA; A78, A79, C36, D43, G87T, H4, I8, I29T, I45M, I77G

*Leleba oldhamii* - *Giant timber bamboo, Lii-chu, Ryoku-chiku* {PL}. The young sprouts can be used as *bamboo shoots*. They are of

excellent quality. China. TANAKA; A79, D43, G87T, H4, H78, I8, I28, I77G, I83M, K46, MIJ, M5M

*Leleba vulgaris* - *Common bamboo, Daisan-chiku* {PL}. Very young shoots, while still tender, are cooked and eaten with rice, added to soups, or made into pickles. Southern Asia, cultivated. BURKILL, OCHSE, TANAKA; D43, I77G, I83M

*Oxytenanthera abyssinica* - *Savannah bamboo, Woody bamboo-grass* {S}. The young shoots are sometimes consumed. In Uganda, they are boiled, steamed, smoked, dried or salted, and are also made into a vegetable salt. Grains are cooked and eaten like rice. Sap from the stems can be drunk immediately or stored and fermented into wine. The wine can be mixed with other drinks like lager beer. Cultivated in the highland areas of Tanzania. Eastern Africa. GOODE, IRVINE 1961, KUNKEL, MARTIN 1975, MGANI, VON REIS; F85

*Oxytenanthera braunii* - *Oxytenanthera abyssinica*

*Phyllostachys angusta* - *Stone bamboo, Sah chu* {PL}. The long shoot is eaten. It is said to be one of the best for quality and flavor. China. YOUNG 1954; A78, B76, D43, G87T, H4, I45M, J68, MIJ, M5M, M16

*Phyllostachys aurea* - *Golden bamboo, Fishpole bamboo, Hotei-chiku* {PL}. Fresh shoots are eaten as a vegetable. They have very little bitterness even when eaten raw. Seeds are also edible. China, cultivated. KUNKEL, YOUNG 1954, YOUNG 1961; A79, B41, B93M, D43, F53M, G87T, H4, I28, I45M, I83M, J68, M16, M5M

*Phyllostachys aureosulcata* - *Yellow-groove bamboo* {PL}. Young sprouts make good *bamboo shoots* as they are relatively free of bitterness or acidity, even when eaten raw. China. YOUNG 1954, YOUNG 1961; A79, B28, B76, D43, G87T, H4, H49, I29T, I45M, J61M, J68, M5M, M16, M33M

*Phyllostachys bambusoides* - *Ma-dake, Japanese giant timber bamboo* {PL}. The large shoots are somewhat acrid, and should be prepared for eating by boiling in a considerable amount of water or by boiling in several changes of water. China, cultivated. YOUNG 1954, YOUNG 1961; A78, A79, B93M, D43, H4, I8, I29T, I45M, I53M, I74, J61M, J68, MIJ, M5M, M16, etc.

*Phyllostachys congesta* - \* *Phyllostachys purpurata*

*Phyllostachys dulcis* - *Sweetshoot bamboo, Pah kohpoo chi* {PL}. The new shoots which emerge in early spring are free of acidity, and are excellent for eating purposes. One of the most highly esteemed bamboos in China, where it is called *vegetable bamboo*. Used in salads, soups, stews and stir-fried dishes, or it is canned, salted, and pickled. China, cultivated. HALPIN, HERKLOTS, YOUNG 1954, YOUNG 1961; A78, D43, G17, G87T, H4, I29T, I45M, I74, J68, MIJ, M5M, M16M, M33M

*Phyllostachys elegans* - *Flowered bamboo* {PL}. Highly regarded for its tasty, early spring time shoots. One of the first species of the genus to send up shoots in the spring. China. D43, G87T, H4, MIJ

*Phyllostachys flexuosa* - *Zig-zag bamboo* {PL}. Shoots are edible, appearing in midspring. They are slightly acrid in the raw state, and should be boiled first before using in salads, etc. China. UPHOF, YOUNG 1954; D43, G87T, H4, I29T, I45M, J68, MIJ, M5M, M33M

*Phyllostachys heterocycla f. pubescens* -> *Phyllostachys pubescens*

*Phyllostachys nidularia* - *Big node bamboo* {PL}. Highly prized for their shoots, not only because they are among the earliest to appear in spring, but because of their delicate food qualities. The cooked shoots have somewhat the flavor of hominy corn. China. YOUNG 1954; A79, B76, D43, G87T, H4, I29T, J68, MIJ, M5M

*Phyllostachys nigra* - *Black bamboo, Kuro-chiku* {PL}. The new shoots are somewhat acrid and can be prepared for eating by first

boiling in a change of water. The water being changed after the first eight to ten minutes. When so prepared they have a distinctive taste and aroma. China, cultivated. UPHOF, YOUNG 1954; A78, A79, D43, G87T, H4, I29T, I45M, I83M, J61M, J68, M5M, M16, M16M, M33M, N37M, etc.

*Phyllostachys nigra* f. *boryana* - *Unmon-chiku*, *Bory bamboo*, *Snake-skin bamboo* {PL}. Young sprouts are used as *bamboo shoots*. Prepared in a similar manner to *P. nigra*. Culms are attractively mottled with green and black. China, cultivated. TANAKA, YOUNG 1954, YOUNG 1961; A79, D43, G87T, H4, I29T, I45M, 174, J68, Mi/, M5M, M16M

*Phyllostachys nigra* f. *henonis* - *Henon bamboo*, *Ha-chiku* {PL}. The young shoots are eaten, having the characteristic flavor and aroma of *P. nigra*. China, cultivated. TANAKA, YOUNG 1961; A78, A79, D43, E87, G87T, H4, I29T, I45M, 174, J61M, J68, Mi/, M5M, M16M, etc.

*Phyllostachys nuda* - *Nude sheath bamboo* {PL}. Edible *bamboo shoots* are of excellent quality and only slightly acrid when eaten raw. Boiling in water for only a short time would make them suitable for salads. China. HERKLOTS, YOUNG 1954; A78, A79, B28, D37, D43, H49, I29T, I45M, I49M, I49P, J61M, J68, Mi/, M5M, M33M, etc.

*Phyllostachys pubescens* - *Moso bamboo*, *Chiang-nan-chu*, *Mao tosh* {PL}. Young sprouts are noticeably acrid raw but are fragrant when cooking. When prepared by a change of water in cooking they are extensively eaten, either cooked alone or with other foods, stir-fried, pickled, or canned and exported. Tender *winter shoots* or *dung sun*, harvested as early as December, are of excellent flavor and esteemed as a delicacy. China, cultivated. HERKLOTS, TANAKA, YOUNG 1961; A79, C27G{PD}, G87T, H4, I29T, I45M, 174, J61M, Mi/, M5M

*Phyllostachys purpurata* - *Water bamboo* {PL}. Young shoots are slightly bitter when raw and are used as a cooked vegetable after boiling in a change of water. China. YOUNG 1954; A78, A79, D43, G87T, H4, I45M, J68, Mi/

*Phyllostachys rubromarginata* - *Red-margined bamboo* {PL}. The tender, young shoots have a small degree of bitterness or acidity, and after boiling in water they are eaten in salads, stir-fried dishes, etc. China. YOUNG 1954; A78, A79, B76, C74, G87T, H4, I29T, I45M, J68, Mi/, M5M, M16, M33M

*Phyllostachys viridi-glaucens* - {PL}. Young sprouts are virtually free of acidity or bite and are eaten as a cooked vegetable, pickled, put in soups, salted, etc. China. YOUNG 1954, YOUNG 1961; A78, A79, D43, G87T, H4, I45M, J68

*Phyllostachys viridis* - *Green sulphur* {PL}. The young shoots are almost entirely free of acidity and could be sliced finely and used raw in salads. They are more commonly boiled first and then used cold in salads, stir-fried, braised, added to stews, etc. China. YOUNG 1954, YOUNG 1961; A78, D43, G87T, I45M, Mi/

#### CULTIVARS

**Robert Youna:** The culms emerge a light sulphur green, then upon exposure to the sun turn a striking yellow with an occasional green stripe. It may taste even better than the species. A79, D43, G87T, H4, I28, I29T, I45M, J68, Mi/, M5M, M16M

*Phyllostachys vivax* - *Wu bu ji zhu* {PL}. The new shoots are free of acidity or bite when raw. Species with this quality would appear to be more nutritious since less of the vitamins and minerals are dissipated in the cooking water. China. YOUNG 1954, YOUNG 1961; A79, D43, G87T, H4, I29T, I45M, I49M, I49P, I66T, 174, Mi/, M5M, M16M

*Sasa kurilensis* - *Chishima-zasa* {PL}. Sprouts are edible, either cooked, canned, or preserved. It is said that they are so popular in Japan that a license is required to collect them. Seeds are also edible. Japan, Korea. TANAKA; A79, G87T, I29T, I45M

*Sasa palmata* - *Chimaki-zasa* {PL}. The broad leaves, often 15 inches long and 3 inches wide, are used in Japan for wrapping salted fish and other condiments eaten as side dishes with rice. On May 5th, for Boy's Day, they are wrapped around the sticky rice cake known as *chimaki mochi* or *sasamaki*, then dipped in toasted soybean flour (*kinako*). The shoots are occasionally eaten. Eastern Asia. FREEMAN-MITFORD, HOMMA, SUGANO; A78, A79, B76, G87T, H4, 128, I29T, I45M, J68, Mi/, M5M, M16, M16M, M33M

*Semiarundinaria fastuosa* - *Narihira bamboo*, *Temple bamboo*, *Narihira-dake* {PL}. New shoots that appear in spring are practically free of bitterness or bite. Although small they are of good quality when cooked, and have a unique flavor. Japan. UPHOF, YOUNG 1954, YOUNG 1961; A78, A79, D43, G87T, H4, I29T, I45M, J68, M5M

*Sinocalamus beecheyanus* - *Beechy bamboo* {PL}. An important source of commercial *bamboo shoots* in southern China. The ground around the base of the clump should be mounded with soil well before the shoots appear. In this way all light that would cause the shoots to develop an intense bitterness is excluded. China, cultivated. SO [Cul], YOUNG 1954, YOUNG 1961; A79, D43, I83M

*Sinocalamus latiflorus* - *Big jute bamboo*, *Machiku*, *Ma-chu* {PL}. Widely grown in Canton for its excellent edible shoots which are robust, relatively solid, and unusually free of any unpleasant taste when raw. Shredded and dried they are used in Chinese-style snacks in Japan, China, Southern Asia. HERKLOTS, TANAKA, YOUNG 1961; M5M

#### BASELLACEAE

*Anredera cordifolia* - *Madeira vine* {PL}. The succulent, slightly mucilaginous leaves may be eaten raw in salads, used as a potherb, or prepared with sesame oil and soy sauce. Tubers are boiled and eaten like potatoes. Occasionally available in ethnic markets. Central America, South America. TANAKA, UPHOF; C43M, C95, E48, N37M, N84, R49

*Basella alba* - *Ceylon spinach*, *Malabar spinach*, *Poi sag*, *Saan choi* {S}. The succulent leaves and stem tips are an excellent hot weather substitute for spinach. They can be eaten raw in salads, boiled, steamed, stir-fried, or added to soups, stews, tofu-dishes, and curries. Flowering shoots are added to hot and sour soup. An infusion of the leaves is used as a tea. The purplish sap from the fruits is used for coloring agar-agar, pastries, and sweets. A little lemon juice added to the dye enhances the color. Tropics, cultivated. DAHLEN [Cul, Re], HALPIN [Cu, Cul], HAWKES [Re], HEDRICK 1919, HERKLOTS, JACQUAT [Cul, Re], MARTIN 1975, OCHSE, UPHOF, VILMORIN [Cu], WINTERS [Nu]; A79M, B49, D26G, J20, J73, K49M, N84, PIG, P38, Q34, R47

#### CULTIVARS

**Red:** (Red Stemmed, Rubra) Leaves, stems, and flowers are tinged with red. Ornamental in appearance, however, best used in salads as it loses much of the pigment when cooked and becomes unattractive. D33, D55, D68, E7M, F37T{PL}, F73D, F85, H49, 139, K49M, N84, N91, S70

*Basella rubra* - *Basella alba*

*Boussingaultia baseUoides* - *Anredera cordifolia*

*Ullucus tuberosus* - *Ulloco*, *Melloco* {PL}. Tubers may be boiled and served with vinegar. When boiled and fried they taste like potatoes. In the cold altiplano areas of the Andes they are frozen and then dried, the resulting product being called *chuho*, a name first used for dried potatoes but now used for any desiccated vegetable. The *chuho* prepared from these tubers is called *llingli*. Leaves are eaten in salads or as a potherb. Andean South America, cultivated. DUKE, FRIED [Re], HERKLOTS, HODGE 1951, NATIONAL RESEARCH COUNCIL 1989, VILMORIN [Cu].



## CULTIVARS

**Como Verde de Monte:** Medium to large, perfectly toned soft pastel green fruits. Smooth, round and desirable. 174

**Pica de Pulqa:** (Flea Bites) Round fruits with an outstanding flavor. Stunning bright fluorescent pink and magenta mottling on a yellow background. Popular in Peru, where "flea bites" is used as a generic term for types with pink and magenta spots. 174

**Plata de Monte:** Smooth, medium-sized, roundish tubers; glossy silver white skin, occasionally mottled with pink. A uniform commercial cultivar. 174

**Shrimp of the Earth:** Small, elongated curved tubers, somewhat reminiscent of shrimp; bright pinkish-maroon skin. A form which is much sought after in its native region and commands a high price. 174

**Yellow Jewels:** (Oid de Monte) Very high quality strain with good form, size and uniformity. Soft pastel yellow tubers. 174

## BATIDACEAE

*Batis maritima* - *American saltwort*, *Jamaica samphire* {PL}. The salty, succulent leaves are sometimes eaten in salads. They are also cooked or used for pickles. Makes a salty puree after boiling and straining to remove "strings". Roots are chewed and sucked for their sweet juice, made into a beverage, or used to sweeten coffee. American coasts. FELGER 1985, HEDRICK 1919, MORTON 1977, TANAKA; F73, F85{S}

## BEGONIACEAE

*Begonia x tuberhybrida* - *Tuberous begonia* {PL}. Artificial hybrids. The showy, waxy flowers are eaten raw in salads, with fish, in desserts, made into sauces, or used as a garnish. They have a pleasant, somewhat tart, lemon-like flavor. Different flower colors make sauces of varying colors and flavors, with red being the tastiest and yellow relatively mild. Petioles can be substituted for rhubarb in making strawberry-rhubarb pie. Relatively high in oxalic acid. Cultivated. BARASH [Re], LENZ, MORSE [Re]; D24, E33, E91G{S}, H57M{S}, G82, H61{S}, H95{S}, 191, J20, L42{S}

## BERBERIDACEAE

*Berberis aquifolium* - *Mahonia aquifolium*

*Berberis aristata* - *Indian barberry*, *Nepal barberry* {S}. Flower buds are used in sauces. Dried fruits, known as *zirshk turash*, are used as a substitute for raisins in desserts. Himalayan region. HEDRICK 1919, KUNKEL, WATT; D95{PL}, I74{PL}, N61, Q12, Q40

*Berberis asiatica* - *Himalayan barberry*, *Raisin barberry* {S}. The large, purplish fruits are dried and used like raisins in desserts. They are said to make the best *Indian raisins*. Himalayan region. HEDRICK 1919, HENDRICKSON, SIMMONS 1972; N51{PL}, N61, Q40

*Berberis buxifolia* - *Magellan barberry*, *Calafate* {S}. When ripe, the large, black, pleasantly-flavored fruits may be eaten out of hand. In England, both green and ripe fruits are used like gooseberries in making pies, tarts, and preserves. Southern Chile and Argentina. HEDRICK 1919, SIMMONS 1972, UPHOF, VALENZUELA; U45

*Berberis darwinii* - *Darwin barberry* {S}. The dark-purple fruits are eaten or made into preserves. Chile, Patagonia. HEDRICK 1919, HENDRICKSON; A61{PL}, D95{PL}, /S{PL}, L91M, N61, N84, 053M, P49, R78, R83{PL}

*Berberis haematocarpa* - *Mahonia haematocarpa*

*Berberis lycium* - *Indian barberry* {S}. Fruits are eaten raw or made into preserves. The young shoots and leaves are consumed as a vegetable. An infusion of the leaves is used as a substitute for tea. Himalayan region. HEDRICK 1919; D95 {PL}, N61, Q40

*Berberis nervosa* - *Mahonia nervosa**Berberis repens* - *Mahonia repens**Berberis trifoliolata* - \**Mahonia trifoliolata*

*Berberis vulgaris* - *European barberry* {S}. Berries are eaten raw, candied, preserved in syrup, made into jellies, sauces, pies, tarts and cakes, or pickled in vinegar and used as a substitute for capers. In some countries the juice is used like that of lemons in the preparation of cooling drinks, and for flavoring ices, sherbets, and punches. In Iran, the dried berries, called *zerezhk*, are a popular sour flavoring for polow and other rice dishes, stuffings, and *kookoo-ye sabzi* (herb omelette). *Confiture de pines vinette*, a celebrated French jam, is made from a seedless form. The leaves are eaten as an acid nibble or used to season meat. Dried young leaves and branch-tips make an excellent refreshing tea. Eurasia, cultivated. BATMANGLU [Re], FERNALD, GOLDSTEIN, GRIEVE [Re], HEDRICK 1919, JOHNS [Cu], LAUNERT, SHAIDA [Re], SIMMONS 1972 [Cu], UPHOF; A7{DF}, K60D{DF}, K63G, N61, N71M, N84, 053M, P49, R78

*Mahonia aquifolium* - *Oregon hollygrape*, *Holly barberry* {PL}. The acid fruits are used in pies, jellies, jams, beverages, and confectionery. When fermented, the juice makes a palatable and wholesome wine. The bright yellow flowers are eaten or used to make a lemonade-like drink. North America, cultivated. DOMICO, FREITUS [Re], HEDRICK 1919, MEDSGER; A2{S}, C9M{S}, D95, 198M, K38{S}, K63G{S}, M77, N84{S}, 053M{S}

*Mahonia haematocarpa* - *Red hollygrape*, *Mexican barberry*, *Algerita* {PL}. The bright blood red berries are pleasantly acid in flavor and are primarily used for making jellies. Southwestern North America. HARRINGTON, H., MEDSGER; D95, 198M, L13{S}, N84{S}

*Mahonia nervosa* - *Oregon grape* {S}. Ripe fruits are too acid to eat raw, but stewed with sugar or other fruits, or made into jams, jellies, and pies, they are very good. They can also be used to enhance the flavor of bland fruits or prepared like lemonade to make a refreshing drink. Young, tender leaves are simmered in a small amount of water and eaten as a snack. Western North America. SIMMONS 1972 [Cu], TURNER 1979 [Pre, Re]; A2, A61, D95{PL}, E15, G5M{£D}, G66, H71, 147, K38, K63G, L94M, N84

*Mahonia repens* - *Creeping barberry*, *Creeping Oregon grape* {PL}. The tart fruits are eaten raw, roasted, pickled in vinegar, or made into jellies, jams, wines, and a lemonade-like beverage. A distinctive jelly can be made by using half apple juice to half barberry juice: Western North America. HARRINGTON, H., HART, UPHOF; C9M{S}, G60, 198M, J25M, J26, K38{S}, K63G{S}, L13{S}, M35M, M51M, 053M{S}

*Mahonia swaseyi* - *Texas mahonia*, *Agrito*, *Wild currant*, *Chaparral berry* {PD}. The fruits are yellowish-orange, up to a half inch in diameter, and pleasantly acid. They can be used in concentrated juices and blends, sauces, tarts and pies, or made into wine, relish, pickles, pies, jams, jellies, candies, and "raisins". Roasted seeds are used as a substitute for coffee. Recommended for improvement by selection and breeding. Southwestern North America. DURAND 1972; D81P, G5M, H4{PL}

*Mahonia trifoliolata* - *Agrito*, *Laredo mahonia*, *Mexican barberry* {S}. The bright red fruit has a subtle, tart flavor which is quite pleasant and is eaten raw or used in jellies, preserves, sauces, drinks, cakes and tarts. Southwestern North America. HUTSON 1995 [Re], LATORRE 1977a [Re], LATORRE 1977b, UPHOF; D81P{PD}, G5M{PD}, H4{PL}, J25M

## BETULACEAE

*Alnus crispa* - *Mountain alder* {S}. The wood is a favorite of many Tanaina Indians for smoking salmon and trout because of the excellent flavor it imparts to foods. Northern temperate region. KARI, SCHOFIELD; G66, K38

*Alnus rubra* - *Red Alder* {S}. In the Pacific Northwest, the wood was traditionally preferred to that of others for smoking salmon, halibut and other fish, adding a light, delicate flavor. Also frequently used in modern restaurant grilling. Alder planks are becoming popular for baking, especially seafood. When baked on planks, the food retains more of its moisture. The wood also adds a somewhat "nutty" flavor to the food. Western North America. BEAN, A. [Re], COX [Re], DE GEUS, JAMISON, UPHOF; A2, B74{PL}, C9M, C26M{PD}, D56M, D96, E15, F88M, G60{PL}, G66, H45M{PL}, I23M{PD}, 147, J26{PL}, K38, K63G, K74J{PD}, M85{PD}, P5, etc.

*Alnus tenuifolia* - *Mountain alder* {S}. In British Columbia, the wood is commonly used for smoking fish and other meats Western North America. DEGEUS; B94, C55{PL}, D96, E67T{PL}, G66, G89M{PL}, I23M{PD}, K63G, N73{PL}, N84

*Betula alleghaniensis* - *Yellow birch* {S}. The sweet sap makes a pleasant drink or it can be boiled down to a syrup. Dried leaves are used as a substitute for tea. Twigs and leaves, having the flavor of wintergreen, can be used as condiments. North America. FERNALD, MEDSGER; D47M, D95{PL}, G66, 14{PL}, K38, K63G, N84, 053M, 093, P17M, P49, Q32, R78

*Betula lenta* - *Sweet birch, Black birch, Cherry birch* {S}. Dried leaves and the reddish bark from the larger roots are used in brewing a delightful tea. The sweet sap is drunk as a beverage, boiled down to sugar and syrup, or fermented into *birch beer*, wine and vinegar. An essential oil, distilled from the twigs and bark, is widely used as a wintergreen flavoring in soft drinks, frozen dairy desserts, baked goods, chewing gum, gelatins and puddings. The wood can be used for smoking foods such as poultry and beef, adding a sweet, woody flavor. Inner bark has been used for food. Eastern North America. ANGIER, FERNALD, GIBBONS 1962, LEUNG, LOGSDON 1981, MARGIN, MEDSGER; A20M{PD}, B68{PL}, D95{PL}, G66, 14{PL}, J3{PD}, K38{PL}, K63G, L36M{PD}, M16{PL}, N7T{PL}, N84, P49

#### *Betula lutea* - *Betula alleghaniensis*

*Betula nigra* - *Red birch, River birch* {PL}. The sap from the trunk is said to make a pleasant drink, and when boiled down, to furnish sugar. It can also be fermented into *birch beer*. North America. FERNALD, TANAKA; B52, C9M{S}, C11M, C33, D45, D95, F51, G23, H49, 14, 177M, K38{S}, K63G{S}, Q32{S}

*Betula papyrifera* - *Paper birch, Canoe birch, White birch* {PL}. Very young leaves, shoots, and catkins may be eaten in salads, or stir-fried dishes. The sap is prized as a pleasant, sweet drink, and by boiling it can be reduced to syrup, or finally, sugar. It is also sometimes used in making *birch beer* and vinegar. Birch syrup, produced commercially in Alaska, has a rich caramel-like flavor and can be used on ice cream and pancakes, in hot cocoa and coffee drinks, barbecue sauces and marinades, or added to dessert recipes. A tea is made from the young leaves. The Tanaina Indians use the wood for smoking fish. North America, cultivated. BRYAN [Cul, Re], FERNALD, KARI, LAWRENCE, MEDSGER, SCHOFIELD; A2{S}, C9M{S}, C33, D45, F88M{S}, G5M{PD}, G19{PD}, H49, 14, J16, J61M{PD}, K38{S}, K63G{S}, L91M{S}, etc.

*Betula populifolia* - *Gray birch* {S}. The sap is consumed as a sweet beverage or fermented into beer and vinegar. Inner bark, ground into flour, is used as an emergency breadstuff. Eastern North America. FERNALD, TANAKA; D95{PL}, E47{PL}, G66, H45M{PL}, K38, K63G, N84, 093, Q32

#### BIGNONIACEAE

*Catalpa ovata* - *Ki-sasage, Azusa* {S}. Flowers and young pods are eaten. China, cultivated. TANAKA; D95{PL}, E7M, H4{PL}, 160{PL}, K63G, N84, 093, P38, P49, R78

*Crescentia alata* - *Mexican calabash, Morrito* {S}. The ripe seeds, when ground, are mixed with raw rice, roasted pumpkin seeds, lemon peel, sugar, water, and ice and made into a non-alcoholic

beverage called *horchata*. They also yield a bland, relatively stable edible oil. Fruits are sometimes eaten or made into a drink. Tropical America. MENNINGER, TANAKA, WILLIAMS, L.; A79M, N84

*Crescentia cujete* - *Calabash tree, Calabazo, Jicara-nut, Mono* {S}. Young fruits are pickled like walnuts. The seeds have been much used in Curacao to make syrup or a popular confection called *carabobo*. For syrup, the seeds are pounded fine, mixed with sugar and a little water and boiled. Roasted seeds are mixed with roasted wheat to form a flavorful, aromatic coffee substitute once marketed as *café du grain*. In Africa, the leaves are cooked in soups with those of Adansonia. Tropical America. BENGHIAT [Cul, Re], DUKE, HEDRICK 1919, MENNINGER, UPHOF; A79M, D56M, F85, I12{PL}, N40M, N84

*Dolichandrone rheedii* - *Thakut* {S}. The young fruits and flowers are eaten as a vegetable by the Burmese. Burma, Andaman Islands. TANAKA; Z25M

*Kigelia africana* - *Sausage tree* {S}. In Kenya, the fruits are used in the preparation of *muratina*, *uki* and *kathroko*, sweet-sour, effervescent beverages made from sugar cane juice or honey. They are consumed as refreshing beverages in place of Western-style beers, especially at festivals and social gatherings. Roasted seeds are eaten as a famine food. Tropical Africa. CAMPBELL-PLATT, FOX, F., HEDRICK 1919, STEINKRAUSI WALKER; A79M, F85, I12{PL}, I47M{PL}, I83M{PL}, N84, 053M, 093, P5, Q12, Q18, Q46, S28M

#### *Kigelia pinnata* - *Kigelia africana*

*Oroxylum indicum* - *Sword fruit tree, Indian trumpet-flower* {S}. The young leaves and flowers are eaten uncooked as a side-dish with rice. This is usually prepared by mixing them with various spices, including chilis, fish paste, red onions, candle nut, lemon grass, and ginger. Young fruits are cut into pieces, boiled, and eaten with rice. Older fruits are grilled and added to curries. Unripe seeds are grilled and served with chili sauce. Matures seeds are used to make a refreshing Chinese drink known as *chub liang*. Also an ingredient of *Chyavanprash*, a famous Ayurvedic food tonic. Southeast Asia. JACQUAT, MENNINGER; A79M, C95, F85, 174 {PL}, N84, Q46

*Parmentiera aculeata* - *Food candle tree, Guachilote* {S}. When ripe, the yellow, banana-shaped fruits are quite sweet and may be eaten raw, cooked, roasted, or made into pickles, preserves and sweetmeats. In flavor, the raw fruit is said to resemble sugar cane. Central America. KENNARD, UPHOF, WILLIAMS, L.; F85, N84, P5

#### *Parmentiera alata* - *Crescentia alata*

*Parmentiera cerifera* - *Candle tree* {S}. Cultivated in the West Indies and other tropical regions for its edible fruits. Mexico. ZEV-EN; A79M, I12{PL}, N84, 093, P5, R78M

#### *Parmentiera edulis* - *Parmentiera aculeata*

*Spathodea campanulata* - *African tulip tree* {S}. The flower buds contain a sweet, watery liquid that is considered tonic. Winged seeds are said to be edible. Tropical Africa, cultivated. DALZIEL, DUKE, IRVINE 1961; A79M, C95, F80, F85, 183M{PL}, N84, P5, P17M, Q32, Q46, R33M, S92

*Tabebuia impetiginosa* - *Pau d'arco, Tahebo, Lapacho, Ipe roxo* {DF}. The inner bark has traditionally been brewed into a tonic tea by rainforest Indians of Brazil, Argentina and other regions of the Amazon. Also very popular with natural foods enthusiasts. Reportedly used by Ghandi and Czar Nicholas II of Russia. South America. TYLER, VAN STRATEN; A25G, A49D, B21P, E14T, F37T, F86G, G84, J82, K2, K18M, L17, L34, L94M, M15M, M32G, M87M, N84{S}, etc.

## BISCHOFIACEAE

*Bischofia javanica* - *Toog, Midi, Akaqi* {S}. Seeds and fruits are eaten. Young leaves are eaten in salads or used as a condiment. Tropical Asia. TANAKA, VAN DUONG; A79M, C9M, F85, 174, 183M{PL}, K46{PL}, N84, P5, Q18, Q32, Q45M, Q46

## BIXACEAE

*Bixa orellana* - *Anatto, Lipstick plant, Urucum* {S}. The seeds, called *achiote* or *roucou*, are briefly steeped in hot oil or lard which is then strained, cooled, and used as coloring and flavoring for meat, poultry, fish, and vegetable dishes. In Yucatan, the whole seeds are ground with various spices into a paste, giving a more pronounced flavor. In Brazil they are ground to a fine red powder which colors stews. The seed coat is the source of a yellow pigment widely used in the food industry for coloring cheese, butter, and margarine. Tropical America, cultivated. DUKE, IDONE, MENNINGER, ORTIZ 1973 [Pre, Re], ORTIZ 1979, UPHOF, WILLIAMS, L.; A7{DF}, A79M, C3M{DF}, F80, F85, H73{DF}, I30{PD}, K18M{DF}, L17{DF}, N84, 053M, P5, P17M, Q46, R33M, etc.

## BLECHNACEAE

*Stenochlaena palustris* - *Paku miding, Pakis bang* {S}. Young leaves and shoots, wine-red in color, are eaten either raw or steamed with rice and are said to resemble amaranth. A soup can also be made from them, the water of which, is likewise led. In West Sumatra, they are cooked with fish and coconut milk in a dish called *pangek*. Tropical Asia. BROWN, W., BURKILL, HUTTON [Re], JACQUAT, OCHSE, OWEN [Re], UPHOF; N84

## BOMBACACEAE

*Adansonia digitata* - *Baobab, Monkey bread, Cream of tartar tree, Ethiopian sour gourd* {S}. Acid pulp of the fruit is eaten, made into drinks, and used as a flavoring or to curdle milk. Young leaves, rich in lime and vitamins, are eaten as a potherb or made into *kuka*, a powder used to thicken soups, sauces and stews. Seeds are eaten mixed with millet meal, used as a coffee substitute, or made into *lalu*, a powder used as flavoring or a baking powder substitute. When slightly fermented, *lalu* has the flavor of almonds. *Reniala oil* or *fony oil*, derived from the seeds, is edible. The flowers are eaten raw. Tender roots are eaten. Shoots of germinating seeds are edible. Tropical Africa. DALZIEL, DUKE, FOX, F., MENNINGER, UPHOF, VON MAYDELL, VON WELANETZ, WILSON, E.G.; A7{DF}, A79M, E29{PL}, 133, 183M{PL}, L91M, M17{PL}, N84, 053M, 093, P5, P38, R88, S28M, S92, etc.

*Adansonia gregorii* - *Australian bottle tree, Cream of tartar tree* {S}. Seeds are eaten raw or roasted. Immature fruits are roasted and eaten. Pulp of the ripe fruit is somewhat acid, also eaten. Aborigines dissolved the sap in water to make a drink. Grown commercially in Spain as a source of *cream of tartar*. Australia. CHERIKOFF, KUNKEL, UPHOF; E14T{DF}, F80, I47M{PL}, K18M{DF}, L34{DF}, N79M, N84, 033, P5, P17M, P38, Q32, Q41, R15M, R33M, R88, S92, etc.

*Bombax buonopozense* - *Red-flowered silk cotton tree* {S}. The fleshy, rather mucilaginous calyces are consumed in soups or used in sauces, as a substitute for roselle (*Hibiscus sabdariffa*). The young fruits are cut, dried and then eaten in various meals. Young leaves, often dried, are eaten as a potherb. Tropical Africa. DALZIEL, UPHOF, VON MAYDELL; F85

*Bombax ceiba* - *Ceiba pentandra*

*Bombax costatum* - \**Bombax buonopozense*

*Bombax ellipticum* - *Mokok* {PL}. Seeds of the white-flowered form are eaten as a snack food. Mexico. ALCORN; A79M, E48, G91M, I47M, N84{S}, Q41{S}, R88{S}, T25M{S}

*Bombax glabra* - *Pachira aquatica*

*Bombax malabaricum* - *Salmalia malabarica*

*Ceiba aesculifolia* - *Ceibillo* {PL}. Young fruits and ripe seeds are eaten after cooking or roasting, in some parts of Yucatan. Mexico. UPHOF, WILLIAMS, L.; N84

*Ceiba pentandra* - *Kapok tree, Silk cotton tree* {S}. Tender leaves, buds, and fruits are mucilaginous and are eaten like okra. Seeds are roasted and ground, eaten in soups, used as a flavoring, or fermented into *kantong*. Presscakes from the seeds can be used for making *tempeh*. They also yield a pleasant tasting cooking oil. Flowers are blanched and eaten with chili sauce. Dried stamens are added to curries and hot and sour soup for coloring. In Indonesia, the sprouted seeds are eaten raw, cooked, added to soups, or made into *sambal goreng* (coconut-milk sauce). Wood ashes are used as a salt substitute. Tropics, cultivated. BURKILL, CAMPBELL-PLATT, DUKE, HEDRICK 1919, JACQUAT, MENNINGER, OCHSE, SHURTLEFF 1979, WATT; A79M, F85, G73, H4{PL}, L55J, N84, P5, Q12, Q18, Q41, Q46, R88

*Durio dulcis* - *Lahong, Tutong, Durian maragang* {S}. When ripe the fruit is an attractive dark purplish-red and has a bright yellow, very sweet aril with an extremely offensive odor. It is soft, creamy and caramel-like with a delicious flavor reminiscent of pineapple cream without the acidity. The sweetest and most ill-smelling of all Durio species. The seeds are eaten boiled or roasted. Borneo. SOEGENG-REKSODIHARDJO, TANKARD, TINGGAL; F85

*Durio graveolens* - *Tabelak, Durian mah* {S}. The orange-yellow fruit is very distinct from that of the common durian, and has a fleshy, dark red aril, without odor and with a very sweet flavor. It is much preferred by the natives for relish and is usually made into *sajur*, soup prepared from fresh water fish. Indonesia. ALT-SCHUL, SOEGENG-REKSODIHARDJO, TANKARD, TINGGAL; Z12

*Durio kutejensis* - *Lai, Durian pulu, Durian kulu, Nyekak* {S}. Ripe fruits are eaten fresh. They are golden yellow in color when ripe and have soft, short spines. The thick-textured, yellowish-orange flesh is drier and firmer than *Isu*. Distinctive flavor, sweetish but less sweet and less strongly flavored than durian, with a tangy aftertaste. They have only a slight aroma when fully ripe. Indonesia, cultivated. RIFAI, SOEGENG-REKSODIHARDJO, TANKARD, TINGGAL; 019

*Durio oblongus* - *Isu* {S}. The small, round durian-like fruits are eaten out of hand. They have yellowish shells when ripe, covered with long sharp, pentagonal spines. The pale yellow flesh is slightly thicker textured than durian, and somewhat dry, like peanut butter. Flavor rich, similar to durian but less sweet and with a slight tangy aftertaste. Only mildly aromatic. Borneo. TANKARD; 019

*Durio zibethinus* - *Durian* {S}. Ripe fruits have a foul odor, but a delicious flavor, much described. Usually eaten out of hand, but also made into candy, preserves, ice cream and paste. Unripe fruits are cooked with coconut milk and spices. Fermented fruits are eaten as *tempoyak*. Fresh seeds are roasted and eaten or cut in slices and fried. Dried up seeds are boiled as a delicacy. Smoke from burned fruit peels gives flavor to fish dishes. The flower petals and young leaves and shoots are also edible. Southeast Asia, cultivated. BURKILL, GARNER [Pro], MORTON 1987a [Cu], OCHSE, POPENOE, W. 1920 [Cu], STEINKRAUS WATT; A45{PD}, E8M{GR}, F85, G5M{PD}, J22{PL}, N84, 019, 093  
CULTIYARS {GR}

**Chanee:** (Gibbon) Large, elongated, golden-yellow fruit; thick, fleshy arils, sweet and creamy; excellent, mild flavor; small, abortive seeds. Lacking the typical garlic-like aroma characteristic of most unimproved forms. Named gibbon for its tendency to bear on top of slender branches. Originated in Thailand where it is in high demand. Q93

*Eriodendron aesculifolium* - *Ceiba aesculifolia*

*Matisia cordata* - *Quararibea cordata*

*Pachira aquatica* - *Malabar chestnut, Guinea chestnut, Provision tree, Saba nut* {PL}. Seeds are eaten raw, tasting like peanuts.

Roasted or fried in oil they have the flavor of chestnuts, and can be ground into a flour for bread baking. Young leaves and flowers are used as a vegetable. Brazil, Guiana, cultivated. DUKE, HEDRICK 1919, MENNINGER; A79M, E29, F85{S}, 112, I83M, M7M, 019{S}, N84{S}, 093{S}, P5{S}

*Pachira insignis* - *Mamorana grande* {S}. Kernels of the nuts are edible after being roasted. Young leaves and flowers are eaten. Tropical America. HEDRICK 1919, MENNINGER, TANAKA; C9M, F85, 112{PL}, 019, N84, P38

*Pachira macrocarpa* - \**Pachira aquatica*

*Patinoa almirajo* - *Almirajo* {S}. The fleshy aril which completely covers the seeds is edible and considered a delicacy by the natives. Cultivated by the Indians of the Choco region of Colombia. Tropical South America. DUKE, SOEGENG-REKSODIHARDJO; U27T

*Quararibea cordata* - *Chupa-chupa*, *South American sapote* {S}. The fibrous, yellow-orange pulp of the fruit is sweet and can be eaten out of hand. The flavor is reminiscent of a very sweet pumpkin, with overtones of mango and apricot. Types with very little fiber may be utilized for juice. Colombia to Peru. HACKETT, HODGE 1960, MORTON 1987a, POPEÑO, W. 1924, WILLAN; E8M{PL}, N84, 019, R78M

*Salmaalial malabarica* - *Red silk-cotton tree*, *Semal*, *Pan-ya* {S}. Flowers and flower buds are eaten as a vegetable. Fleshy calyxes of the large red flowers are used in curries. Ripe seeds are roasted and eaten, or used as a source of cooking oil in place of cotton-seed oil. Tropical Asia, cultivated. BURKILL, HAWKES, MACMILLAN, WATT, TANAKA; A79M, D56M, F80, F85, 174, N40M, N79M, 093, P17M, P38, Q12, Q18, Q32, Q46

BORAGINACEAE

*Anchusa azurea* - *Anchusa* {S}. The bright, gentian-blue flowers are an excellent addition to a tossed salad, particularly when mixed with rose petals. They are also used as an attractive garnish. In Turkey, fresh parts of the plant are eaten as a vegetable or condiment. Europe. LARKCOM 1984, LEGGATT [Re], OZTURK; A61, A61{PL}, C9{PL}, F35M{PL}, L66{PL}, M82{PL}, N23, N84, 053M, Q24 \*

*Anchusa capensis* - *Cape forget-me-not* {S}. The vivid blue flowers are prized as an addition to salads, including seafood, fruit, potato, vegetable and tossed green salads. Also used in cold drinks, pasta, puddings, custards, icings, and hot or cold soups. Leaves are also eaten. South Africa, cultivated. KUNKEL; E5T, E7M, F85, 139, I50G, N84, 093, Q34, S28M, S55

*Anchusa officinalis* - *Alkanet*, *Bigloss* {S}. Young leaves and shoots are boiled or steamed and eaten like spinach, especially in the south of France and parts of Germai. The flowers are eaten as a vegetable or used as a garnish. The roots have been used as a red food coloring. Europe. HEDRICK 1919, LAUNERT, LEGGATT [Re], WILSON, C.; A61, C43M, C43M{PL}, D56M, E61{PL}, F68T, J76, J76{PL}, J82, K22, M82{PL}, N71M, N84, S55

*Borago officinalis* - *Borage* {PL}. Fresh leaves, tasting of cucumbers, are added to salads, eaten as a potherb, or used in the preparation of cooling drinks. The blue flowers are eaten in salads, preserved, candied, made into syrup, or used as garnishes. Seeds are the source of a nutritious oil that can be used in salads, dressings or mixed into foods, but more often is taken as a food supplement. In Spain and the Balearic Islands, the succulent leafstalks are parboiled and fried in batter, and the roots are mixed with "baby" borage leaves in salads. Dried stems are used for flavoring beverages, among which *negus* and *claret cup*. Flower corollas can be used to color vinegar blue. Both leaves and flowers are brewed into tea. The flowers also yield a whitish honey with a mild, herbal flavor, much appreciated in New Zealand. Mediterranean region, cultivated. CRANE 1975, DE SOUNIN [Cu], ERASMUS [Nu], HALPIN, LAUNERT, MACNICOL [Re], MARCIN, MICHAEL [Pre, Re], MURRAY, SEVILLA 1997a, UPHOF; A97, C3{S}, C3M{PD},

C67M, D92M{S}, E14T{PD}, F80{S}, I66{PD}, J66, K22{S}, M35, M53, M84{PD}, N19M

*Cynoglossum officinale* - *Hound\*s tongue* {S}. Young leaves are used in some areas of Switzerland as a salad and vegetable. Eurasia. UPHOF; D56M, F35M{PL}, F80, J82, J99D, L3J, N40M, N71M, N84, 053M, Q24, S55

*Echium vulgare* - *Viper\*s bugloss* {S}. The blue flowers can be crystallized and added to salads. They also yield a white to light golden honey with a delicate sweet flavor. In Australia, it is popular for blending with other honeys in quality table lines. The leaves are cooked and eaten like spinach. At one time a popular cordial herb in England, being added to wine cups and cooling summer drinks. Eurasia, naturalized in North America. BREMNESS, CLEMSON, CRANE 1975, LAUNERT, LEYEL 1987b; A61, C95, C3M{ED}, F80, H15T{PD}, K17M, N71M, N84, 053M, Q24, S55

*Heliotropium curassavicum* - *Seaside heliotrope*, *Nena* {S}. Leaves are eaten in salads or boiled as a potherb. Dried leaves are brewed into a tea. Ashes of the plant are used as a substitute for salt. Tropical America. DUKE, KUNKEL, TANAKA, WILLIAMS, L.; Y29M

*Lithospermum officinale* - *Gromwell* {S}. Leaves are used as a substitute for tea, called *Bohemian tea* or *Croatian tea*. Eurasia. UPHOF; A2, E61, E61{PL}, F68T, F86G, J82, M82{PL}, N84, R53M, R53M{PL}

*Mertensia maritima* - *Sea bugloss*, *Oyster plant* {S}. The fleshy leaves, whose taste has given it the name oyster plant, are eaten both raw and cooked. They are especially good cooked with eggs. Rhizomes are consumed as food by the Eskimos of Alaska. Northern temperate region. LOVELOCK, MABEY, SCHOFIELD, UPHOF; N84, R53M, R53M{PL}

*Myosotis arvensis* - *Field forget-me-not* {S}. The leaves are gathered when young and added to *pistic-3i* mixture of up to fifty six different wild greens which are cooked together with butter, garlic and pieces of lard and eaten as an early spring ritualistic dish in parts of Friuli, Italy. Eurasia. PAOLETTI; N71M, N84, 053M, S55

*Myosotis sylvatica* - *Forget-me-not* {S}. The flowers may be added to salads as a garnish. They are also very good for candying. BREMNESS, WILLIAMS, J.; A53M, C95, D47M, E81M, FI, F32D{PL}, F80, H21, I63Z, J99D, M49, M47M, M82{PL}, O1, R47, etc.

*Pentaglottis sempervirens* - *Evergreen alkanet* {S}. The azure blue flowers can be used in salads. Europe. LARKCOM 1980; N84

*Pulmonaria officinalis* - *Lungwort*, *Jerusalem cowslip* {PL}. Young basal leaves can be used for salads, boiled as potherbs, or added to soups, stews, and vegetable dishes. An extract of the herb flavors *vermouth*. Europe. BOWN, LAUNERT, MABEY; B28, D92M{S}, F37T, K85, M82, N84{S}, 053M{S}, P92, Q24{S}, R53M

*Symphytum officinale* - *Comfrey* {PL}. Young leaves are chopped and added to salads, cooked as a potherb, or used in soups, sautes, pastas, and au gratin dishes. A Teutonic fritter called *schwarzwur* is made from leaves stuffed with cheese, dipped in egg batter, and then fried. Mature leaves were used to flavor cakes and a sauce base known as *panada*. Blanched stalks are used like asparagus. Peeled roots are cut up and used in vegetable soups. Dried leaves and roots are used for tea. The roasted roots are mixed with those of chicory and dandelion and used as a coffee substitute. One of over thirty different herbs and spices included in *Norfolk Punch*, a non-alcoholic herbal beverage formulated by Monks of Norfolk, England. Eurasia, cultivated. GRIEVE, HALPIN [Cu, Cul], HEDRICK 1919, MABEY [Re], MARCIN, MICHAEL [Pre, Re], MORTON 1976; A97, C67M, C82, D65, G96, J66, J73, K2{PD}, M53, M87M, M87M{PD}, N71M{S}, N84{S}

*Symphytum peregrinum* - *Symphytum x uplandicum*

*Symphytum tuberosum* - *Tuberous comfrey* {PL}. The roots, when roasted until brown and brittle, then ground, make a very good substitute for coffee, with a smoothness that is not even found in real coffee. Europe, naturalized in North America. GIBBONS 1979; N84, R53M

*Symphytum x uplandicum* - *Russian comfrey* {PL}. A natural hybrid. Young leaves are boiled or steamed and served like spinach, or used in soups, souffles, and au gratin dishes. Health food enthusiasts liquidize the leaves and consume them as *green drink*. Dried leaves are used for tea, the best flavor coming from those that have been dried quickly. They can also be ground to a green flour that can be used in gravies, soups, and stews. Caucasus Mountains, cultivated. HILLS, L. [Nu, Re], ZEVEN; A50, D56M{S}, F37T, H94M, 139, I91{S}, J5M, K22, K85, L90J, M35, M82, N84{S}, S55{S}

#### CULTIVARS

**Booking 4:** Leaves broad, round tipped, very large, recovering rapidly after cutting. Stems strong, solid, wings small. Flower color is Bishops Violet 34/3 when fully open. Recommended for use in liquidized *green drink*. HILLS, L.; J82

**Booking 14:** (Webster's) Leaves pointed, slightly serrated at the edges. Flower stems slender, frequent, entirely wingless. Flowers are Imperial Purple 33/3 fading to Lilac Purple 031/3. Considered too bitter for use in *green drink*. HILLS, L.; J82, R32, S55

*Trichodesma zeylanicum* - *Northern bluebell* {S}. Leaves are cooked and eaten as a side-dish with groundnuts or added to beer to ensure proper fermentation. The seeds yield an edible oil. Tropical Asia, Tropical Africa. FOX, F., MARTIN 1975, MENNINGER, QUIN; N84, 053M, R15M, S92

#### BRASSICACEAE (CRUCIFERAE)

##### *Alliaria officinalis* - *Sisymbrium officinale*

*Alliaria petiolata* - *Garlic mustard*, *Hedge garlic* {S}. The garlic-flavored leaves can be finely chopped and added to tossed salads, cooked as a potherb, or eaten with bread and butter. In England, they are mixed with mint leaves and made into a sauce to serve with salt-fish, lamb, or mutton dishes. Eurasia. GRIEVE, HEDRICK 1919, LAUNERT, MABEY, MICHAEL [Re], UPHOF; 139, L7M, N7G, N71M, N84, 053M, R32, S55

##### *Alyssum maritimum* - *Lobularia maritima*

*Arabis alpina* - *Alpine cress*, *Mountain rock-cress* {S}. The young leaves and flowers are an agreeable substitute for cress. They can be eaten raw, cooked, or mixed with other greens as a flavoring. North America. FERNALD, GIBBONS 1979; A53M, C43V, C85M, E5T, F80, N23, N84, Q24, S55

##### *Armoracia lappathifolia* -> *Armoracia rusticana*

*Armoracia rusticana* - *Horseradish* {PL}. The fresh roots are used for flavoring meats, vegetables, pickles, etc. They are also processed into sauce, powder, and vinegar. Prepared horseradish is available in white and red forms, which are preserved in vinegar and beet juice respectively. In Poland, horseradish is mixed with beets to form an ancient condiment known as *cwikla*, served at Easter with sausage and ham. Horseradish mustard is one of the most popular of all mustards. In Japan, the powdered root is used to adulterate true *wasabi* powder. Young leaves have a pleasant flavor and can be added to salads, pickles, or cooked as a potherb. Sprouted seeds are eaten in salads. Roots can be brought indoors in the winter and forced into producing white, tender, sweet leaves. In Germany, sliced roots are cooked like parsnips. Eurasia, naturalized in North America. FERNALD, GIBBONS 1966b, HALPIN [Cu, Cul], HERBST, S., KNAB, LARKCOM 1984, MABEY, SCHNEIDER 1986 [Cul, Re], TANAKA, UPHOF, VILMORIN [Cu]; A7{DF}, A94M{PD}, C43M, D65, D97{PD}, E14T{DF}, FL, G22{PD}, G71, H65, H90G{PD}, I42G{PD}, I81T{PR}, I81T{DF}, J63M, J83, J99G, K22, ZJ4{DF}, etc.

#### CULTIVARS

**Bq To d:** A newly selected strain that is vigorous, widely adapted, and resistant to foliage disease, rust and bacteria spot. Plant in the early spring in a rich soil that maintains good moisture. Plant with the slanted cut down and the flat end up. D69, F13,150

**Bohemian:** (Bohemian Giant) Hardy, easy to grow cultivar. Produces large, white roots of superior quality that make a gourmet sauce. Grate and mix with mayonnaise. Has a pleasantly pungent flavor. Plant in moist, well-drained soil and full sun. B73M, C82, D76, E97, G16

**Hybrid:** An outstanding, hybrid horseradish with superior disease resistance, smoother roots, and bigger yields. Pungent roots add flavor to meats and relishes. Dig roots during cool weather of spring and fall. D76, E97

**Maliner Kren:** Vigorous grower, producing large white roots. Earlier, larger, whiter than the standard type. True Bohemian horseradish, the standard cultivar for condiment use. Originally from Germany. B75, C85M, G57M, H54, I39, K71, M46

**New Bohemian:** (Kiester's New Bohemian) Improved Maliner Kren or Bohemian type, known for its vigorous growth and large-size roots. Makes a strong quick growth and produces a heavy crop, particularly on land which has been well prepared. The small sets or roots are planted in the spring to furnish large, straight, smooth roots for use the following season. C61, C84

**Varieata:** Attractive, variegated horseradish with long, wide leaves that emerge from the center of the plant. Dark green, splashed with white. Grows 24 inches tall and 18 inches wide. The variation is very slight the first year, but will improve with time. H63, M82, N84

##### *Barbarea praecox* - *Barbarea verna*

*Barbarea verna* - *Upland cress*, *American cress*, *Belle-Isle cress* {S}. The young leaves have a pleasant flavor similar to water-cress and are eaten in salads as a garnish or flavoring. They are also used in cress soup. In hot weather the plant runs to seed very rapidly, the flavor then becoming very hot. Seeds are used as a source of oil. Sprouted seeds can be eaten in salads. Europe, cultivated. FERNALD, HALPIN, KRAFT, LARKCOM 1984, UPHOF, VILMORIN; A2, C44, E38, F80, F82, G71, I39, K22, K49M, K71, L7M, L91M, N84

*Barbarea vulgaris* - *Winter cress*, *Yellow locket* {S}. Young leaves and shoots, while still tender, may be chopped fine and added to tossed green salads. Somewhat older leaves make a good potherb if cooked in two or more waters, the first removing some of the bitter flavor. The undeveloped flower clusters are gathered and used like broccoli. During mid-winter warm spells, the plant has the ability to grow vigorously and produce greens. Northern temperate region. ANGIER, FERNALD, GIBBONS 1962, MEDSGER; E28M, L7M, M34M, N71M, N84, 048

#### CULTIVARS

**Variegata:** A heavily variegated form with leaves in shades of green, splashed with cream or gold. Spreading plant, 9 to 12 inches tall. Makes a striking addition to a kitchen garden. Somewhat bitter, spicy flavor. L94M, N84, 053M

##### *Brassica adpressa* -+ *Hirschfeldia incana*

##### *Brassica alba* -\* *Sinapis alba*

##### *Brassica alboglabra* - *Brassica oleracea*

##### *Brassica arvensis* -\* *Sinapis arvensis*

##### *Brassica campestris* - *Brassica rapa*

*Brassica carinata* - *Ethiopian mustard*, *Abyssinian mustard*, *Senafich*, *Karate* {S}. Tender leaves and young stems, up to twelve inches high, can be eaten raw in salads. Older leaves and stems are cooked and served like collards or mustard. The inflorescence may

be used as a broccoli-like vegetable. Seeds are used for a prepared mustard popular in Ethiopia during lent and are also the source of an edible oil. East Africa, cultivated. LARKCOM 1984 [Cu], MESFIN [Re], OOMEN, ZEVEN; N84, 048

#### CULTIVARS

**TexSei:** (Tamu TexSel, Tel-Tex) The plants in the early growth stages develop a rosette of leaves from a very short stem. At full height the plants are 3 to 5 feet. The foliage is green to light glaucous, mostly glabrous. Similar in growth characteristics to mustard and collards. Immature plants are excellent as a green leafy vegetable. The flavor is somewhat milder than collards without the pungency of mustard greens. Developed at Texas A&M University. ANONYMOUS 1972; E83T, L89G, R32, S55

*Brassica fimbriata*-*Brassica napus*

*Brassica geniculata* -\**Hirschfeldia incana*

*Brassica hirta* -\**Sinapis alba*

*Brassica Japonica*-*Brassica rapa*

*Brassica juncea* - *Indian mustard*, *Gai choy*, *Mustard greens*, *Karashi-na* {S}. Leaves are eaten raw, pickled, as a potherb, stir-fried, boiled, added to soups and stews, or fermented into *gundruk*. Pickled leaves are known as *sajur asin* and *hum choy*. The seeds are very pungent and are often used whole to season meats and other foods. They yield an edible oil widely used for pickling in Bengali and Kashmiri cooking. *Mostarda di Cremona*, *Mostarda vicentina*, and *Mostarda mantovana* are Italian preserves of whole, pureed or segmented fruits in hot, mustard-oil flavored syrup. Powdered seeds are the source of *brown mustard*, a prepared mustard that is stronger than that produced from other species. In the preparation of some prepared mustards whole or cracked seeds are used. The roots of some forms are eaten. Sprouted seeds can be used in salads. Protein extracted from the leaves mixes well with banana pulp and is well adapted as a pie filling. Cultivated. CAMPBELL-PLATT, GRAY, P., HALPIN [Cu, Cu], HAWKES [Re], HERKLOTS, HESSELTINE, JAFFREY, MORTON 1976, OCHSE, PIRIE, SCHNEIDER 1986 [Cu, Re], STEINKRAUS, TANAKA; B71G{PD}, C82, E13G{PR}, F74{PD}, H15T{PD}, H90G{PD}, H99J{SP}, L24G{SP}, L59, M56M{PD}, R47. (for cultivars see Mustard, page 431, see also Sprouting Seeds, page 524)

*Brassica kaber* -> *Sinapis arvensis*

*Brassica napiformis* -\**Brassica juncea*

*Brassica napobrassica*-*Brassica napus*

*Brassica napus* - *Rape*, *Colza* {S}. The seeds are pressed for their oil which is used as a salad or cooking oil. They are also used to adulterate mustard seed. *Rapeseed oil* is widely produced in Canada, while *colza oil* is common in India and China. In Italy, it is favored over olive oil by some professional bakers of *farinata* or *socca*, a chickpea flour pancake. Leaves are eaten in salads, used as a potherb or fermented into *gundruk*. Inflorescences can be used like broccoli. Sprouted seeds are eaten in salads. Cultivated. ANDREWS, C. 1996 [Re], BIANCHINI, CAMPBELL-PLATT, SCHERY, TANAKA, UPHOF; B13, B49, E38,193M, I99M, K95M, M34M, N81, N84, S17

#### CULTIVARS

**Dwarf Essex:** (Broad Leaf Essex) Rapid growing dual-purpose crop; will thrive in almost any soil. Used extensively in some areas for early greens. Can also be used instead of *mustard and cress* as an indoor seedling crop, and as a sprouting seed. Sown outside it makes a good cut-and-come-again crop. Biennial. A15Z, D26D, D68, E38, E53, G27M, G71, H54, K71, K95M, Nil, S55

**Ranai:** Resistant to aphids and club root rot. A good oil seed and often used as a green manure. Prefers a cool growing season, moderate rainfall, and a sunny, dry harvesting period. Needs protection from strong winds to prevent seed pods shattering. J97M

**Rape Salad:** (Salad Rape) In England, when boxes of seedlings are sold as *mustard and cress* they are often neither, but are in fact Rape Salad. This is much milder than mustard or cress and is more like cabbage in taste. It is an excellent salad vegetable. Rape Salad runs to seed much more slowly than mustard or cress, hence it can be used over a longer period. LARKCOM 1984 [Cu]; B49, K2{PD}, 048, 053M, R32, S55

*Brassica napus* Napobrassica Group - *Rutabaga*, *Swede*, *Swedish turnip* {S}. The turnip-like roots are eaten boiled, steamed, baked, fried, mashed, etc. In Sweden, small rutabagas are brushed with oil and baked until tender. The lid is then cut off, a wedge of cheese inserted, the lid replaced, and the whole is served hot. Rutabagas are hardier than turnips and take from four to six weeks longer to mature. Flesh color is usually yellow and the texture is richer than a turnip. The leaves can be used as a potherb. BURR, CUSUMANO [Cu, Re], FELL 1982b, HEDRICK 1919, RODALE [Cu], VILMORIN [Cu]; 048, R47. (for cultivars see Rutabaga, page 518)

*Brassica napus* Pabularia Group - *Curled kitchen kale*, *Siberian kale* {S}. The leaves and plant tops are eaten as a vegetable. In comparison with common kale, the plant is generally taller and more spreading, with less frilled, grayish-green leaves. In the southern United States, it is planted as animal fodder as well but many prefer its flavor to other kales. Plants are extremely cold-hardy. HALPIN, TANAKA. (for cultivars see Kale, page 389)

*Brassica napus* 'Canola' - *Canola* {S}. Rapeseed is high in erucic acid and glucosinolates, which were thought to have anti-nutritional properties. In 1974, Canadian plant breeders produced a "double low" cultivar of rapeseed that was low in both erucic acid and glucosinolates, and by 1981 a second "double low" cultivar was produced from *B. rapa*. In 1979, the name Canola was adopted for all the new "double low" cultivars. Canola oil is used as a salad and cooking oil and in products such as mayonnaise, margarine, and shortening. The toasted seeds can be used like sesame, sunflower or poppy seeds—sprinkled on salads, baked potatoes or cooked grain dishes like rice, added to baked goods and salad dressings, or ground into flour and used as a coating for fish, chicken and meat before roasting or barbecuing. DE PETERS, ERASMUS; C73P{PD}, G6, G50, G68, G68{DF}, I19M{£D}, J99G, L77D, M63M{ED}, N24M. (see also Sprouting Seeds, page 524)

#### CULTIVARS

**Alto:** New and improved type developed in Canada. Matures early and germinates quickly, even in cold spring weather. Has a higher oil and protein content than other types. Also about 25% higher yielding. Sow in rows 28 inches apart, 4 pounds to the acre. Or broadcast at the rate of about 20 pounds per acre. G50

*Brassica narinosa* -\**Brassica rapa*

*Brassica nigra* - *Black mustard* {S}. The pungent seeds are used whole to season pickles, sausages, and sauerkraut. When ground, they form mustard powder or dry mustard, a common ingredient of curry powders in the Near East. Mixed with vinegar and spices they constitute the commercially prepared mustard used as a relish on frankfurters, etc. The tender leaves can be chopped finely and added to tossed green salads, or cooked as a potherb. Young flower clusters are prepared like broccoli. Preferred over other mustards for sprouting. Eurasia, naturalized in North America. GIBBONS 1962, GRIEVE [Cu], HARRINGTON, H., MABEY [Re], MEYEROWITZ 1994a, MORION 1976, UPHOF, VILMORIN; F80, G91{SP}, H99J{SP}, J73, K2, L24G{SP}, M34M. (see also Sprouting Seeds, page 524)

*Brassica nipposinica* -\**Brassica rapa*

*Brassica oleracea* - *Wild cabbage* {S}. Although slightly bitter raw, the leaves are quite acceptable to eat after being cooked in two or more changes of water. The flower buds and the green, undeveloped seed pods can be stir-fried and eaten. Atlantic coast of Europe, Mediterranean region. BREMNESS, MABEY, MICHAEL; U15

*Brassica oleracea* Acephala Group - *Kale, Collard, Flowering kale, Flowering cabbage*. The leaves are eaten boiled, steamed, sauteed, used as a garnish, or added to soups and stews. Unopened flower clusters, sometimes called *broccolini*, can be used like broccoli and have a flavor reminiscent of a cross between broccoli and asparagus. In Ireland, kale or cabbage are traditionally served in a dish called *colcannon*, which is made with potatoes, leeks, and milk or cream. Collards are popular in the southern United States and are commonly cooked with hamhocks, fatback bacon, and other types of pork. HALPIN [Cul, Re], IRWIN [Re], KRAFT [Re], SCHNEIDER 1986 [Cul, Re], VILMORIN [Cu]; (for cultivars see Kale, page 389 and Collard, page 339, see also Sprouting Seeds, page 524)

*Brassica oleracea* Alboglabra Group - *Chinese broccoli, Chinese kale, Gai-lohn, Kai-laan, Fat-shan* {S}. The leaves, flower stalks, and young inflorescences are steamed, stir-fried, cooked with oyster sauce, or used in sukiyaki. The florets can be cut from the stalk, dipped in tempura batter, and deep-fried. Stems that have been briefly cooked are marinated in a spicy dressing and served as a kind of pickle. HARRINGTON, G. [Cu, Cul], HERKLOTS [Cu], KRAFT [Re], TANAKA; A79M, C82, E13G{PR}, H49, J73, J82, K73, M46, N40{PR}, N84, R47, S63M

#### CULTIVARS

**Blue Star:** Large stems with pointed leaves, very crisp and tender. White-flowered type. One of the most popular varieties sold in Chinatown markets. D55, N84

**Green Delight:** Leaves and stems are slightly smaller and more tender than those of Blue Star. Grows very well in mild, warm climates. Young leaves and stems are very good for stir-frying. D55, N84

**Green Lance:** (F.) 45 days. Highly heat-resistant, vigorous and rapid growing with thicker stems than open pollinated types. Ready for use about 10 days earlier. After the main stem is cut, it branches freely for extended harvest. C20M, G13M, 139, K16M, K66, L91M, M29, N84, 053M, Q34, R32, S55

**White Flowered:** 60-70 days. Large, smooth, bright-green, pointed leaves; tender, crisp, fleshy stems Very hardy and will tolerate heat but bolts readily. Quick growing. Suitable for growing in spring and summer. C20M, F80, F85, G13M, G93M, L42, L59, L79G, S70

**Yellow Flowered:** 60-70 days. Leaves are light-green. Plants are dwarf with yellow flowers Very hardy and will tolerate heat, but may bolt in cold weather. L59, L79G

*Brassica oleracea* Botrytis Group - *Cauliflower, Perennial broccoli*. The immature flower heads are eaten raw in salads, boiled, steamed, braised, fried, used in soups and casseroles, prepared as tempura, etc Young leaves can be used for greens. The flower stalk and the midveins of the larger leaves make first-rate eating, though they are usually neglected, except in counties which like cauliflower soup. Sprouted seeds are eaten. CARCIONE, LARKCOM 1984, ROOT 1980a, TANAKA, VILMORIN [Cu]; (for cultivars see Cauliflower, page 322)

*Brassica oleracea* Capitata Group - *Cabbage, Savoy cabbage, Red cabbage* {DF}. The leaves are eaten raw in salads and *cole slaw*, steamed, boiled, pickled, fermented into *sauerkraut*, etc. Fermented sauerkraut juice, sold under the brand names *Biotta* and *Eden*, is popular with natural foods enthusiasts. In the former Yugoslavia, whole heads of cabbage are fermented like sauerkraut. Called *kiseo kupus*, they are used in w/na—stuffed sour cabbage rolls with smoked spareribs. In Egypt, red cabbage leaves are added to pickles to provide a purple color. The core, normally containing more than twice the Vitamin C of other parts, may be cut into strips and soured. Stems can be eaten boiled or pickled after having been peeled. The sprouted seeds are very good eating. BOLOTNIKOVA, CARCIONE, CHANTILES, HUNTER 1973a, KHALIL [Re], LARKCOM 1984, PEDERSON, STEINKRAUS, TANAKA,

VILMORIN [Cu]; A7, E47M{PD}, L17. (for cultivars see Cabbage, page 315, see also Sprouting Seeds, page 524)

*Brassica oleracea* Gemmifera Group - *Brussels sprouts* {PD}. The small, cabbage-like heads are eaten raw in salads, boiled, steamed, sauteed in butter, served with cream sauce, or used in soups. They are especially good cooked and eaten in a cold salad with chestnuts and apples. As the sprouts mature the lower leaves are removed to facilitate harvesting of the sprouts. These thick, collard-like leaves can be finely chopped, steamed, and served with butter and lemon juice. CARCIONE [Pre], RICHMOND, S. [Re], SCOTT, TANAKA, VILMORIN [Cu]; E42M. (for cultivars see Brussels Sprouts, page 313)

*Brassica oleracea* Gongyloides Group - *Kohlrabi*. The swollen, fleshy, turnip-like stem is eaten raw in salads or marinades, steamed, boiled, braised, stuffed, or served with Hollandaise or other sauces. Kohlrabi is at its best when young and tender before it becomes necessary to peel it, as much of the flavor lies just below the skin. The young leaves, especially those of the Prague cultivars, can be used as potherbs. CARCIONE, CUSUMANO [Cul, Re], HALPIN [Cul], KRAFT [Re], MATTOO [Re], ORGAN [Re], SCHNEIDER 1986 [Cul, Re], TANAKA, VILMORIN [Cu]; (for cultivars see Kohlrabi, page 406)

*Brassica oleracea* Italica Group - *Sprouting broccoli, Purple cauliflower, Cape broccoli* {DF}. The immature flower heads and tender parts of the stems are eaten raw in salads, steamed, boiled, sauteed, prepared as tempura, marinated, served au gratin or with a cream sauce, etc. In preparing broccoli for the table, it is best to quarter the stem lengthwise so it cooks more rapidly and insures that the delicate buds are not overcooked. Leaves are also eaten. The sprouted seeds are eaten. They are in great demand because of recent nutritional findings. L17. CARCIONE [Pre], VILMORIN [Cu]; (for cultivars see Broccoli, page 311, see also Sprouting Seeds, page 524)

*Brassica oleracea* Tronchuda Group - *Portuguese cabbage, Couve tronchuda, Galician cabbage, Braganza, Sea-kale cabbage* {S}. The midribs of the outer leaves are thick, white, and fleshy. When cooked, they somewhat resemble sea-kale in texture and flavor. In Portugal, the large, flat, tender leaves are shredded with a special implement and used in the preparation of the national soup *caldo verde*. The heart, or middle of the plant, is peculiarly delicate and agreeably flavored, without any of the coarseness so often found in Brassicaceous crops. It can be cut into pieces, boiled, and then braised. ANDERSON, J. [Re], BURR [Cu], ORGAN [Re], VILMORIN; C44, E83T, G68, 053M, PIG

#### CULTIVARS

**De Valhascos:** Tender and delicate. J73, N84

**Gloria de Portugal:** Large, wide leaves with very tender midribs and stem. N84

**Tronchuda Portuauesa:** Improved early-maturing type which is also known as "Cabbage of Seven Weeks" in Portugal. J73, N84

*Brassica oleracea* 'Aspabroc' - *Aspabroc, Broccolini* {S}.

Artificial hybrid. Broccoli x Chinese broccoli. Combines the best aspects of broccoli and the asparagus-like Chinese broccoli. The flowering stems may be eaten raw, steamed, boiled or stir-fried.

#### CULTIVARS

**Asoation:** Distinct, multi-branched flowering shoots; elongated, slender stems with medium-sized beaded heads; mild, sweet and tender. Darker green and more nutritious than both broccoli and Chinese broccoli. Offers a longer shelf life than broccoli. Tall, spreading plant, yields 6 to 10 stems. Developed by Sakata Seed America, Inc. K16M

*Brassica oleracea* x - *Big stem broccoli* {S}. Artificial hybrid. Broccoli x kohlrabi. Produces a swollen kohlrabi-like stem which elongates into a broccoli-like beaded head. The stem and flower head may be used like kohlrabi and broccoli, respectively.

## CULTIVARS

**Queen:** (F.) Large, thick stem, 15 to 16 inches long and 3 to 4 inches in diameter; small flower head. Vigorous and early, can be harvested 55 days after transplanting. The stem is suitable for salads, pickles or cooking. The flower head can be used like broccoli. Q39

*Brassica oleracea* 'Dalmeny' - *Dalmeny sprouts, Cabbage sprouts* {S}. Artificial hybrid. Cabbage x brussels sprouts. A new "old" vegetable, the result of a cross between the common heading cabbage and brussels sprouts. The stem is a foot or more in height, and is not only thickly set with sprouts or small cabbages, like brussels sprouts, but terminates in a cabbage of medium size. BURR, FELL 1982b.

## CULTIVARS

**Fisher's:** Golden Acre cabbage x an unspecified brussels sprouts. Most of the plants will make good solid heads like cabbage; some produce heads along the stem like brussels sprouts. Earlier than regular brussels sprouts. Developed by Fisher's Garden Store, Belgrade, Montana. D82

*Brassica parachinensis* -> *Brassica rapa*

*Brassica perviridis* - *Brassica rapa*

*Brassica rapa* - *Field mustard, Wild turnip* {S}. Leaves are eaten boiled, oil-roasted, pickled, or added to soups. The finely chopped, very young leaves can be added to a tossed green salad. Immature flower clusters are cooked and served like broccoli. The seeds can be ground into a powder and used as a seasoning. Eurasia. CROW-HURST 1972, TANAKA.

## CULTIVARS

**Tarahumara Esoinaca:** (Mequasare) Plants grow to 6 feet tall. Tender, mild flavored young leaves can be used in green salads. Also tasty fried. Cultivated by the Tarahumara Indians of Mexico. Introduced there by the Spanish. 116, N84

**Tarahumara Mostasa:** (Mocoasali) Slightly spicy leaves can be added to green salads when young or cooked as a potherb. The seeds are ground and added to *pinole*. Wild in the fields of the Tarahumara Indians. Old World introduction. 116, N84

**Variegated:** Similar to the species, except the leaves are irregularly variegated white and green. C7M

*Brassica rapa* Chinensis Group - *Bok choy, Pak-choi, Chinese white cabbage, Tsoi sum, Yow choy* {S}. The leaves, tender leaf-stalks, and in some cultivars the flowering stems, are eaten raw in salads, stir-fried, steamed, or pickled. Some cultivars also yield an edible oil. Bok choy leaves are widely used in wonton and other similar Chinese broths. In China, bok choy is sometimes dried and stored for several weeks before use. The product is called *bok choy kan*. When pickled in salt, the leaves rapidly lose fifty percent of their vitamin B but the content can be increased nearly fourfold if the leaves are pickled in a paste of salt and rice bran. Rice bran pickles are called *nuka-miso-zuke* in Japan. HALPIN [Cu, Cul], HARRINGTON, G., HERKLOTS, KRAFT [Re], LARKCOM 1984, OCHSE, SCHNEIDER 1986 [Pre, Re], SHURTLEFF 1975; A79M, C27G{DF}, C82, F82, G93M, K73, L59, R47. (for cultivars see Bok Choy, page 309)

*Brassica rapa* Japonica Group - *Potherb mustard, Japanese mustard* {S}. Leaves are used as a potherb, pickled, or added to soups. The flavor is pleasant and mild compared to mustard. HERKLOTS, TANAKA.

## CULTIVARS

**Green Spray:** (F.) Hybrid mibuna. Light green, entire, flavorful leaves. Suitable for harvesting either in the young stage or when mature. Used for boiling, pickling or *ohi-tashi*. Very vigorous, high-yielding plant with good cold tolerance; early maturing. Good for both fall and winter harvests. C20M, G6,139, N84, Q34, S55, S63M, S75M, TIM

**Kyoto:** 43 days. Vigorous growing plant produces numerous slender, white stalks. Narrow, dark-green leaves, deeply cut and

fringed at the edges; non pungent. Highly resistant to cold. Grows extensively during the winter season. J20, S70

**Mibu-Na:** Long, smooth-edged, relatively flat leaves, more rounded than Mizu-Na; 12 inches long, only 1 to 1 1/2 inches wide; narrow, greenish petioles. Excellent for pickling. Sown late summer to fall, often being overwintered for an early spring crop. Spring planted crops produce edible flower stalks. Makes a superior cut-and-come-again vegetable. D55, F73D, 177, M46, PIG, R32, R47, S63M, S70

**Mizu-Na:** (Kyo-Na, Thousand Veined Mustard) 65 days. Leaves are deeply divided into many linear or filiform thread-like lobes, giving it an attractive feathery appearance. Narrow, white petioles. While Mibu-Na is chiefly pickled, this cultivar is seldom pickled but is more often used in sukiyaki-like Japanese dishes. Also good in salads. GESSERT, HARRINGTON, G. [Cu, Cul], HERKLOTS, LARKCOM 1984, TANAKA, ZEVEN; C53, D3M{PR}, D55, E24, G6, G33, 139, 177, J73, K22, K23{PL}, K66, L59, N7G, O53M, R47, etc.

**Purple Mizu-Na:** A stable line of mild flavored mustards. Deeply divided leaves resemble Mizu-Na but with light purple stems similar to Hon Tsai Tai (Flowering Purple Pak Choy). N7G

**Sakata:** Premium quality Mizu-Na type. Slender white stalks with narrow leaves deeply cut and fringed at the edges; more pronounced ribbing and regular serration. Has a longer shelf life than many other varieties. Very easy to grow. Regrows quickly after having been cut. I18M, 177

**Tokyo Beau:** (F.) 70 days. Vigorous, uniform grower with broad shiny leaves, deep green in color. Mild, fresh, mustard-like flavor. Similar to Tokyo Belle, but grows larger, up to 4 1/2 pounds. Cold hardy and bolt resistant. Has ornamental value as an edging plant in home gardens from autumn to winter. A79M, D68, 177, K16M, L42, L89C, M46

**Tokyo Belle:** (F.) 60 days. Large, vigorous plant, much improved over open-pollinated types. The stalks are thicker, wider, and whiter; the leaves are broader, glossy dark-green with sharp cut lobes. Has a sweeter, milder flavor. Cold tolerant, can be fall planted and harvested even in snow. Also very ornamental. D68, K16M, Q34

*Brassica rapa* Pekinensis Group - *Chinese cabbage, Celery cabbage, Pe-tsai, Wong bok, Napa, Siew choy, Tientsin cabbage* {S}. Leaves are eaten raw in salads and slaws, stir-fried, steamed, marinated, braised, pickled, or added to soups. In Korea, it is fermented into a spicy, sauerkraut-like vegetable called *kimchi*. *Kimchi* is a general term, more specific names being used depending on the substrate, processing methods, seasons, and localities. *Tongbaechu-kimchi* and *bossam-kimchi* are based on Chinese cabbage. Sprouted seeds are eaten in salads and sandwiches. HALPIN, HARRINGTON, G. [Cu, Cul], HERKLOTS [Cu], JAFFREY, LARKCOM 1984, SCHNEIDER 1986 [Pre, Re], STEINKRAUS, TANAKA; C82, E13G{PD}, E38, F92, G83M, G93M, H49, L59. (for cultivars see Chinese Cabbage, page 337, see also Sprouting Seeds, page 524)

*Brassica rapa* Perviridis Group - *Mustard spinach, Komatsu-na* {S}. Leaves are eaten raw in salads, cooked as a potherb, stir-fried, pickled, or used in soups. In eastern Honshu, they are used in the preparation of a New Year's ceremonial rice-cake soup, *zoni*. Young seedlings are also used as a vegetable. The thick, tuberous root of some forms is pickled and eaten. HALPIN [Cu], HERKLOTS, LARKCOM 1984, TANAKA, UPHOF; D55, G33,139,177, J20, J73, M46, R32, S63M

## CULTIVARS

**Kuromaru:** (F.) Upright plant with oval, glossy dark-green leaves. Tight petiole resists damage during harvest. Can be harvested in about 20 days from a summer sowing, 50 days in autumn. Productive all year round. High tolerance to heat and cold, turnip mosaic virus, and black rot. Q28



**Osome:** (F.) 35 days. Recently developed hybrid with thick, dark-green, large round leaves that grow upright. Easy to grow. Very uniform, vigorous and heavy yielding. M46

**Savanna:** (F.) 30 days. Uniform, early maturing Tendergreen type. Vigorous, upright plant with large, round, thick, glossy dark-green leaves. Mild flavor. Develops fewer yellow leaves as crop matures. Faster growing and slower bolting than open pollinated types. Shows good tolerance to heat, cold and drought. Fast recovery after harvest. Introduced in 1979 by T. Sakata Co. *Al*, A27M, C28, D11M, F70, 177, 191, J82, K10, *K16M*, K73, L42, M29, M46, Q34, etc.

**Summer Fest:** (F.) 35 days. Dark green, rounded leaves; slender, fleshy, rounded green stems. Mild, tender and delicious. Recommended for use in salads and braising mixes. Upright, uniform plants, heat and disease tolerant. Specially suited for growing as a summer crop. G6,177, N84, Q34, *S63M*

**Tenderareen:** 30-50 days. Spreading; medium-green, broad, smooth, thick leaves have a very mild, bland flavor with hardly a hint of mustard-like hotness. Grows to about 18 inches tall in fertile soil and should be thinned to at least 8 inches apart. Bolts about May 1st from a February planting in western Washington. A25, C44, F82, G79, *H33M*, 139, *L10*, L59, M46, N16, R47

**Tokyo:** 30 days. Very popular Japanese cultivar of fine quality. Medium-green leaves with a mild flavor. Excellent for stir-frying. Fast growing and dependable. Grows about 18 inches tall. F73D

Brassica rapa Rapifera Group - *Turnip*, *Fodder turnip*, *Stubble turnip* {S}. The roots are eaten raw, pickled, braised, pureed, or used in soups, stews, casseroles, etc. They can be harvested when the size of a seedling radish and used in salads. Salted turnips are a common product in China. A bread is sometimes made from turnips. First they are peeled, boiled, and the juice is pressed out. When dry, wheat flour is added, the mixture is kneaded, fermented briefly, made into loaves, and then baked. The leaves are used as a potherb, and in Nepal they are fermented into *gundruk*. In northern Iraq, pickled turnip heads are used instead of yoghurt in the production of *kushuk*. In Morocco, the leaf stalks are chopped and cooked in chicken *kabra*, a type of stew that includes the aged Moroccan butter called *smen*. Sprouted seeds are eaten in salads and sandwiches. CAMPBELL-PLATT, CARCIONE, DIRAR 1993, EVELYN, VILMORIN [Cu], WOLFERT 1973 [Cui, Re]; B13, C27G{PD}, E53, 193M, M25, N81, 048. (for cultivars see Turnip, page 566, see also Sprouting Seeds, page 524)

Brassica rapa Ruvo Group - *Broccoli raab*, *Turnip broccoli*, *Rapini*, *Sparachetti*, *Cimadi rapa*, *Grelos* {S}. The flowering stems and leaves have a pleasant bitter flavor and are eaten boiled, steamed, braised, sauteed, or served with pasta, potatoes, Italian sausage, etc. A very popular vegetable with Italians, who traditionally prepare it with garlic and olive oil. Also widely eaten in Spain and Portugal. Young, tender leaves are sometimes eaten in salads. ANDERSON, J. [Re], BUGIALLI [Re], CUSUMANO [Cul, Be], GRAY, P. [Pre, Re], HALPIN [Cu, Cul], KRAFT [Re], SCHNEIDER 1986 [Pre, Re], UPHOF; A76{P£}, E13G{PR}, F80, 139, 184, K49M, N40{PR}, R47

#### CULTIVARS

**Broccoletto:** An Italian "seedling" crop. Each plant produces a single, sweet broccoli-like head. Can be broadcast or sown in rows, thinning to a minimum of 4 inches. Harvest whole plants as soon as buds show, usually when 9 to 12 inches tall. Sow in succession from early spring to fall. An ideal catch crop. DI 1M, F70, R32, S55

**Centoventina:** (120 Days, 120 Giomi) Sown in autumn for harvesting during the winter in mild climates. One of the latest of all cultivars, maturing in about 120 days. Q11M, *S17*

**Fall Raab:** (Late Rappone, Salad Rappone) 90 days. Grows 18 to 22 inches tall. Tasty strap-shaped leaves, medium to dark-green in color; long standing. Winter hardy; seeded in late fall for an early spring harvest. Greens similar to turnip tops. In mild winter areas,

produces multiple small florets when the weather turns colder. *Al*, C28, C44, *DIT*, G57M, G71,177, K50, L42

**N.C. Raab Salad:** 60 days. Fresh market and garden variety for greens. Dark green leaves; abundant side shoots. Grows to 15 inches tall. Planted in late spring and early summer. G1M

**Novantina:** 90 days. Produces numerous shoots that are eaten during the winter in the same manner as asparagus. Usually sown from July to September in Italy. Matures relatively late, in about 90 days. Good regrowth after cutting. B8, J20, Q11M, *S17*

**Quarantina:** 40 days. Produces tasteful greens during winter. Usually harvested at about 12 inches tall, before the blossoms have opened, and eaten boiled or pan-fried. Matures very early, in about 40 days. Usually sown from July to September in Italy. B8, D68, Q11M, *S17*

**Sessantina:** 60 days. Not as early as Quarantina, but more voluminous. Quality excellent. Usually sown from July to October in Italy. Rapid growing, matures in about 60 days. B8, K66, Q11M, *S17*

**Sessantina Grossa:** Improved type with thicker, tender shoots and early, large buds. Leaves and buds have a "bloom" and more of the color of regular broccoli. Suitable for fall, winter or spring crops. G6

**Sorrento:** 40 days. One of the earliest maturing cultivars, recommended for early spring planting. Delicious, dark-green florets, among the largest and most uniform in the early category; blue-green foliage. Grows upright to 30 inches tall; well branched. Excellent for home gardeners and specialty growers. L42, L89

**Soring Raab:** 60 days. Extra early fine-flavored spring raab. Plants grow quickly without developing a center head. Grows to 12 inches with numerous, tender side shoots. Seeded in early spring; harvested before weather becomes hot; bolts quickly. Can also be used for an early fall harvest. Not winter hardy. B75, C28, C92, F82, G57M, G71,167M, K50, K73, L42, M29

Brassica rapa Sarson Group - *Sarson*, *Toria* {S}. Source of *Indian colza oil*, used in pickles, preserves, curries and other culinary preparations. Also grown as a vegetable crop in the hills and plains of northwestern India, the young leaves and flowering stalks being used as greens. In some areas sarson *sag* is relished when eaten with maize *chapaties*, butter, and buttermilk. One of the vegetables used for *gundruk*, an important Nepalese food which is made by fermenting shredded and squeezed greens, then drying them. *Gundruk* is eaten with curries, dais, soups and achars. ANONYMOUS 1950, ASSOCIATION [Re], CAMPBELL-PLATT, CHAUHAN, D., MAJUPURIA [Cul], MANANDHAR, VAUGHAN, WATT, ZEVEN.

#### CULTIVARS

**Brown Sarson:** (Kali Sarson) Flower clusters, hairy leaves and seed oil are used for culinary purposes. Highly self-sterile. Resembles *Toria* more than it does Yellow Sarson. Matures slightly later than *Toria*. Has a slightly lower oil content than Yellow Sarson. Grown in the Punjab area of India. ANONYMOUS 1950, CHAUHAN, D., TANAKA, WATT; U76, Y81

**Toria:** (Indian Rape) The smooth leaves and seed oil are used for culinary purposes. Highly self-sterile Very sensitive to drought during pod formation. Sown in September and harvested in January, making it the earliest maturing Indian oleiferous brassica. An important oil-seed crop in the Punjab area of India. ANONYMOUS 1950, TANAKA, WATT; U76, Y81

**Yellow Sarson:** (Indian Colza) Source of a seed oil much used in the diet of the Hindus. The tender leaves and shoots are relished as a potherb. Self-sterile. Matures somewhat later than *Toria*. Also more drought resistant, but more susceptible to insects and diseases. An important oil-seed crop in parts of India. ANONYMOUS 1950, CHAUHAN, D., TANAKA, WATT; U76, Y81

*Brassica rapa* 'Tyfon' - *Tyfon, Holland greens* {S}. 40 days. A cross between Chinese cabbage and stubble turnip. Highly nutritious, productive, fast growing crop; can be grown in all parts of the country. Extremely winter-hardy and bolt resistant. If harvested by cutting back, several cuttings can be made at 30 to 40 day intervals. Best cut when young and tender. Mild-flavored, can be used in salads or as a cooked vegetable. A15Z, 139, J20, L89, M25, M46

*Brassica sinapistrum*-*Sinapis arvensis*

*Brassica tournefortii* - *Wild turnip-rape, Punjab rai* {S}. Leaves and young shoots are eaten. Seeds are the source of an edible oil. Eastern Mediterranean, Southwest Asia. KUNKEL, TANAKA, ZEVEN; W59M, Y81, Z7M

*Brassica* x sp. (*B. oleracea* x *B. rapa*) - {S}. Artificial hybrids. Cabbage x various forms of *B. rapa*. The leaves are eaten fresh in salads, stir-fried or pickled.

CULTIVARS

**Hakuran:** A hybrid between common cabbage and Chinese cabbage. Intermediate in shape between the two parents. The head resembles a large, loose Napa type Chinese cabbage, contains 50 to 60 leaves and weighs 2 1/4 to 4 1/2 pounds. Leaves are crisp, juicy, tasty and have less fiber. Moderate yield and disease resistance. Matures later than Chinese cabbage and has greater heat tolerance; more suited to tropical and sub-tropical areas. NISHI; Q28

**Senoosai:** (One Thousand Treasure Vegetable) 35 days. A hybrid between common cabbage and komatsu-na produced by embryo culture. Thick, green leaves; tender and soft like komatsu-na, moderately sweet like cabbage. Heat resistant; grows vigorously all year round, even in summer. Very rapid-growing. High in vitamins and minerals. Developed by Kirin Brewery Co., Ltd in cooperation with Tokita Seed Co., Ltd. LARKCOM 1991; D55, D68, 177, N84, Q34, S70

*Brassica* 'Colbaga' - *Colbaga* {S}. Very large roots, purple above ground, white below the soil; flesh white, firm like a rutabaga. Flavor unique, delicate, combines the flavors of Chinese cabbage, rutabaga and cabbage. Can be used both cooked or raw in cole slaw or other salads. Grow and store like a rutabaga. Will keep all winter. Developed by Professor E.M. Meader at the University of New Hampshire.

CULTIVARS

**Whits:** An improved cultivar developed by Fisher's Garden Store, Belgrade, Montana. Selected for its pure white flesh. D82

*Bunias erucago* - *Com rocket* {S}. The young, tender leaves are used in refreshing spring soups or as a side dish. They have a characteristic, aromatic flavor that goes well with white Spanish beans (Dutch case knife beans) in dishes such as *ris e barland* soup from Lombardy, Mediterranean region, Southwest Asia. BIANCHINI; V73M, W88M, X54, Y17M

*Bunias orientalis* - *Turkish rocket* {S}. Young leaves and shoots are eaten raw in salads or boiled as a potherb, especially in some parts of Russia and Poland. Eumsia. HEDRICK 1919, UPHOF, VILMORIN [Cu]; C95, N71M, N84, R49{PL}

*Cakile edentula* - *American sea-rocket* {S}. The succulent, young leaves, stems, and unripe capsules are eaten raw in salads, having the flavor of horseradish. Older leaves and flower buds can be combined with milder flavored greens and used as a potherb. The roots are occasionally dried, ground, mixed with flour and used for making bread. Northern temperate region. FERNALD, GIBBONS 1964, MEDSGER; F85, F88M

*Cakile maritima* - *Sea rocket* {S}. Young leaves and stems, flower buds, and unripe pods are eaten raw in salads and sandwiches, or mixed with milder greens for use as potherbs or seasonings. The roots are pounded, mixed with flour, and eaten during times of scarcity. European coasts, North Africa. BIANCHINI, CLARKE, HEDRICK 1919; N84

*Camelina sativa* - *Gold of pleasure, False flax, Siberian oil-seed, Tsitsmati* {S}. The seeds yield an oil which is used for culinary purposes. In Georgia, the peppery leaves are eaten fresh, having a flavor similar to arugula. Sold in local markets. Eurasia. GOLDSTEIN, HEDRICK 1919, VAUGHAN [Nu]; N71M, N84

*Capsella bursa-pastoris* - *Shepherd's purse, Chinese cress, Water chestnut vegetable, Nazuna* {S}. The young leaves and stems are cooked and eaten like spinach. They are said to have a cabbage-like flavor when blanched and served as a salad. At one time cultivated and brought to the markets of Philadelphia. Seedpods can be used as a peppery seasoning for soups and stews. Fresh or dried roots are used as a ginger substitute or candied in syrup. The seeds are sometimes gathered and ground into meal. In Japan, the plant was one of the essential ingredients in the ceremonial rice and barley gruel eaten on January 7th. Eurasia, cultivated. BURR [Cu], FERNALD, HARRINGTON, H., HERKLOTS, HOMMA, LARKCOM 1984, LAUNERT [Re], MEDSGER, TANAKA; A2, C82, C95, F37T{PL}, F86G, J82, M34M, N71M, N84, R47

*Cardamine amara* - *Large bitter-cress* {S}. Young leaves can be eaten alone as a salad, or used like rocket and watercress to enhance the flavor of other salads with its aromatic, piquant taste. Eurasia. BIANCHINI, HEDRICK 1919, UPHOF; W35

*Cardamine diphylla* -> *Dentaria diphylla*

*Cardamine hirsuta* - *Hairy bitter cress, Lamb's cress* {S}. The young leaves and flowers are eaten raw in salads, used as a garnish, or cooked and served like spinach. Eurasia. CRIBB, HEDRICK 1919, LARKCOM 1984; N84, O48

*Cardamine oligosperma* - *Little Western bitter cress, Spring cress* {S}. The peppery rosette leaves are delicious added to salads, or the whole plants can be harvested like mache. Western North America. C95, N7G, N84

CULTIVARS

**Karen's Giant:** Selected by Shoulder to Shoulder Farm for its exceptionally large rosettes, 3 to 5 inches in diameter. Some rosettes are flat, others are mounded like a pin cushion of small, cress-like leaves. Good eating quality until the first flowers open, when the stems become tough. N7G

*Cardamine pratensis* - *Cuckoo flower, Lady's smock* {S}. The young leaves, shoots, and flower buds have a pungent, cress-like flavor and can be added to fresh green salads, sandwich spreads, sauces, or served alone with an oil and vinegar dressing. Northern temperate region. CROWHURST 1972, LARKCOM 1984, LAUNERT [Re], MICHAEL, VILMORIN; K53, M77M{PL}, N71M, N84, 053M, Q24, R32, S55

*Cardamine rotundifolia* - *Mountain water cress* {PL}. The young and tender leaves are eaten raw in salads, having a delicious mildly pungent flavor somewhat reminiscent of water cress. Older leaves are cooked and eaten. North America. GIBBONS 1979, HEDRICK 1919, MEDSGER, PETERSON, L.; I90M

*Cardaminopsis halleri* - {S}. In parts of Friuli, in northern Italy, the leaves are added to *pistic-di* ritualistic spring dish containing up to fifty six different wild greens. Europe. PAOLETTI; V84T

*Cardaria draba* - *Hoary cress* {S}. Young leaves and shoots are eaten in salads or as a potherb. The pungent seeds are used as a seasoning. Eurasia. HEDRICK 1919, NIEBUHR, UPHOF; M34M, N84, O48

*Cochlearia anglica* - *English scurvy-grass* {S}. The young leaves and flower-heads are eaten raw in salads and sandwiches. Europe. MICHAEL [Pre, Re]; N84

*Cochlearia danica* - *Danish scurvy-gmss* {S}. Young leaves are eaten raw in tossed green salads. As a cultivated plant, it is considered superior to *C. officinalis*. Northern temperate region. LARKCOM 1980, MICHAEL; Z25M

*Cochlearia officinalis* - *Scurvy grass*, *Spoonwort* {S}. The succulent, slightly salty leaves and flower-heads are added to tossed green salads, soups, sauces, beer, or used as a filling for bread and butter sandwiches and stuffed vegetables. Juice from the leaves can be added to orange juice to make *spring juices*. Once taken on long sea voyages on account of its high vitamin C content. Circumpolar. BURR [Cu], HEDRICK 1919, LAUNERT, LEYEL 1987b, PAINTER [Re], ROOT 1980b, VILMORIN; J82, N84, 048, S55

*Conringia orientalis* - *Yabani tutun* {S}. Seeds are the source of a light-yellow oil used for cooking purposes. In Turkey, the above ground parts are used as a vegetable or condiment, condiment. Europe. OZTURK, UPHOF; M34M

*Crambe cordifolia* - *Tartar sea-kale* {PL}. Young leaves are eaten as a potherb. The root is also reported to be edible. Southwest Asia to Central Asia. HEDRICK 1919, WATT, ZEVEN; A61, A61{S}, B28, C2, C9, E7M{S}, E30, E33, L91M{S}, M37M, N84{S}, 053M{S}, Q24{S}

*Crambe maritima* - *Sea-kale* {S}. The blanched leafstalks are eaten raw in salads, boiled, baked, braised, or otherwise prepared as asparagus. When properly cooked, they retain their firmness and have a very agreeable flavor, somewhat like that of hazelnuts, with a very slight bitterness. The leaves can be boiled until soft, minced, seasoned with garlic and served as spinach. Plants can be forced indoors for winter use. Eurasia. HALPIN [Cu], HAWKES [Cu], KRAFT [Re], LARKCOM 1984, LAUNERT, MABEY, VILMORIN [Cu]; A61, A61{PL}, B77{PL}, C2{PL}, C9{PL}, D92M, D95{PL}, E30{PL}, I74{PL}, J6, L22{PL}, L91M, N84, 053M, Q24, R47, R53M{PL}, etc.

#### CULTIVARS

**Lily White:** Young leaves are totally devoid of the purple tinge that develops on those of the common type when they are exposed to the light, becoming green under similar conditions. In other respects they are identical. VILMORIN; B49, N84, 053M, R32, S55

*Crambe orientalis* - {S}. The very thick roots are used as a substitute for horse radish. Young flower-stalks can be prepared in the same manner as broccoli. Reportedly has potential for producing an edible oil. Eurasia. HEDRICK 1919, OZTURK; U71M

*Crambe tatarica* - *Tartar bread plant* {S}. Young, blanched leafstalks are eaten raw or cooked, like those of *C. maritima*. The root is thick, fleshy, and sweet and is eaten raw as a salad, as well as cooked and seasoned with oil, vinegar, and salt. Eurasia. HEDRICK 1919, TANAKA, UPHOF; A61, A61{PL}, D92M, N84, 053M, Q24

*Dentaria diphylla* - *Two-leaved toothwort*, *Pepper-root*, *Crinkleroot* {PL}. The crisp, white rootstock is a popular nibble, having the flavor of cress or horseradish. It can be added to green salads and sandwiches, eaten as a radish-like relish with salt, or grated and prepared like horseradish. Eastern North America. FERNALD, GIBBONS 1979, MEDSGER; I37M, 144, J48, L59P, N9M, N9M{S}

*Dentaria laciniata* - *Cut-leaved toothwort* {PL}. The crisp roots have a pungent, peppery taste and are chopped and added to salads, or used in the preparation of spicy relishes and sauces. They are very good eaten in sandwiches with luncheon meats, whose salt helps bring out their flavor. North America. ANGIER [Re], CROWHURST 1972, GIBBONS 1966b; 144, J39M, J48, L59P, M77M, N9M, N9M{S}

*Descurainia pinnata* - *Tansy mustard* {S}. Leaves, when boiled or roasted between hot stones, were eaten by Indians of several tribes. The seeds were mixed with cornmeal, added to soups, or boiled to a mush and consumed with salt. In Mexico, they are made into refreshing drinks with lime juice, claret and syrup. Pods make an interesting mustard-flavored nibble. North America. CLARKE, GIBBONS 1979, KIRK, MEDSGER, UPHOF; M34M, N84

*Descurainia sophia* - *Tansy mustard*, *Flixweed* {S}. The pungent seeds are sometimes made into mu staid. Young leaves are used as a

potherb. Sprouted seeds are eaten in salads and sandwiches. American Indians baked the leaves in firepits and used the ground seeds as *pinole* in breads, gruels, and soups. Eurasia, naturalized in North America. HARRINGTON H., KAVENA [Re], TANAKA, UPHOF; F85, L3J, N84

*Biptaxis erucoides* - *Wild rocket*, *Sylvetta* {S}. The spicy leaves are eaten in salads or cooked with dried beans. They are best harvested before the flowers appear. A very popular traditional vegetable in parts of Italy. Often cooked with pasta in the manner of broccoli raab. Mediterranean region. CRETTE, WOLFERT 1998; N7G, N84

*Diplotaxis muralis* - *Wall rocket*; *Wild arugula*, *Rucola selvatica*, *Sylvetta* {S}. The young leaves have a piquant flavor, somewhat resembling arugula but with a sharp aftertaste. Finely chopped, they can be used sparingly in salads or as a flavoring for cooked dishes. Flowers are also eaten or used for garnishing. The perennial plant is resistant to heat, and would make a good warm weather substitute for arugula in suitable climates. Mediterranean region. BIANCHINI, WEAVER 1993; C53, E63D, G6, G53M, 139,177, J20, K57{PL}, K66, N71M, N81, N84, Q11M, Q34, S17, S55

#### *Diplotaxis tenuifolia* - \**Diplotaxis muratis*

*Eruca sativa* - *Rocket-salad*, *Arugula*, *Roquette*, *Rucola* {S}. Young leaves have a distinct, spicy flavor and are eaten raw in salads, or sauteed with garlic and olive oil. One of the popular ingredients of *mesclun* and *misticanze*, salad mixtures of baby and bitter lettuces and mild herbs. Older leaves that have become too hot to be eaten alone can be pureed and added to soups and sauces. Arugula sauce is a traditional condiment of the Umbria region of Italy. The flowers are used as a garnish and are available at some specialty markets. Seeds are used as a substitute for mustard, and also yield an edible oil called *jamba oil*. Sprouted seeds are eaten. Eurasia, cultivated. CUSUMANO [Cu, Re], GRAY, P. [Cu, Re], HALPIN [Cu, Cu], KRAFT [Re], LARKCOM 1984, SCHNEIDER 1986 [Cu, Re], UPHOF, VILMORIN [Cu]; A16, A97{PL}, C3, C44, D3M{PR}, F15M{PL}, F80, F93G{PL}, G6, G68, G82, 191, 194{PD}, J73, J85T{PR}, K22, K66, M46, N40{PR}, R47, etc. (see also Sprouting Seeds, page 524)

#### CULTIVARS

**Astro:** Improved strap leaf strain. Medium green, slim, less deeply cut leaves; semi-open plant habit; somewhat milder, nutty flavor, stronger in high temperatures. Matures slightly earlier. Small leaf tips can be harvested and blended with other greens in *mesclun* mixes. Mature leaves and flowers add flavor to salads. C20M, K57{PL}, L42, N84

**Greek:** An improved cultivar that originated in Greece. Nutty, spicy flavor, excellent in salads. Easily and quickly grown. L88J

*Eutrema wasabi* - *Wasabi*, *Japanese horseradish* {PL}. The fleshy rhizomes are grated and prepared into an attractive fresh green paste which is the essential condiment for Japanese raw sliced fish (*sashimi*). Considered to have a distinct flavor and pungency that is superior to common horseradish. Leaves, flowers, leafstalks, and freshly sliced rhizomes are soaked in salt water and then mixed with sake lees to make a popular pickle called *wasabi-zuke*. Eastern Asia, cultivated. COST 1988 [Cu], HAWKES [Re], HODGE 1974 [Cu], SHURTLEFF 1975 [Re], TANAKA, TSUJI [Re], YASHIRODA [Cu]; A7{DF}, E66T{DF}, F88{DF}, G20M{ED}, G47B{DF}, I8M{DF}, L16{DF}, N84, R53M, S70, S70{S}

#### *Farsetia clypeata* - *Fibigia clypeata*

*Fibigia clypeata* - *Paperpumpkinseeds* {S}. The young leaves are eaten in salads like cress. Eastern Mediterranean. HEDRICK 1919; D92M, E91G, F35M{PL}, F80, L94M, N84, 01, 053M, Q24

*Hesperis matronalis* - *Dame's rocket*, *Damask*, *Scented rocket* {S}. In many countries, especially in Germany, the young leaves, before flowering, are gathered and eaten like cress in salads. Seed-pods can be added to soups and stews. The flowers are used to add a spicy flavor to salads and fruit dishes. Seeds are the source of an oil,

called *honesty oil*, *huile de Julienne*, or *rotreps oel*. The sprouted seeds can be eaten. Eurasia. GRIEVE, REILLY, UPHOF; C9M, D92M, F24D, G47M, H63{PL}, K53, N11M, N19M{PL}, 053M, R47

*Hirschfeldia incana* - *Greek mustard* {S}. Young plants are consumed with oil and lemon juice in some parts of Greece. The Cahuilla Indians of California ate them either fresh or boiled. They also collected the seeds and ground them into mush. The flowers can be added to vegetable dips. Southern Eurasia, naturalized in North America. BEAN, L., ROOS-COLLINS, UPHOF; F85

*Iberis amara* - *Rocket candytuft* {S}. Seeds are occasionally used as a source of mustard. Eurasia. UPHOF; D56M, D92M, E7M, F68T, F85, F86G, J82, N40M, N84

*Lepidium campestre* - *Bastard cress*, *Pepperwort* {S}. Finely chopped leaves and young shoots can be used to give a watercress-like taste to salads, omelettes, soups, and sauces. The pungent, unripe seedpods can be added to hot soups and stews. Northern temperate region. LAUNERT [Re], PETERSON, L.; N71M, N84

#### *Lepidium draba* *Cardaria draba*

*Lepidium fremontii* - *Desert pepper-weed*, *Mustard bite* {S}. Seeds were used by the Indians of Arizona for making bread or mush. They may be used directly as flavoring in salads, soups and stews, and they also make an excellent dressing for meat when mixed with vinegar and salt. The young shoots are good in salads. Southwestern North America. HALL, KIRK, YANOVSKY; L55J, N84

*Lepidium latifolium* - *Dittander* {S}. The peppery leaves are used in salads, sauces, and as a potherb. Seeds are used as a condiment. The hot, pungent root resembles horseradish, for which it may be used as a substitute. Was once cultivated in England and by the ancient Greeks. Northern temperate region. MABEY, UPHOF; N71M, 048, R49{PL}

*Lepidium meyenii* - *Maca* {DF}. The sweet, pleasant flavored roots resemble a small pear in both size and shape. The fresh roots are sometimes baked in underground pits. After being dried, they are cooked in water or milk to form a sweet, aromatic porridge called *mazamorra*. Maca roots are also placed in sugar cane rum (*aguardiente*), to which they impart a special aroma and flavor. Leaves are also edible. Andean South America. HERKLOTS, LEON, NATIONAL RESEARCH COUNCIL 1989; F37T, GO, K18M

#### CULTIVARS {PL}

**Hesoerada:** (Varietad) Thick, strong radish-like root SL Yellow skin, banded with purple at the waist. Pearly white flesh, somewhat marbled in appearance. 174

**Purple:** Thick, strong radish-like roots. Purplish skin. Pearly white flesh, somewhat marbled in appearance. 174

**White:** Thick, strong radish-like roots. Whitish skin. Pearly white flesh, somewhat marbled in appearance. 174

**Yellow:** Thick, strong radish-like roots, Yellowish skin. Pearly white flesh, somewhat marbled in appearance Yellow types are generally the most popular of the macas in their native region. 174

*Lepidium sativum* - *Cress*, *Garden cress* {S}. Young leaves are eaten in salads, sandwiches, soups, omelettes, with sliced hard-boiled eggs, etc. Commonly grown in combination with mustard as a cut-and-come-again seedling crop called *mustard and cress*. The fresh or dried seed pods can be used as a pungent seasoning. In Ethiopia, the seeds are grown for their edible oil, while in the United States they are utilized as a sprouting seed. Roots are occasionally used as a condiment. Cultivated. BIANCHINI, DUKE, HALPIN, LARKCOM1984, UPHOF, VILMORIN [Cu]; E7M, E33, E63D, K2{PD}. N7G, N71M, N84, R47. (see also Sprouting Seeds, page 524)

#### CULTIVARS

**Broad Leaved:** (Mega Cress, Broad Leaved French) 10-40 days. The leaves are oval in shape, about 2 inches long, and about 1 inch broad; the blade of the leaf is entire, without any divisions, merely notched somewhat on the edges. The stalks are slender and somewhat irregular in outline. Less desirable as a salad plant but good for use in soups. BURR, VILMORIN; C53, G6, L91M{SP}, N84, P59M

**Curled:** (Peppergrass, Curly Cress, Early Curled) 10-30 days. In this cultivar the divisions of the leaves are finer and more numerous than in the common kind; they are also curled and more or less frilled on the edges like some types of parsley, which gives the foliage a very ornamental appearance. Used in salads, feta cheese sandwiches and as a garnish. BURR, VILMORIN; A16, D82, E24, FI, F70, F92, H99J{SP}, I91{SP}, K66, L24G{SP}, L89, M49, N7G

**Extra Curled:** (Triple Curled) 10-30 days. The blade of the leaf is divided into a few lobes, which are almost entire, the edges only being cut into a kind of fringe. The divisions are very fine, numerous, and curled in such a manner as to cause the plant to resemble a tuft of green moss. Leaf-stalks are comparatively short, which gives the plant a dense and compact appearance. VILMORIN; C85M, D11M, L91M, PIG

**Greek:** A fast growing salad crop that can be broadcast in succession and cut when young. A completely new addition to the mixed salad. Delicious peppery taste. Discovered in Greece. B49, N84, R32, S55

**Groka:** Large, oval, entire leaves; attain a dark-green color at an early age Very vigorous and quick growing. The strong, sturdy plant is trouble free and easy to grow. Maintains its attractive appearance well. Can be harvested 5 to 8 after sowing for a seedling crop. R11M

**Moss Curled:** 10 days. Fine cut leaves resemble parsley; dwarf and compact in growth. Tastes like water cress. Ready just 10 days from seeding; sow every 2 weeks year round. Can be grown indoors in pots to provide winter greens. G16, Q34

**Persian:** (Barbeen, Shahi) Broad-leaf type. Large, dark-green leaves, 2 to 6 inches long and 1/2 to 1 inch wide; irregularly toothed. Pungent, water-cress like flavor. In Iran, Iraq and the Gulf States of Arabia, the fresh leaves are commonly used as a garnish in salads like watercress. In Iran they are also used as a potherb. MALLOS [Re]; A2, C95, 199M, K49T, N7G

**Reform:** 50 days. A vigorous broad-leaf cultivar. Leaves are sword shaped, 3 to 5 inches long. Targy, peppery-sweet cress flavor. Will grow and thrive in ordinary garden soil. Seed can be freely broadcast in the bed or row and seedlings don't need thinning. Grows very quickly; sow every month from early spring until hot weather and again all fall. Recently introduced from Holland. K66

**Victoria:** 25 days. Broad, smooth-leaved type which is very productive and very fast growing. Excellent for adding a spicy, piquant flavor to salads. Can be planted in two week successions for continuous harvest. J20

*Lepidium virginicum* - *Wild pepper-grass*, *Virginia cress* {S}. The mustard-flavored leaves or young shoots are chopped and mixed in salads, used as a garnish, or cooked as greens. Unripe pods, pleasantly pungent in flavor, are chopped, mixed with vinegar and served as a condiment with soups and stews. North America. CROWHURST 1972, GIBBONS 1979, MEDSGER, MORTON 1976; F85, M34M

*Lobularia maritima* - *Sweet alyssum* {S}. Leaves, young stems, and flowers can be used as a flavoring herb in salads or other dishes where pungency is desired. The flowers are also good for candying. Cultivated. BOCEK, NYERGES; A53M, D92M, E7M, E59Z, E66M, FI, K15, K49M, K53, N11M, N84, 053M, R47

## CULTIVARS

**Rosie O'Dav:** Recommended for candying by candied flower expert Jill Ann Williams. Highly scented, dainty, pinkish-lilac blossoms. For use when wanting to set a "feminine" mood. Works well with gel-based candying kits. WILLIAMS, J.; D92M, N84

**Royal Carpet:** Recommended for candying by candied flower expert Jill Ann Williams. Rich, velvet, violet-purple blossoms with white eyes. Combines well with yellow and orange edible flowers. Works well with gel-based candying kits. WILLIAMS, J.; C85M, D26D, FI, F92, H21, L11, L79, N84, 053M

**Snow Crystals:** Recommended for candying by candied flower expert Jill Ann Williams. Pure white blossoms, largest of any variety. Sturdier than other types, holding up better in the candying process. Especially recommended when a lace-effect is desired. Good combined with other edible flowers and leaves, such as blue pansy and woodland violets, and made into a cluster. WILLIAMS, J.; D26D, N84

*Lunaria annua* - *Penny flower, Honesty, Money plant* {S}. The roots, when gathered before the flowers form, can be eaten raw in salads. Pungent seeds are used as a substitute for mustard. Europe. HEDRICK 1919, UPHOF; B77M, C82, C95, D92M, E7M, FI, G80{PL}, K53, L59, N42{PL}, R47

*Lunaria biennis* - *Lunaria annua*

*Matthiola incana* - *Stock* {S}. The highly fragrant flowers are eaten as a vegetable or used as a garnish, especially with sweet desserts. Pods are also edible. Mediterranean region, cultivated. LEGGATT [Re], TANAKA; C53, D68, D74B, D92M, E5T, E7M, F85, G71, G71M, G82,191, K66, L89, M29, OfR47, etc.

*Nasturtium officinale* - *Water cress* {S}. Leaves and shoots are employed as an attractive garnish, eaten in salads, or used in soups, canapes, omelettes, etc. Blended with butter it makes a tangy spread for sandwiches. Seeds are occasionally made into mustard. The seeds can also be sprouted like alfalfa or grown as a seedling crop. Eurasia, cultivated. CARCIONE, FERNALD, FOX, F., GIBBONS 1962 [Re], HALPIN [Cu, Cul], HARRINGTON, G., LARKCOM 1984, VILMORIN [Cu]; C53, C95, E38, F80, F92, G0{DF}, G6, H54,191{SP}, K66, L59, M39{PL}, N11, R47. (see also Sprouting Seeds, page 524)

## CULTIVARS

**Improved Broad-Leaved:** (Large Improved, Broad Leaf) 50 days. An improved cultivar with large, broad, oval leaves and a mildly pungent flavor. Home gardeners should have a very moist, shady spot, as it is usually grown along river banks. Harvest in cool temperatures. Perennial. D11M, FI, F70,177, K49M, L42, L89, L94M, P59M

*Orychophragmus violaceus* - *Erh-yiieh-lan* {S}. Used as a vegetable in some parts of China. China, cultivated. TANAKA; L91M

*Peltaria alliacea* - *Shieldwort, Garlic cress* {PL}. The flowers and leaves are eaten in salads, having a flavor reminiscent of garlic and mustard. They are best harvested during the cooler months, as hot weather makes them somewhat bitter. Europe. HEDRICK 1919; R49

*Radicula nasturtium-aquaticum* -> *Nasturtium officinale*

*Radicula palustris* - *Rorippa islandica*

*Raphanus caudatus* - \* *Raphanus sativus*

*Raphanus maritimus* *Raphanus raphanistrum ssp. maritimus*

*Raphanus raphanistrum* - *White charlock, Wild radish* {S}. Young leaves and shoots are minced and added to salads or cooked as a potherb. The seeds are very pungent and are said to form an excellent substitute for mustard. Sprouted seeds make a very tasty addition to a salad. Eurasia, naturalized in North America. BIANCHINI, HEDRICK 1919, LAUNERT; M34M, N71M, N84,

048

*Raphanus raphanistrum ssp. maritimus* - *Sea radish, Spanish radish, Rapestone* {S}. Leaves and roots are eaten as a potherb. The succulent roots can be used as a substitute for horseradish. Mediterranean region. HEDRICK 1919; SI7

*Raphanus sativus* - *Radish, European radish*. The hot, spicy roots are eaten raw in salads, as an appetizer, pickled, used for garnishing, etc. Leaves may be boiled as greens, fermented into *gundruk*, or used as a cress. Young flower clusters are eaten as a cooked vegetable. The tender pods of some forms are served with beer in Germany. Seeds are the source of an edible oil. The sprouted seeds are widely used in the food industry for spicy sprout mixtures. Dehydrated radish sprouts can be used as a salt substitute. Cultivated. ASSOCIATION [Re], CAMPBELL-PLATT, HEDRICK 1919, LARKCOM 1984, MEYEROWITZ 1994b [Re], TANAKA, UPHOF, VILMORIN [Cu]. (for cultivars see Radish, page 500, see also Sprouting Seeds, page 524)

*Raphanus sativus* Caudatus Group - *Rat-tail radish, Mougrî, Singri, Serpentine bean, Monkey-tail radish* {S}. The long, slender seedpods can grow to two feet or more in length, and have an attractive purple tint. In India, where they are primarily grown the pods are eaten in salads, boiled, pickled, or cooked with ghee or in curries. It is best to harvest them when still tender and free of fibers, usually at ten or twelve inches. BURKILL, TANAKA, VILMORIN [Cu], WATT; B49, C95, F73D, F80, H24, J20, J39, N24M, Q34

## CULTIVARS

**Long Purple:** An improved type from India with long purple pods. R0

**Madras:** Mild-flavored pods that remain crisp and tender for up to 2 weeks. Excellent raw or pickled. Distinctive pale pink flowers, tipped with purple. Originated in India. Introduced into the United States from England in 1859 by Isaac Buchanan. WEAVER 1997; B49, K46T

*Raphanus sativus* Longipinnatus Group - *Daikon, Lobak, Lo bok, Oriental radish* {S}. The roots are grated and eaten raw, marinated, stir-fried, used in soups, pickled, etc. Pickled roots are known as *takuan* or *gakkua-zuke*. Young leaves and flower clusters are stir-fried, boiled, added to soups, or pickled. The young seedlings may be cooked like spinach. In Korea, *chonggak-kimchi*, *yeolmu-kimchi*, and *dongchimi* are some of the forms of *kimchi* prepared with oriental radishes. The peppery seeds can be added to tossed salads or rice dishes. Both the roots and leaves are dried and stored for later use. Pods are also eaten. HALPIN, HARRINGTON, G. [Cu, Cul], HERKLOTS [Cu], HESSELTINE, KRAFT, SCHNEIDER 1986 [Cul, Re], SHURTLEFF 1975 [Re], STEIN-KRAUS, TANAKA, YAMAGUCHI; E13G{PR}, E56{DF}, E66T{PD}, F85, G20M{PD}, G47B{DF}, G47B{PD}, H91{ED}, N40{PR}. (for cultivars see Radish, page 500, see also Sprouting Seeds, page 524)

*Raphanus sativus* Oleiformis Group - *Oilseed radish, Fodder radish* {S}. A type of radish particularly adapted for the production of oil. The oil is considered superior to rapeseed oil, but is extracted with greater difficulty. Cultivated in China, Japan, India and parts of Europe. In Canada, besides being grown as a canola-like oil crop, it is often grown as a sprouting seed. BURR, ZEVEN; B13, B49, D68, G50, I93M, I99M, K95M, N81, R32. (see also Sprouting Seeds, page 524)

*Rorippa islandica* - *Yellow marsh-cress* {S}. The young leaves and stems make a good substitute for watercress. Young seedlings are also eaten. Europe, naturalized in North America. CRIBB, MEDSGER, TANAKA; N84

*Sinapis alba* - *White mustard, Yellow mustard* {S}. In England, the young seedlings are commonly grown together with those of cress for use in salads and sandwiches. They are usually harvested when two or three inches high. Milder in flavor than those of black mustard, the seeds are preferred for making lighter mustards, such as American frankfurter mustards. The leaves of mature plants can be

used as a potherb. Eurasia, cultivated. BROUK, GRIEVE, HARRINGTON, H., HERKLOTS [Cu], LARKCOM 1984, MORTON 1976, VILMORIN; B49, E14T{DF}, F15M{PL}, F91{SP}, F97MIDF}, H90G{PD}, H99J{SP}, J82{DF}, L24G{SP}, L24M{SP}, M82{PL}, 053M, Q34, S55. (see also Mustard, page 431 and Sprouting Seeds, page 524)

#### CULTIVARS

**Fine White:** (Fine White Kingston) For growing as *mustard and cress*, i.e. as a companion for plain or Moss Curled cress in containers all year round. They should be sown 3 days after cress to mature concurrently. Tops are usually cut close to the soil surface with scissors. If grown outdoors, it makes an excellent cut-and-come-again crop. N84, S55

*Sinapis arvensis* - *Charlock, Field mustard* {S}. Seeds are widely used as a condiment in Southern Russia, where they are sold in markets. In England, *Durham mustard* is occasionally derived from the seeds Young, finely chopped leaves lend a piquant flavor to salads, cottage cheese, pates, omelettes, and sandwiches. Larger leaves can be used as a potherb. The flower buds are prepared and served like broccoli. Flowers are used as a vegetable or garnish. Sprouted seeds can be used in salads and sandwiches. Eurasia, naturalized in North America. CROWHURST 1972, GRIEVE, HEDRICK 1919, LAUNERT, LEYEL 1987b, UPHOF; M34M, N71M, N84, 048

*Sisymbrium alliaria* - \**Alliaria petiolata*

*Sisymbrium altissimum* - *Tumble mustard* {S}. The leaves and shoots, when young and tender, are eaten raw in salads or cooked as a potherb. Seeds were ground into a meal and used for making gruel and flavoring soup. Northern temperate region. HARRINGTON, H.; L3J, M34M, N84

*Sisymbrium canescens* - *Descurainia pinnata*

*Sisymbrium irio* - *London rocket* {S}. Young leaves, stems, and flowers are eaten raw in salads, boiled or fried. The seeds are ground and eaten. Sprouted seeds are also edible. Mediterranean region. BAILEY, C., FARNSWORTH [Re]; F80, F85

*Sisymbrium officinale* - *Hedge mustard, Tumble-mustard* {S}. The young leaves and shoots are added to tossed salads, used in sauces, soups, and omelettes, or prepared as a potherb. The seeds can be parched and ground into a nutritious flour for making gruel or seasoning soups. Eurasia, naturalized in North America. FERNALD, HARRINGTON, H., HEDRICK 1919, KIRK, LAUNERT, NIETHAMMER [Re]; N84, 048

*Sisymbrium sophia* - \**Descurainia sophia*

*Sophia pinnata* - \**Descurainia pinnata*

*Stanleya pinnata* - \**Stanleya pinnatifida*

*Stanleya pinnatifida* - *Prince \*s plume, Indian cabbage* {S}. The tender stems and leaves have a cabbage-like taste and may be prepared in the same manner. They can be quite bitter at first, but boiling in several waters removes the astringency. Seeds are sometimes parched, ground, and made into mush. Western North America. KINDSCHER, KIRK, YANOVSKY; E67TJPL}, G89M{PL}, I98M{PL}, I98M, J25M, L13, N84

*Thlaspi arvense* - *Penny cress, Treacle mustard* {S}. Young leaves and shoots are eaten raw in salads or sandwiches, used in soups, omelettes, and sauces, or cooked as a potherb. The flavor is somewhat like mustard, with a hint of onion. The seeds are used as a mustard-like condiment. Sprouted seeds are occasionally eaten. Eurasia, naturalized in North America. FERNALD, HARRINGTON, H., LARKCOM 1984, LAUNERT; D92M, F85, M34M, N71M, N84, 048, 053M

*Wasabia japonica* - \**Eutrema wasabi*

#### BROMELIACEAE

*Aechmea magdalenae* - *Pingwing, Pita* {PL}. Acid fruits are eaten raw or cooked. They are said to be better when made into beverages. Central America, Tropical South America. DUKE, WILLIAMS, L.; P38

*Ananas comosus* - *Pineapple* {PL}. Ripe fruits are eaten raw, preserved, cooked with ham, candied, used in pies, puddings, ice cream, and sherbets, or made into jams, juice, vinegar, wine, etc. Unripe fruits are eaten raw with hot pepper sauce. Terminal buds are eaten raw, cooked as a vegetable, or put in soups. Flower-spikes are peeled, sliced, and used as a steamed vegetable or added to stews. Young shoots, called *hijos de piha*, are eaten in salads or curries. In the Philippines, the juice is fermented into a sweet, gelatinous dessert called *nata de piha*, which is often added to *halo-halo* (fruit sundaes). The rind of the fruit is made into *chicha de piha, tepache* and other beverages. Source of *bromelain*, an enzyme used commercially in meat tenderizing, modifying bread dough, chillproofing beer, clarifying fruit juices, and in manufacturing sausage casings. Tropical America, cultivated. BENGHIAT [Cu, Re], COLLINS [Cu], DUKE, GELLE [Re], JACQUAT, JOHNS [Cu], LEUNG, MORTON 1987a [Cu, Pro], OCHSE, STEINKRAUS, UPHOF, ZASLAVSKY; G92{DF}, L54{DF}, N84{S}, P38

#### CULTIVARS

**Abacaxi:** (Abbaka, Abbaco) Tall, pyramidal fruits; weight 4 to 5 pounds; very fragrant; white or very pale yellow flesh, juicy, sweet, rich and succulent; nearly coreless. One of the most delicious of all pineapples. Erect, spiny plant; disease resistant; low yielding. Too tender for commercial use. MORTON 1987a; I77G

**Hawaiian Kina:** A lush deep-green, smooth leaved cultivar grown commercially in Hawaii. Plants grow 2 to 3 feet tall at maturity and are covered with large violet blooms on dense spiked heads from January to March. Harvest season is May through September. G17

**Honey Gold:** One of the largest pineapples, often reaching 15 pounds in weight. Has a large base and a narrow crown. Flesh yellow, juicy, moderately acidic, very aromatic, rich in flavor. Plant grows 3 feet tall with a spread of 3 feet. Originated in Hawaii. D57

**Natal Queen:** Medium-sized, conical fruit, weight 1 1/2 to 2 pounds; skin deep yellow, with deep eyes; flesh juicy, crisp, aromatic, of fine, delicate flavor with a small, tender core. Dwarf, compact plant, produces numerous shoots and no slips. Sport of the old Queen cultivar originating in South Africa. COLLINS, MORTON 1987a; T73M

**Red Spanish:** Medium-sized, more or less round fruit, weight 3 to 6 pounds; skin orange-red, with deep eyes; flesh pale-yellow, fibrous, large-cored, aromatic and flavorful. Breaks off easily and cleanly at the base in harvesting; stands handling and shipping well. Highly resistant to fruit rot; subject to gummosis. The most popular cultivar in the West Indies; Venezuela and Mexico. MORTON 1987a; I77G

**Smooth Cayenne:** (Sweet Spineless) Large, cylindrical fruit; weight 4 to 10 pounds; rind orange, eyes shallow; flesh yellow, low in fiber, juicy and rich; flavor excellent, mildly acid. Highly prized for canning. Plant nearly free of spines except for the needle at the leaf tip. Selected and cultivated by the Indians of Venezuela; introduced from Cayenne, French Guyana in 1820. MORTON 1987a; E29, I77G, J81M, N84

**Sugarloaf:** (White Sugarloaf) Fruit more or less conical, sometimes round, not colorful; weight averages 1 1/2 to 3 pounds. Flesh white to yellow, very sweet, juicy. Leaves of the plants and crowns pull out easily. Too tender for shipping. Closely related to Abacaxi. MORTON 1987a; D57, I83M

**Variigated:** An attractive plant with green and yellow striped leaves. When approaching maturity it turns cherry pink at the base of all its fronds. It soon sends up short stalks topped by pale white fruit with flaming red tops. Both the skin and flesh of the ripe fruit is albino white and sweet as honey. E29, G17, H4, I77G, N84

*BromeUa karatas* -+ *Karatas plumieri*

*Bromelia pinguin* - *Pinguin, Pinuela* {S}. When ripe, the pulp of the fruit is acid but makes an excellent refreshing drink. It is also used to make vinegar. The fried inflorescence is eaten in El Salvador. Shoots at the base of the plant are eaten raw or cooked. Sold in local markets. Caribbean region. DUKE, KENNARD, UPHOF, WILLIAMS, L.; A79M, E29{PL}, I74{PL}, N84, P38

*Karatas plumieri* - *Pinuela* {S}. The fruits, raw or cooked, are used in making refreshing beverages called *atol de pinuela* or *atol de pina*. Tender, blanched leaf bases of young shoots are eaten as a cooked vegetable or used in soups, stews, and egg dishes. Young inflorescences are cooked and eaten or used with eggs. Central America. WILLIAMS, L.; N84, P38

*Tillandsia erubescens* - {PL}. The flowers are prized by American Indians for their sweetness. Southern North America. LINSKENS; N84

## BUDDLEIACEAE

*Buddleia asiatica* - *Winter lilac, Sau dau chuoat, Glentud ulangan* {PL}. The root, dried and powdered, is used in the preparation of a fermented liquor. The hill tribes of northern Thailand boil the flowers to make a yellow liquid which is poured over rice as a coloring. Tropical Asia. ALTSCHUL, ANDERSON, E.F., TANAKA; G20, G96, M82, N84{S}, 093{S}

*Buddleia officinalis* - *Butterfly bush* {PL}. Hani people living in mountainous regions of Xishuangbanna, China often collect the flowers and use them for dyeing rice. Eastern Asia. ZAIJU; R77

*Buddleia salviifolia* - *Sagewood* {S}. Fresh or dried leaves are used as a substitute for tea. Southern Africa. FOX, E; N84

## BURSERACEAE

*Boswellia carterii*-*Boswellia sacra*

*Boswellia sacra* - *Frankincense, Olibanum* {DF}. Source of an aromatic resin that is chewed or manufactured into an essential oil used commercially to flavor candy, baked goods, gelatins and puddings, ice cream and soft drinks. Eastern Africa to Southwest Asia. LEUNG, MORTON 1976; E14T, F73D, F86G, GO, H36, L21T, L34, N7D

*Boswellia serrata* - *Frankincense, Indian olibanum tree* {DF}. The flowers and seeds are eaten. Also the source of an edible gum. Southern Asia. MENNINGER, TANAKA, WATT; F37T, GO, K18M, M15M, N7D, Q46{S}

*Bursaria fagaroides* - *Linaloe* {DF}. One of the sources of linaloe wood oil, an essential oil with an agreeable, flowery, rose-like odor used commercially for flavoring baked goods, frozen dairy products, candy, pudding and beverages. Mexico. BURDOCK; A49D, E14T, F73D, N84{S}

*Bursaria simaruba* - *West Indian birch, Gumbo-limbo* {PL}. Leaves are used as a substitute for tea. West Indies. TANAKA; D87G, G73, I12, N84

*Canarium album* - *White Chinese olive, Ch 'ing-kuo* {S}. The fruits, when pickled in salt or preserved in honey, are highly esteemed as a condiment or as a side dish. Often used as a garnish for the southern Chinese dish known as *fried milk*. Also used in wines and liqueurs. Seed kernels are also eaten. Readily available in Chinatown markets. Southeast Asia, cultivated. CHANG, W., PASSMORE, PORTERFIELD, TANAKA; U7N, U71M

*Canarium commune* - *Java almond, Kenari, Galip nut* {S}. The seeds have a rich, pleasant flavor and are eaten in pastries or with rice. In Celebes, they are made into bread. An edible oil is extracted from them. Also used as a condiment. Indonesia, cultivated. HEDRICK 1919, KUNKEL, MENNINGER, OWEN [Re], TANAKA; F85, 019

*Canarium edule*-*Dacryodes edulis**Canarium indicum*-*Canarium commune*

*Canarium odontophyllum* - *Borneo olive, Dabai, Kembayau, Sibul olive* {S}. The blue-black fruits can be eaten raw or used in the same manner as olives. For fresh eating, they are prepared by soaking in hot water for ten minutes until they soften, then eaten with soy sauce or sugar with a meal or as a savory snack. The flavor is unique and the texture thick and oily, like a rich creamy avocado. The rich, nutty kernel is also edible. Produces 70% male trees from seed. Indonesia, Malaysia. ALTSCHUL, TANAKA, TANKARD, TINGGAL; 019

*Canarium ovatum* - *Pili nut* {S}. When roasted, the sweet nuts have a delicious flavor and are served like almonds, or used in confections, preserves, ice cream, and nut milks. In some areas they are used to adulterate chocolate. In the Philippines, they are cooked with sweet potatoes to make *turon*. The oil obtained from the nuts is sweet, and suitable for culinary purposes. Pulp of the fruit is boiled and eaten, pickled, or pressed for its edible oil. It has a tangy, resin-like flavor. Young shoots are eaten in salads. Philippines. CORONEL 1983, GELLE, MENNINGER, O'BOYLE [Re], ROSENGARTEN, UPHOF; A79M, F85, 019

*Canarium schweinfurthii* - *Papo canary tree, Incense tree* {S}. The greenish, oily fruits are eaten in many parts of Africa. They are best softened in warm water before eating. The seeds are occasionally eaten. Also the source of an oil which is a possible substitute for *shea butter*. In Angola the fruit is used as a condiment. Tropical Africa. DALZIEL, DANFORTH, MENNINGER; Y40

*Commiphora molmol* - *Somalian myrrh* {DF}. The bark yields a fragrant, balsam-like gum oleo-resin used by the food industry for flavoring beverages, baked goods, candy, gelatins, meat products, frozen desserts, and chewing gum. Eastern Africa. BURDOCK, LEUNG; A49D, B21P, F73D, F86G, GO, K18M, L34, N7D

*Commiphora mukul* - *Guggul* {DF}. Source of a bitter, pungent resin which is the most important gum used in Ayurvedic tonic formulas. It is often combined with *Triphala* to make *Triphala guggula*. Another well-known restorative formula is *Yogaraj guggula*. Aiaibia to Eastern India. FRAWLEY, TIERRA; F37T, GO, K18M, N7D

*Commiphora myrrha* - *Myrrh* {DF}. Source of a fragrant, pungent gum-resin used commercially to flavor soft drinks and other non-alcoholic beverages, soups, baked goods, gelatins and puddings, candy and chewing gum. Also one of the ingredients of *Swedish biters*, a famous tonic formula. Southwest Asia. KUNKEL, LEUNG, MORTON 1976, TREBEN; E14T, H36, J82

*Dacryodes edulis* - *Bush butter tree, Safii, Eben tree* {S}. The dark purple fruit is eaten raw, roasted, boiled, fried or with curries. When placed in hot water it softens and swells, and all the flesh then slides easily off the seed. It is usually salted and tastes like a warmed ripe avocado, with a slight sour flavor. Has a seven percent protein content, which is very high for a fruit. Tropical Africa. DALZIEL, DANFORTH, HEDRICK 1919, SMITH, N., UPHOF; Y40

*Dacryodes rostrata* - *Pinanasan* {S}. The oblong, smooth-skinned, black or bluish-black fruits are eaten. They have oily, yellowish-purple flesh that is sweet and creamy. In Brunei, they are preserved in salt or soy sauce and eaten as an appetizer with rice or porridge. Similar to the Borneo olive. Malaysia, Indonesia. ALTSCHUL, TINGGAL; F85

## CABOMBACEAE

*Brasenia schreberi* - *Water shield, Junsai* {PD}. Young, curled leaf tips, which are coated with a thick transparent mucilage, are eaten as a salad with vinegar, sake and soy sauce, dressed with vinegared bean cake, pickled, or added to soups as a thickener. Considered a great delicacy in Japan. Often bottled and sold in Japanese and oriental markets. The starchy, tuberous roots may be peeled, boiled and eaten, dried and stored, or ground into flour.

Widespread. FERNALD, GIBBONS 1979, HEDRICK 1919, KIRK, LARKCOM 1991, SHURTLEFF 1975, TANAKA, UPHOF, YASHIRODA [Cui]; G19M, G20M

## CACTACEAE

### *Acanthocereus pentagonus* - \**Acanthocereus tetragonus*

*Acanthocereus tetragonus* - *Barbed-wire cactus*, *Pitahaya* {PL}. The fruit is scarlet, gloss/, round or oblong, about two inches long. Flesh is juicy, red, with numerous small, black seeds. When ripe, the fruit may be eaten raw. Tender stems are cooked and eaten. Central America, Florida Keys. ALCORN, MORTON 1977; B86

*Ariocarpus fissuratus* - *Living rock* {S}. Juice of the plant is used in the preparation of *tesguino*, a slurry-like, alcoholic beverage prepared by fermentation of germinated maize or maize stalk juice. An important beverage of the Tarahumares, Huicholes, Tepehuanos, and other Indian people of Northwestern Mexico. Southwestern North America. STEINKRAUS; F73D, G18, G73, H52, H52{PL}, 133, I81M, K47M, N43M{PL}, N84, Q38, R88, T25M

*Camegiea gigantea* - *Saguaro*, *Giant cactus* {S}. The sweet fruits are eaten raw, cooked, dried, preserved, or made into jam, syrup, refreshing drinks, or a ceremonial wine called *nawait*. Also used for curdling milk. Seeds are ground into flour, used in *atole* and *pinole*, soups, sweetmeats, or made into a buttery paste used on tortillas. Also the source of an edible oil. Southwestern North America. CROSSWHITE [Pre, Re], GUNDA, KIRK, NIETHAMMER [Re], UPHOF; AOM, A69, A79M, B86{PL}, C99{PL}, F80, F89M{PL}, 133, K47M, O53M, T25M

### *Cereus dasyacanthus* - *Echinocereus dasyacanthus*

#### *Cereus engelmannii* - *Echinocereus engelmannii*

*Cereus hexagonus* - *Cierge pascal* {S}. Fruits are pale red, thick-rinded, and have white or pinkish pulp and black seeds. They may be eaten out of hand and parts of the stems can be used as a vegetable. Caribbean region. BRITTON 1937, KUNKEL, ZEVEN; F85, 133, Q41, R88

*Cereus jamacaru* - *Jamacaru* {S}. The large, bright red fruit has white, edible pulp and is usually eaten out of hand. Stems are sometimes used as a vegetable. Brazil. BRITTON 1937, CORREA; B84{PL}, B86{PL}, 133, N84, P38{PL}, Q41, R88, T25M

*Cereus pernambucensis* - *Jumbaba* {S}. Fruits are narrowly oblong, purplish red, and when mature they split on one side exposing the white, edible pulp and black seeds. Brazil to Paraguay. BRITTON 1937, TANAKA; F85, 133

*Cereus peruvianus* - *Pitahaya* {S}. The fruits are pinkish-red, with a white pulp that is juicy, sweet, somewhat aromatic, and much appreciated. David Fairchild recommended freezing thin slices of the fruit after they had been sprinkled with sugar and lime juice. The peel of the fruit can be candied. Young stems are sometimes eaten. Commonly cultivated as an ornamental in California, Florida, and Hawaii. Cultivated. KUNKEL, MORTON 1987a, TATE [Re]; A69, F53M{PL}, 133, K47M, N84, P38{PL}, Q41, T25M

### *Cereus variabilis* - *Cereus pernambucensis*

#### *Coryphantha arizonica* - *Coryphantha vivipera* var. *arizonica*

*Coryphantha vivipera* var. *arizonica* - *Sour cactus* {S}. The pleasantly sour fruits were gathered by the Navajo Indians, dried in the sun, and used like dried currants. Southwestern North America. TATE; C98M{PL}, F89M, 133, Q38, Q41, R88

*Cylindropuntia fulgida* - *Chain-fruit cholla* {PL}. Juicy fruits are eaten raw, or made into jellies or refreshing beverages. A gummy sap that exudes from the cut stems can be eaten raw, boiled, roasted, or mixed with water to form a beverage. Southwestern North America. FELGER 1985, NOBEL, TANAKA; C99, H52, N84{S}, R88{S}

*Cylindropuntia imbricata* - *Cholla*, *Walking-stick cactus* {S}. Unopened flower buds are boiled or steamed and then added to stews, tossed salads or potato salads. When dried they are less mucilaginous. The fruit is eaten raw or cooked in New Mexico and Arizona. Southwestern North America. NIETHAMMER [Pre, Re], YANOVSKY; A69, C98M, C99{PL}, F85, H52, H52{PL}, H60{PL}, 133, M16{PL}, N51{PL}, N84, Q41

*Echinocactus grandis* - *Barrel cactus* {S}. The candied pulp of the stems, called *acitron* or *cubiertos de biznaga*, is eaten as a sweet, or used to flavor meat hash or desserts. Mexico. LATORRE 1977a [Pre, Re], VON WELANETZ; H52{PL}, 133, Q38, Q41

*Echinocactus horzontbalonium* - *Manca caballo* {S}. The fruits are sliced, candied, and sold as confections. Pulp of the stems is used in making sweetmeats. Southwestern North America. TATE, UPHOF; A69, C98M{PL}, C99{PL}, H52, 133, N84, Q38, Q41, R88

*Echinocactus ingens* - *Biznaga* {S}. The pulp of the stems is used in sweetmeats. Fleshy parts are eaten in salads. Mexico. BRITTON 1937, KUNKEL; AOM{PL}, A69, B86{PL}, H52{PL}, 133, K47M, N51{PL}, Q38, Q41, R88

*Echinocactus platyacanthus* - *Barrel cactus* {S}. The stem is cut into pieces and boiled with both white and brown sugar until it crystallizes. The resultant cactus candy is eaten as is or added to pastries, cakes and sweet tamales. Mexico. NOBEL; H52{PL}, N84, Q41, R88, T25M

### *Echinocactus viridescens* - *Ferocactus viridescens*

#### *Echinocactus wislizenii* - \**Ferocactus wislizenii*

*Echinocereus conglomeratus* - *Alicoche*, *Pitahaya de Agosto* {S}. The somewhat acid fruits are eaten. Mexico. BRITTON 1937, UPHOF; A69, B84{PL}, 133, K47M, Q38, Q41

*Echinocereus dasyacanthus* - *Chihuahua* {S}. The fruit is small, greenish-purple, rich in sugar, and when fully ripe is delicious to eat, much like a gooseberry. Southwestern North America. HEDRICK 1919, YANOVSKY; A69, B84{PL}, C99{PL}, H52, H52{PL}, 133, K47M, N51{PL}, Q38, Q41, R88

*Echinocereus engelmannii* - *Indian strawberry* {PL}. Fruits are eaten fresh, served with cream and sugar, or cooked into conserves, jams, and sauces. They are said to have a delicious strawberry-like flavor. Southwestern North America. HEDRICK 1919, TANAKA, TATE; A69, B84, C98/S, C99, G94, H52, I33{S}, Q38{S}, Q41{S}, R88{S}

*Echinocereus enneacanthus* - *Strawberry cactus* {S}. Fruits are eaten fresh or preserved. The flavor of the fruit is so much like strawberries that preserves made from them cannot be distinguished from strawberry jam. Southwestern North America. BRITTON 1937, TATE; A69, B84{PL}, C98M{PL}, G91M{PL}, H52{PL}, 133, N51{PL}, Q41, R88

*Echinocereus stramineus* - *Mexican strawberry* {S}. The red fruits have a pleasant strawberry-like flavor and are usually eaten raw. Southwestern North America. YANOVSKY; A69, B84{PL}, C98M{PL}, C99{PL}, H52, H52{PL}, 133, Q38, Q41, R88

*Echinocereus triglochidiatus* - *Red hedgehog-cactus* {S}. Bright red fruits are eaten fresh or made into preserves. The fruit pulp is sliced and baked like squash, or made into a sweet pickle by baking it in sugar. Southwestern North America. UPHOF; AOM{PL}, A26, C99{PL}, F44M{PL}, F73D, G73, H52{PL}, 133, I81M, J25M, N84, Q38, Q41, R88

*Escontria chiotilla* - *Chiotilla* {S}. Purple, fleshy fruits are eaten fresh or are used in marmalade and ice cream. Sold in the market at Tehuacan under the name of *geonilla* and *tuna*. The dried fruit is said to have the flavor of gooseberries. Mexico. BRITTON 1937, NOBEL; A69, H52{PL}, N84, Q41



*Espositoa lanata* - *Cotton ball*, *Peruvian old man* {PL}. Sweet, juicy fruits are white with pinkish scales and are eaten raw. They are called *soroco* in southern Ecuador. Ecuador, Peru. BRITTON 1937; AOM, B84, B86, C99, H52, H52{S}, I33{S}, 053M{S}, Q38, Q38{S}, Q41{S}, R88{S}, T25M{S}

*Ferocactus acanthodes* - *Barrel cactus* {S}. The fruit is eaten raw, dried, or made into a syrup which is then fermented into an alcoholic beverage. A potable sap is obtained by scooping out the pulp from the stem and squeezing out the juice. Pulp of the stems is also used to make cactus candy. Seeds are ground and made into a meal-cake. Flower buds are cooked and eaten. Southwestern North America. CLARKE, KIRK, TANAKA, TATE [Re]; A69, C98, C99, F85, 133, 198M{PL}, K47M, Q41, R88, T25M

*Ferocactus hamatacanthus* - *Hamatocactus hamatacanthus*

*Ferocactus histrix* - *Mexican barrel cactus* {PL}. Fruits are eaten raw or their juice is extracted and used for making popsicles, marmalades, syrups and wine. The water-storage tissue of the plant is cut into pieces and boiled with sugar until it crystallizes. The resultant barrel cactus candy is eaten as is or used in pastries, cakes and sweet tamales. Commonly sold in markets. Mexico. NOBEL; A69{S}, B84, H52, N84{S}, Q38{S}, R88, T25M

*Ferocactus viridescens* - *Coast barrel cactus* {S}. Reddish fruits are pleasantly acid, somewhat resembling the taste of a gooseberry and are usually eaten fresh. Flower buds are eaten cooked. Southwestern North America. HEDRICK 1919, TATE; A0M{PL}, A69, B84{PL}, C99{PL}, F85, G91M{PL}, H52{PL}, 133, 198M{PL}, K47M, N84, R88, T25M

*Ferocactus wislizenii* - *Arizona barrel cactus*, *Bisnaga* {S}. The pulp of the stems is watery, slightly acid, and is used to quench the thirst. Pieces of it, soaked in syrup or sugar and dried, resemble candied citron in taste and texture. Seeds are parched, ground and used for bread and gruel. The flower buds or *cabuches* are pickled and served as an appetizer. They are occasionally available at specialty markets. The sour fruits are eaten. Southwestern North America. FELGER 1985, HEDRICK 1919, NIETHAMMER [Re], QUINTANA 1986 [Re], TATE; A69, C99{PL}, H52{PL}, 133, K47M, L55J, N84, Q41, R88, T25M

*Hamatocactus hamatacanthus* - *Turk's head*, *Lemon cactus* {S}. In some parts of Mexico, the fruits are used as a substitute for lemons in giving an acid flavor to drinks, pies, or cakes. The fruit is dried and eaten as a sweetmeat. Unopened flower buds are delicious soaked in water overnight and boiled or fried. They taste like artichokes. Southwestern North America. TATE, UPHOF; AOM {PL}, A69, B84{PL}, G91M{PL}, H52, H52{PL}, 133, K47M, Q38, Q38{PL}, Q41, R88

*Hylocereus guatemalensis* - *Guatemalan pitahaya* {PL}. The fruits are eaten. They are deep purplish red and juicy. Guatemala. UPHOF; G18

*Hylocereus ocamponis* - *Pitahaya roja* {PL}. The skin as well as the sweet pulp of the fruit are a wine-red color. Usually eaten out of hand. Also grown as an ornamental hedge plant. Central America to Colombia. MORTON 1987a, PEREZ-ARBELAEZ, ZEVEN; G18, P38

*Hylocereus polyrhizus* - *Pitahaya* {S}. Red, thick-skinned fruit has pulp that is white or sometimes pinkish, and a sweet and pleasant flavor. It is used in making *refrescos*, or eaten out of hand. Has potential for large scale commercial plantings. Panama to Colombia. NOBEL, POPENOE, W. 1924; F85

*Hylocereus triangularis* - *Selenicereus megalanthus*

*Hylocereus undatus* - *Night-blooming cereus*, *Strawberry pear*, *Pitahaya* {PL}. Sweet, juicy fruits are eaten out of hand, in cooling drinks, sherbets, preserves, etc. A syrup made of the whole fruit is used to color pastries and candy. The unopened flower buds are cooked and eaten. In Jamaica, they are called *byne spear* and in some areas are used like okra in the famous *peppercot* stew. Also grown as

an ornamental for its fragrant night-blooming flowers. Hand pollination is recommended for good fruit production. Cultivated. MORTON 1987a, POPENOE, W. 1924, TATE [Re], WALSH [Cul, Re]; AOM, F85{S}, 183M, P38, Q41{S}

*Lemaireocereus chichipe* - *Chichipe* {S}. The edible fruit is red both within and without, and is sold in the Mexican markets. Like many other Mexican cactus fruits, it has a name different from that of the plant—it is called *chichituna*. Mexico. BRITTON 1937; A69, K47M, N84, Q38, Q41, T25M

*Lemaireocereus queretaroensis* - *Pitahaya* {S}. When fully ripe the edible fruit is deep red. The flesh is dark red to purple and has a sweet delicious flavor. Cultivated in Jalisco, Michoacan, and Queretaro. Mexico. NOBEL, POPENOE, W. 1924; A69

*Lemaireocereus schottii* -> *Lophocereus schottii*

*Lemaireocereus stellatus* -\* *Stenocereus stellatus*

*Lemaireocereus thurberi* -\* *Mars hallo cereus thurberi*

*Lophocereus schottii* - *Senita* {S}. The small red fruits are eaten fresh. Southwestern North America. FELGER 1974, UPHOF; A69, A79M, B84{PL}, C98, F85, G18{PL}, 133, 181M, K47M, Q38, Q41, R88

*Machaocereus gummosus* - *Pitahaya agria*, *Creeping devil* {S}. The fruit is much relished for its sweet but tart flavor. It may be eaten fresh, dried, or made into unsweetened jams. Mexico. FELGER 1974, TATE [Re], UPHOF; N84, R88

*Mammillaria mammillaris* -+ *Mammillaria simplex*

*Mammillaria meiacantha* - *Viejito* {S}. The oblong, scarlet fruits are very good to eat. Southwestern North America. HEDRICK 1919; C98M{PL}, C99{PL}, H52, H52{PL}, 133, Q38, Q41

*Mammillaria simplex* - {S}. Fruits are edible. The plant is said to yield a milky juice that is sweet and wholesome. Northern South America. HEDRICK 1919; N84, Q38, Q41

*Marshallocereus thurberi* - *Organ-pipe cactus*, *Pitahaya dulce* {S}. The fruits are large, sweet, and delicious. They are eaten fresh skin and all, dried, or made into wines and syrups. They are sometimes combined with prickly pears to make a candy called *dulce pitahaya*, or made into a jam that is served as a topping for the Mexican custard *flan*. Seeds are dried and powdered into meal. The petals are also eaten. Southwestern North America. FELGER 1974, TATE, YANOVSKY; A0M{PL}, A69, A79M, B84{PL}, 133, 181M, N84, Q38, Q41, R88, T25M

*Melocactus communis* - *Melon cactus* {S}. The small fruits are eaten. The juice of the plant is used to quench thirst. Central America, Caribbean region. BRITTON 1937, HEDRICK 1919, TANAKA; F85, Q41

*Myrtillocactus geometrizans* - *Garambullo*, *Blueberry cactus* {S}. Small, bluish-purple fruits are eaten fresh as a dessert, resembling blueberries in flavor. The dried fruits are similar to raisins in appearance and are used in much the same way. The flowers are often eaten raw in salads or cooked with eggs. Cultivated in central Mexico for its fruit. Central America. BRITTON 1937, HEGYI, NOBEL; A0M{PL}, A69, F85, G18{PL}, H52{PL}, 133, 174{PL}, K47M, N84, Q38, Q41, R88, T25M

*Neocardenasia herzogiana* - *Kalapari*, *Carapari* {S}. The fruits are eaten. They have smooth, pinkish pulp with a delicious flavor reminiscent of pineapple and strawberry. Said to be the finest tasting cactus fruit. Andean region. CARDENAS, WINTER; A0M{PL}, A69, 133, N84, Q38, Q38{PL}, Q41, R88, T25M

*Nopalea cochenillifera* - *Nopal* {PL}. The fruits are eaten or made into candy. Young joints are pickled. One of the host plants for the insect that produces *cochineal*, a reddish dye used as a colorant for meat products, soft drinks, Easter eggs, baked goods, shrimp, *Snapple*, and liqueurs such as *Campari* and *Al Kermes*. Mexico.

BURDOCK, HANNEMAH NEWALL, NOBEL, TANAKA, TOOMRE [Re], WILSON, C.; H52

*Opuntia basilaris* - *Beavertail cactus* {PL}. Unripe fruits are boiled or baked to the consistency of applesauce. Ripe fruits are eaten raw, dried, or made into syrup or jam. The syrup can be used to flavor candy, sauces, ice cream, and other dishes calling for fruit. Young pads are sliced and substituted for green beans in stews and other dishes. Flowers and flower buds are cooked and eaten. Southwestern North America. CLARKE [Re], YANOVSKY; AOM, C98, C99, F89M, G18, H52, H60, I98M, I98M{S}, N84{S}, R88{S}

*Opuntia compressa* - *Opuntia vulgaris*

*Opuntia dillenii* - *Dillen prickly-pear* {S}. Fruits are insipid but very juicy, and are eaten raw or made into syrup, jam or jelly. Young joints are cut into pieces and boiled, or dried in the sun for future use. Florida, Caribbean region. MORTON 1977, PARMAR, C; F85, Q41, Q46

*Opuntia ficus-indica* - *Prickly pear, Indian fig, Tuna* {PL}. Sweet, juicy fruits are very refreshing, the best ones being much like watermelons. They are very good chilled and eaten out of hand, the seeds simply swallowed. Also used in ices, jams, tarts, cakes, drinks, *Sabra* liqueur, etc. The fermented pulp is mixed with flour and nuts to form the festive Italian biscuit *mostaccioli di fichi d'India*. Young pads, called *nopalitos*, are boiled and used like snap beans in salads, soups, omelettes, or pickles. In Japan they are made into *narazyke*, *saboran*, and *saboten glace*. Part of the traditional diet of the Majorcan black pig, the prickly pears adding a distinctive flavor to the famous sausages made from this breed. A host plant of the *cochineal* insect. Cultivated. BROWN, G., CARTER, GRAY, P. [Cul], HALPIN [Cul], NOBEL, POPENOE, W. 1920, RAY, C, SCHNEIDER 1986 [Cul, Re], SIMMONS 1972 [Cu], TATE [Re]; B86, C89{PR}, F43M, H52{S}, K47M{S}, L15M{ED}, M16, N40{PD}, N84{S}, 053M{S}, Q41

#### CULTIVARS

**Burbank's Spineless:** (Spineless, Thornless) Some have sweet fruit, others can be used for their pads which do not require despinning. Many cultivars of spineless, or nearly spineless cactus were developed by Luther Burbank. Unfortunately, most of those named and released have been lost and the generic name Burbank's Spineless has become widely used. D33, G17,174

**Honeydew:** Pale lime-green fruits, about 3 to 4 inches long; kiwi-green inside and out; has a hint of a honeydew-like flavor. Fruits hang on the plant for a couple of months after ripening, when they develop a rosy-pink blush. Vigorous, large spineless pads. 174

**Papava:** Large, oval fruits, about 3 to 4 inches long resemble a papaya in color and taste. Fruits turn from pink to deep sherbet-orange when ripe, inside and out. Vigorous, tall growing plant, to 8 feet; large edible pads. Rose-like flowers. 174

*Opuntia fulgida* - \**Cylindropuntia fulgida*

*Opuntia humifusa* - *Devil's tongue, Western prickly-pear* {PL}. The fruit has purplish pulp that is somewhat acid or sweetish. It is eaten raw, roasted, stewed, or dried for later use. Young joints are roasted and eaten. North America. HEDRICK 1919, MEDSGER; C99, E30, E61, F43M, F89M, G91M, H61M{S}, I33{S}, L22, M16, N9M, N9M{S}, N84{S}, Q41{S}

*Opuntia imbricata* - *Cylindropuntia imbricata*

*Opuntia leucotricha* - *Duraznillo* {S}. Aromatic, white or red fruits are eaten raw or made into a fermented beverage, *colonche*. The custom of making this beverage is said to be more than two thousand years old. Mexico. STEINKRAUS, UPHOF; N84, Q41

*Opuntia lindheimeri* van *linguiformis* - *Opuntia linguiformis*

*Opuntia linguiformis* - *Cow's tongue, Lengua de vaca* {S}. Fruits are used in making ^rup or jelly. Southwestern North America. TATE [Re]; A69, B86{PL}, 133, K47M, N84, Q41

*Opuntia megacantha* - *Mission tuna, Nopal* {S}. Widely cultivated for the fruits from which some of the best edible tunas are derived. They are eaten raw or made into various products. *Queso de tuna* is composed of the dried fruits pressed into large, thick cakes. *Miel de tuna* is the name given to a syrup prepared from the fruits, and the taffy that forms when the syrup cools. *Melcocha* is a thick paste or jelly made from the boiled juice. *Colonche* is boiled and fermented juice. *Nochote* is fermented tuna juice, *pulque*, and water. Tender, young joints are used as a vegetable. Cultivated. LATORRE 1977a, NOBEL, TATE [Re], UPHOF; F85, Q41

#### CULTIVARS {PL}

**White:** Extra-large fruits of commercial quality; whitish-green skin and light green pulp. Large pads with very small spines. Young pads can be sliced, boiled and seasoned like snap beans or okra. 174

*Opuntia phaeacantha* - *Bastard fig* {S}. Juicy fruits are eaten raw, dried, pickled, made into jelly, or baked with sugar, butter, cinnamon, and lemon juice. The seeds are dried, parched, and ground into a meal for use in gruel and cakes. Young stems are boiled or roasted and then used like green beans with scrambled eggs. North America. HARRINGTON, H., TATE [Re]; A69, C99{PL}, F80, F89M{PL}, H52{PL}, H60{PL}, 133, M16{PL}, N84, Q41, R88, T25M

*Opuntia polyacantha* - *Many-spined opuntia* {S}. Fruits are eaten raw, or dried for future use. The dried fruits can be mixed into stews or used to thicken soups. Young joints are boiled and added to salads or fried. Western North America. HART, KAVASCH [Re]; C98M{PL}, C99{PL}, F89M{PL}, H52{PL}, H60 {PL}, 133, K47M, M16{PL}, N84, Q41

*Opuntia pottsii* - *Prickly pear* {PL}. The Hopi Indians take the stems, spines and all, boil them and squeeze out the juice, and mix it with commeal used in making *torillas*. It acts as the white of an egg does in making the meal more cohesive. Southwestern North America. TATE; H52

*Opuntia rafinesquii* - *Opuntia humifusa*

*Opuntia robusta* - *Dinner plate* {S}. Fruits are eaten raw, pureed, or made into jellies, jams, pies, gelatin desserts, sherbets, syrups, or *colonche*, a fermented drink. Wine made from the fruit is later distilled into a type of biandy. One of the primary species used for *nopalitos*, young joints which are cooked with onions, peppers, cheese, eggs, and spices and used as fillings for tacos and other dishes. Marinated *nopalitos*, eaten as hors d'oeuvre, in salads or cooked with other foods, are widely available in Mexican stores. Mexico. STEINKRAUS, NOBEL, TATE [Re]; F85, G91M{PL}, L55J, N84, Q41

*Opuntia soehrensii* - *Ayrampo* {S}. The dried seeds, when placed in water, yield a brilliant clear violet dye which is used for coloring jellies, gelatine; wines and *chicha*. Available in local markets. The small fruits are occasionally eaten. South America. BRITTON 1937, KUNKEL; L3J

*Opuntia streptacantha* - *Tuna cardona* {S}. Fruits are eaten raw, used in the preparation of sweetmeats, made into *colonche*, a sweet alcoholic beverage, or distilled into a type of biandy. One of the primary species used for the production of *queso de tuna*, sweet brown brick-like cakes made by boiling down the pulp of the fruit. Whole fruits are often hung on strings to dry, after which they become coated with a sweet sticky juice. One of the primary sources of *nopalitos*, young pads which are sliced or diced and used as a vegetable. Mexico. KUNKEL, NOBEL, STEINKRAUS, TATE; F85

*Opuntia tenuispina* - *Prickly pear* {S}. The fruits are said to make the best cactus wine. The juice is allowed to stand until the wine thickens and sours to taste. It is then bottled and capped. This makes a delicious, cooling summer drink. Southwestern North America. TATE; F85

*Opuntia tomentosa* - *Tree pear* {S}. Fruits are eaten raw or made into jams and jellies that have a flavor rather like that of guava jelly.

A succulent cactus chutney is made by mixing the fruit with raisins, apples, onions, lemon peel, dates, sugar, vinegar, and spices. One of the host plants for the *cochineal* insect. Mexico, cultivated. CRIBB, NOBEL, TATE [Re]; Q41

*Opuntia tuna* - *Tuna, Nopal, Panini* {S}. The sweet, juicy fruits are delicious to eat out of hand. Also used in ices, jams, jellies, cakes, muffins, ice cream, sauces, compotes, wine, or to color beverages and confectionery. Half-ripe fruits, when dried, have the flavor of dried green apples. Tender pads are boiled and then used as a substitute for string beans in soups, stews, omelettes, fritters, souffles, casseroles, stuffings, etc. Jamaica, cultivated. GIBBONS 1967 [Re], TANAKA, TATE [Re]; F85, L55J, N84, Q41

*Opuntia vulgaris* - *Eastern prickly-pear* {PL}. Fruits are eaten raw, stewed, or dried for later use. Unripe fruits and tender, young joints can be added to soups and stews and will impart an okra-like mucilaginous quality. Cultivated, naturalized in North America. GIBBONS 1964, MEDSGER; B61M, B61M{S}, C99, H60, H70M, 174, J48, L3J{S}, M16

*Opuntia* sp. - *Supra nopalito* {PL}. The completely spineless pads are used as a vegetable, being especially thin and succulent. They are about six inches long and have an attractive deep forest-green color. Discovered by Kima Joseph. 174

*Pachycereus pecten-aboriginum* - *Cardon hecho hecho* {S}. Seeds are ground into a meal that is made into cakes, eaten by Indians and Mexicans. Mexico. The fruits are also edible. NOBEL, UPHOF; A26, A69, C98, F73D, F80, G73, G73{PL}, 133, 181M, N84, Q41, R88

*Pachycereus pringlei* - *Cardon* {S}. The ripe fruits are eaten raw or made into a refreshing drink. Pulp of ripe and unripe fruits are mixed together, mashed and kneaded and the juice poured off, and the resulting sticky mixture is made into cates and dried. Toasted seeds are ground into an oily paste, formed into balls, and eaten with salt. It tastes something like sesame butter, only better. The flowers are eaten fresh. Mexico. FELGER 1974, TATE; A0M{PL}, A69, B86{PL}, C95, C98, G73, H52{PL}, 133, N84, Q41, R88

*Peniocereus greggii* - *Deerhorn cactus* {S}. Bright scarlet, fleshy fruits are eaten raw, cooked, or made into jam. The tubers are parboiled, dipped in batter, and made into fritters. In Louisiana, they are roasted in ashes in a fireplace. They can also be cut into small strips, soaked in cold water for thirty minutes, drained and dried, and then deep fried. Southwestern North America. HEDRICK 1919, KUNKEL, TATE [Re]; A69, F85, G91M{PL}, 133, I57{PL}, 174{PL}, K47M, N84

*Pereskia aculeata* - *Barbados gooseberry, Lemon vine, Blade apple* {PL}. Fruits are juicy, somewhat acid, occasionally eaten raw but usually stewed or made into jam and preserves. The succulent leaves and young shoots can be used as a substitute for purslane in salads, marinades and cooked dishes. Tropical America, cultivated. MORTON 1987a, OCHSE, TATE, UPHOF; E29, E48, G18, H4, 183M, N7J, N84, P38

*Polaskia chichipe* - *Lemaireocereus chichipe*

*Rhypsalis cassutha* - *Mistletoe cactus* {S}. The edible fruits are produced in great numbers. They are soft, juicy and sweet, like small grapes. Cultivated. HEGYI; F85

*Selenicereus megalanthus* - *Pitahaya amarilla* {PL}. The fruits are eaten out of hand. Some varieties have thin peels and an extremely delicious flavor. Cultivated commercially in Columbia and Israel where selections have been made for various color combinations—such as fruits with yellow or red skin and white flesh, red skin and red flesh, and yellow skin and yellow flesh. Tropical America. NOBEL, PEREZ-ARBELAEZ; M17

*Stenocereus stellatus* - *Jocostle* {S}. The spiny red fruit is eaten, either fresh or dried. It is said to make the most delicious of all cactus jams. In Mexico, it is used as the filling for small turnovers which are served hot with local goat cheese. The juice of the

fruits is used in preparing *colonche*, an alcoholic beverage. Seeds, stems and flowers are occasionally eaten. The flower buds are parboiled, then fried with eggs or prepared with onions and vinegar. Mexico. CASAS 1997, KRAIG [Re], TANAKA, TATE; A69, B84{PL}, H52{PL}, 133, N84, Q38, Q41

*Trichocereus chiloensis* - *Cardon de candelabro, Quisco* {S}. Fruits are eaten raw or processed into a brandy and a syrup. Chile-Argentina. UPHOF, VALENZUELA; G73, H52, 133, Q38, Q41, R88

*Trichocereus spachianus* - *Torch cactus* {S}. Fruits are eaten raw or used in ice cream and sherbets. The new tender shoots, peeled and diced, may be added to a vegetable salad or boiled and served with butter. Argentina. KUNKEL, TATE; A0M{PL}, A26, A79M, B84{PL}, F73D, G18{PL}, 133, K47M, N84, Q38, Q41, R88

#### CAESALPINIACEAE

*Bauhinia carronii* - {S}. The white flowers secrete a considerable quantity of nectar. Australian Aborigines sucked this nectar directly from the flower or washed it out with water. Australia. CRIBB, DONKIN; P38, R33M

*Bauhinia esculenta* - *Tylosema esculentum*

*Bauhinia hookeri* - *Mountain ebony* {S}. Flowers produce a considerable quantity of nectar. This can be sucked directly from the flower, or washed out with water and used as a beverage or for sweetening. Australia. CRIBB; G73, P5, P17M, P38, Q46, R33M

*Bauhinia malabarica* - *Amli, Bentjuluk, Alibangbang* {S}. The young leaves are sour and are eaten raw as a side-dish with rice, or as a lime-like flavoring for meats, fish and hot and sour soups. Young shoots are used as a vegetable. Tropical Asia. JACQUAT, OCHSE, TANAKA, UPHOF; F85, Q12, Q18, Q46

*Bauhinia purpurea* - *Camel's foot tree, Deva kanchan, Koiralo* {S}. Flowers and flower buds are cooked and eaten as a potherb, used in curries, or pickled. In Nepal, they are often cooked with potatoes, spices and tomatoes. Leaves are also edible. Tropical Asia. MAJUPURIA [Re], MARTIN 1975, TANAKA; A79M, C9M, F80, F85, G66, 174, K38, N84, P5, P38, Q12, Q15G, Q18, Q32, Q46, R33M, etc.

*Bauhinia racemosa* - *Kachmal, Burmese silk orchid* {S}. Leaves are pickled. Seeds are also edible. Southeast Asia. KUNKEL, WATT; F80, F85, G73, N84, P5, P17M, Q12, Q18, Q32, Q41, Q45M, Q46

*Bauhinia retusa* - *Semla* {S}. A clear gum, resembling *gum arabic*, is collected by making cuts in the bark and used in sweetmeat manufacture. Himalayan region. TANAKA; G73, N84, P5, P17M, P38, Q12, Q18, Q32, Q41, Q45M, Q46

*Bauhinia tomentosa* - *St. Thomas tree, Kipu-kupu* {S}. Young, sour leaves are eaten as a vegetable with rice, added to soups, or used as a flavoring for other foods. Seeds are eaten. Tropical Asia. HEDRICK 1919, OCHSE; A79M, F85, H4{PL}, N84, P5, P38, Q46, R33M, S28M

*Bauhinia variegata* - *Mountain ebony, Kanchanar, Kurol* {S}. Young leaves, young pods, and flowers are eaten as a vegetable. Flower buds are pickled. The seeds are also much appreciated. Tropical Asia. HEDRICK 1919, KUNKEL, TANAKA; F85, G66, 183M{PL}, N84, 093, P5, P17M, Q12, Q18, Q46, R60

*Caesalpinia gilliesii* - *Bird of paradise tree* {S}. Flower stamens are used to adulterate saffron. Brazil to Argentina, cultivated. CORREA; A79M, C9M, F63M, 133, 183M{PL}, K38, L13, N37M{PL}, N84, 053M, P5, P17M, R33M

*Caesalpinia pulcherrima* - *Peacock flower, Pride of Barbados* {S}. Young seeds, having a sweetish flavor, are eaten fresh or cooked. Flowers are cooked and eaten. Tropics, cultivated. PONG-PANGAN, TANAKA; A79M, C9M, F63M, F80, 133, 183M{PL},

L13, N84, 053M, P5

*Cassia auriculata* - *Tanner's senna*, *Ranawara*, *Matar tea* {S}. Young leaves, pods and flowers are occasionally eaten. Dried flowers are used as a coffee substitute, while the dried leaves are used as tea. Tropical Asia. MACMILLAN WATT; F85, N84, P5, P17M, Q12, Q18, Q46, R88

*Cassia bicapsularis* - *Wild currant*, *Cafe de pobre* {S}. The pulp of the fruit is sweet and edible with somewhat the flavor of tamarind. Toasted seeds are used as a coffee substitute. Tropical America. DUKE, WILLIAMS, L.; F85, H4{PL}, H14M{PL}, H71, N37M, N79M, N84, 093, P17M, P38, Q32, S92

*Cassia fistula* - *Golden shower* {S}. Flowers are edible. Leaves and fruits are also eaten, however they act as a mild laxative. Southern Asia, cultivated. CRIBB, DUKE, MARTIN 1975; A41M, A79M, C9M, D56M, F80, N84, 094, P5, P17M, P38, Q12, Q18, Q32, R33M, S92

*Cassia floribunda* - *Smooth senna*, *Tajumas* {S}. The steamed young shoots and leaves are eaten as a potherb or cooked in soups and stews. Unripe seeds are cooked or roasted and eaten as a side-dish with rice. Seeds are used as a coffee substitute in some parts of Guatemala. Tropical America, cultivated. OCHSE, UPHOF; F85, JO, N84, 093, P5, P17M, Q12, Q18, R33M

*Cassia grandis* - *Pink shower*, *Stinking toe* {S}. The malodorous, sugary pulp of the fruit is eaten although it can be purgative if eaten in excess. Tropical America. DUKE, WILLIAMS; A79M, D92M, F80, N84, 093, P5, P17M, Q12, Q18, Q32, Q45M, Q46, R32, R33M, R88

*Cassia laevigata* - *Cassia floribunda*

*Cassia obtusifolia* - *Sicklepod*, *Ebisu-gusa* {S}. The leaves are used as a vegetable. In the Sudan, they are fermented into a high protein (20%) meat substitute and extender called *kawal*. A pale yellowish juice that accumulates during the fermentation process is skimmed off and made into a stew with okra, beef jerky, and salt. Seeds are used as a tea substitute. Tropics. DIRAR 1984, DIRAR 1993 [Nu], TANAKA; F85, M34M, N84, Q12

*Cassia occidentalis* - *Coffee senna*, *Kasamaidah* {S}. Young leaves, unripe pods, and flowers are eaten as a steamed vegetable. A traditional coffee substitute, *Magdad coffee* or *Florida coffee*, is prepared from the roasted seeds. Also used in *Raja's Cup*, an Ayurvedic coffee substitute. Tropics, naturalized in Southern North America. DUKE, FERNALD, MEDSGER, OCHSE; F15M{PD}, F85, H14{PD}, M7M, N79M, N84, P5, P17M, R33M

*Cassia siamea* - *Cassod tree* {S}. The young leaves and flower buds are eaten in curries, after having been parboiled two or three times to reduce their bitterness. Indonesia, cultivated. BURKILL, JACQUAT, TANAKA; C9M, F85, N79M, N84, 093, P5, P17M, Q12, Q18, Q32, Q46, R33M

*Cassia tomentosa* - *Alcaparro* {S}. Tender pods, leaves, and flowers are eaten as a vegetable. Buds are used as a caper substitute. Tropics. DUKE, MACMILLAN; D92M, F85, H71, 093

*Cassia tora* - *Sickle pod*, *Sickle senna*, *Coffee weed* {S}. Young leaves and shoots are steamed as a potherb or cooked and eaten with rice. They contain about 6% protein. The seeds, roasted or cooked in the pod, are eaten as a side-dish at the rice table. Roasted seeds are also used as a coffee substitute. Tropics. DUKE, JACQUAT, OCHSE; B49, F85, J82, Q12, Q18

*Ceratonia siliqua* - *Carob*, *St. John's bread*, *Locust bean* {S}. Pods are sweet, rich in sugars and protein, and somewhat fibrous. They are sometimes eaten as a sweetmeat, but are usually made into a molasses or syrup called *pasteli* or *dibs el kharoub*, alcoholic beverages, or ground into powder. Carob powder is used as a chocolate substitute in drinks, cakes, candies, baked goods, etc. *Locust bean gum* or *tragasol*, extracted from the seeds, is used to thicken sauces, pickles, salad dressings and ice cream. Roasted seeds

are used as a coffee substitute. Cultivated. COIT, CUSUMANO [Cul, Re], DAGHER, GOULART [Nu, Re], HEDRICK 1919, MORTON 1987a, UPHOF; A7{DF}, A79M, C9M, D95{PL}, F97M{PD}, K370{DF}, K38, K63G, L50M{PD}, N84, 053M, S92

#### CULTIVARS {GR}

**Casuda:** Medium-long, flat fruit, 5 to 7 inches in length and about 1 inch wide; of a dark brown color; sugar content about 50%, protein about 5%, quality very good; not susceptible to worms. Tree a good bearer. In California best adapted to foothill areas, but also does very well in the desert. Originated in Valencia, Spain. THOMSON 1971; U26{SC}

**Santa Fe:** Large, slightly curved fruit, up to 7 inches long; skin thin, light brown; good sugar content, 47.6%, flavor very good; usually harvested during September and the first 10 days of October; immune to worms. Tree spreading, precocious; self fertile, bears heavy crops annually; does especially well in coastal foothills. Originated in Santa Fe Springs, California. Introduced in 1922. BROOKS 1972, MORTON 1987a; T49M{SC}

**Sfax:** Very large, thick fruit; sugar content about 51 %; ripens very early, September 10 to 30 at Vista; milling quality good. Excellent for eating out of hand as it is soft, very sweet and tasty. Tree vigorous, spreading; yields heavily in alternate years. In southern California best suited to foothills some distance from the coast. Originated in Tunis, Tunisia. Introduced into the U.S. in 1959 by Dr. J. Elliot Coit, Vista, California. BROOKS 1972, THOMSON 1971; U26{SC}

**Tvlliria:** Large fruit, 6 to 9 inches long; sugar content averages 47.4%, protein 5.81%, good flavor; excellent quality for milling; ripens late, in October. Tree comes into bearing late, with no commercial yields before 10 years from budding. In California best adapted to foothills near the coast. Good commercial cultivar; widely grown for export on Cyprus where it originated in ancient times. BROOKS 1972; U26{SC}

*Cercidium floridum* - *Palo verde* {S}. Immature seeds and pods are eaten as a vegetable, having a pleasant taste similar to peas and beans. Dry seeds are ground and made into breads, cakes, and beverages. Leaves are eaten as greens. Southwestern North America. CLARKE, FELKER, KUNKEL, UPHOF; A79M, B94, C9M, C98, D56M, E66M, F63M, H71, 133, 198M{PL}, JO, J86{PL}, 093

*Cercidium microphyllum* - *Small-leaved palo verde* {S}. The seeds are eaten fresh or ground and mixed with mesquite meal. Southwestern North America. CLARKE, KIRK, YANOVSKY; A69, B94, C9M, C98, E66M, F63M, F85, H71, 133, 198M, 198M{PL}, JO, N84

*Cercidium torreyanum* - *Cercidium floridum*

*Cereis canadensis* - *Red bud* {PL}. Acid flowers are eaten raw in salads. Unopened buds are pickled in vinegar and used as a caper substitute. Buds, flowers, and young pods are good sauteed in butter or made into fritters. High in vitamin C. North America. FERNALD, GIBBONS 197, ZENNIE [Nu]; A50, B9M, C9, C9M{S}, D95, E87, F80{S}, G23, H4,14,177M, K38{S}, K63G{S}, M77, N84{S}

*Cereis occidentalis* - *California redbud* {S}. Roasted pods and seeds are eaten. Flowers are used in salads. Buds are pickled like capers. Western North America. KIRK, YANOVSKY; A2, C9M, C95, D95{PL}, F80, G59M, G60{PL}, H4{PL}, I83M{PL}, K38, K63G, L13, N84

*Cereis siliquastrum* - *Judas tree* {S}. The flowers have a pleasant acid taste and are eaten raw in salads or dipped in batter and made into fritters. Flower buds are pickled in vinegar and used as a condiment. Mediterranean region. HEDRICK 1919, MACNICOL; C9M, D95{PL}, E87{PL}, H4{PL}, K38, K63G, N71M, N84, 053M, 093, P5, Q32

*Cynometra cauliflora* - *Nam-nam* {S}. The fleshy, subacid fruit has a pleasant flavor suggesting an unripe apple and is eaten fresh, stewed or preserved. Fried with batter, it is said to make a good fritter. Young fruits are pickled, eaten with sambal, or prepared with fish. Tropical Asia. HEDRICK 1919, JACQUAT, MACMILLAN, TANAKA; N84

*Dialium guineense* - *Velvet tamarind* {S}. The aril surrounding the seeds has an agreeably acid flavor and is commonly eaten. When dry, it is chewed or macerated in cold water to form an acid beverage. West Tropical Africa. DALZIEL, HEDRICK 1919, MACMILLAN; F85

*Dialium indum* - *Tamarind plum, Keranji madu* {S}. The small, dull velvety-black fruits have a delicious subacid flavor somewhat reminiscent of tamarind, but not as acidic. They have thin, brittle shells which preserves the desiccative pulp perfectly for several months. Considered a delicacy in some areas and sold in local markets. Tropical Asia. HEDRICK 1919, JACQUAT, TANKARD, UPHOF; 019

*Dialium* sp. - *Keranji ayer* {S}. Small, roundish fruits, about 3/4 of an inch long; thin, brittle shells, dull velvety-black in color, easily opened; soft, burnt-orange flesh that separates easily from the seed. The flavor of the raisin-like flesh, which keeps for months, is tangy but not too tart. Although slow growing, it may fruit quickly. Borneo. TANKARD; 019

*Gleditsia triacanthos* - *Honey locust, Sweet locust* {S}. Seed pods are cooked and eaten while still small and tender. The sweetish pulp is eaten as a nibble, made into sugar, and fermented into a beer. Has a unique, nearly overwhelming, bittersweet flavor Young seeds are eaten, tasting like raw peas. Source of an under-utilized but highly desirable smoking wood that imparts a distinct honey wood flavor to grilled foods, especially wild game. Considered to be the hardest, hottest, and longest-lasting of the native Northeastern hardwoods. North America, cultivated. FERNALD, GIBBONS 1979, LOGSDON 1981, MESSINA; B61M, C9M, F80, F85,149G{PL}, K38, K63G, L15G{PD}, N84, 053M, P49

#### CULTIVARS {GR}

**Ashworth:** Very sweet pulp said to have a melon-like flavor, although others report the fruit quality as being inferior. Tree extremely haidy, thornless. Produces male flowers for pollination. F43M

**Calhoun:** Large, thick pods. Unusually high sugar content, up to 39 percent. Vase-like growth habit, as opposed to Millwood which is more upright. Produces 30 to 35 pounds of pods per tree at 5 years of age. Hardy in central Pennsylvania, Massachusetts, southern Michigan. Discovered near Gadsden, Alabama for a TVA contest held in 1934. DETWILER; F43M, F43M{PL}

**Hershey:** Very prolific and precocious. Hardy to Zone 5. Named after the late John W. Hershey, noted tree-crops specialist and nurseryman from Downingtown, Pennsylvania who at one time worked on honeylocusts for the Tennessee Valley Authority. F43M

**Millwood:** Large, thick pods, filled with syrupy pulp; has an unusually high sugar content, up to 37 percent. Vigorous and productive tree; grows 12 to 15 feet tall after five years; thornless even if cut back severely. Yields 60 to 65 pounds of pods per tree after 5 years. The best known of all the honey locust cultivars. Discovered near Lake Junaluska, North Carolina for a TVA contest held in 1934. DETWILER; F43M, F43M{PL}, I60{PL}

**Schofer:** Discovered in 1946 northeast of Reading, Pennsylvania by Robert Schofer of Reading. Pods are considered to be equal in size and flavor to Millwood. Tree very haidy, possibly north into Canada. Introduced by John W. Hershey. DETWILER; F43M{PL}

*Gymnocladus dioicus* - *Kentucky coffee tree* {S}. The fully ripe seeds may be roasted, ground, and used as a coffee substitute. Thorough roasting, at least three hours at 300° F., is necessary to destroy the poisonous hydrocyanic acid in the ripe seeds. Eastern

North America. GIBBONS 1979; A79M, D95{PL}, E7M, F51{PL}, F80, K38, K63G, M35M{PL}, N37M{PL}, N84, 053M

*Haematoxylum campechianum* - *Logwood* {S}. The flowers are the source of a light-colored honey of delicious flavor and superb quality. Considered by some to be the finest table honey in the world. The principal export honey of Jamaica. Tropical America. CRANE 1975, PELLETT, UPHOF; N84

*Hymenaea courbaril* - *West Indian locust, Courbaril, Guapinol, Stinking toe* {S}. The dry, whitish-yellow pulp around the seeds is sweet and is eaten. Also mixed with water to make an *at ole*, added to *peppercot*, or fermented into an alcoholic beverage. In Jamaica, it is eaten like candy by children or used in making custards and ice cream. The protein content is high for a fruit. Tropical America. DE CERDAS, GRIME, HEDRICK 1919, TANAKA, UPHOF, WALSH [Cul, Re], WILLIAMS, L.; F80, F85, G0{DF}, I12{PL}, N84

*Parkinsonia microphyllum*-*Cercidium microphyllum*

*Poinciana gilliesii*-*Caesalpinia gilliesii*

*Poinciana pulcherrima*-*Caesalpinia pulcherrima*

*Saraca bijuga* - *Sok nam, Ashok* {S}. The aromatic flowers, having a sourish flavor, are eaten locally as a potherb. Fruits are chewed instead of Areca nuts. Leaves are also edible. Southeast Asia. BURKILL, PONGPANGAN, TANAKA; C9M, P17M, P38, Q12, Q18, Q46, R50{PL}

*Saraca indica*-*Saraca bijuga*

*Tamarindus indica* - *Tamarind* {S}. The acid fruit pulp is used in drinks, preserves, curries, jellies, syrups, *Worcestershire* and *Pickapeppa* sauces, and chutneys. Compressed blocks of pulp are sold as *wet tamarind* in ethnic stores. Less sour forms are mixed with salt, sugar and chiles and eaten as a snack. Sweet-fruited types, considered a delicacy, are eaten out of hand. Young, immature pods are eaten fresh mixed with spices or fish sauce, pickled like green mango, or added whole to soups, stews and sauces, such as *nam prik ma-kahm*. Leaves are eaten in soups, salads, and curries. Seeds are roasted and eaten, ground to flour, used as a coffee substitute, and also yield an edible oil, gum, and starch. The bark of the tree is chewed as a delicacy. Flowers are eaten raw in salads or cooked. The seedlings, when about a foot high, are used as a vegetable. Cultivated. COST 1988 [Cul, Be], CRAWFORD [Re], DUKE, LOHA-UNCHIT, MORTON 1987a, OCHSE, POPENOE, W. 1920 [Cu, Nu], RICHARDSON, M. [Re], ROUTHIER 1989 [Cul, Re], TANAKA, VON MAYDELL; A79M, B60M{PR}, E21D{PL}, E29{PL}, F80, I83M{PL}, J58{ED}, K17J{ED}, L90G{ED}, N40{PR}, P5, P17M, Q32, R47

#### CULTIVARS {PL}

**Mekong Dream:** Sweet fruited type collected on the Mekong river border of Laos and Thailand. Completely free of any tartness, being very rich, sweet and delicious. Chewy, raisin-like texture. Straight, easily cracked pods yield seeds that are roasted and eaten. 174

*Tylosema esculentum* - *Marama bean, Gembok bean* {S}. After roasting, the seeds have a delicious nutty flavor that tastes like coffee beans or roasted cashews. They have a protein content comparable to soybeans, and an oil content that approaches that of the peanut. The edible oil is similar to almond oil in consistency and taste. Sweet tubers can be baked, boiled, or roasted. Southern Africa. FOX, E, MENNINGER, NATIONAL RESEARCH COUNCIL 1979; C95

#### CALYCANTHACEAE

*Calycanthus floridus* - *Carolina allspice, Sweet shrub* {PL}. The aromatic bark is sometimes used as a spice. Eastern North America. HEDRICK 1919; A50, B96, C9, C9M{S}, D92M{S}, D95, E33M, F51, F80{S}, G23, H4, I11M, N71M{S}, 053M{S}

*Calycanthus occidentalis* - *California allspice* {PL}. Said to be used as a spice. Southwestern North America. TANAKA; B92, B94{S}, D95, G60, G66{S}, H4, 198M, J75, 053M{S}

*Calycanthus praecox* -> *Chimonanthus praecox*

*Chimonanthus praecox* - *Wintersweet*, *Kara-ume* {S}. Flowers are eaten with oil and salt. The flower petals are used to flavor and scent tea. Korea-China, cultivated. REHDER, TANAKA; D95{PL}, E7M, E63{PL}, E87{PL}, H4{PL}, K38, K63G, N37M{PL}, 053M, 093, P5, R78

#### CAMELLIACEAE

*Camellia japonica* - *Garden camellia* {S}. The dried flowers are eaten as a vegetable or used in the preparation of *mochi*. Seeds are the source of an oil, called *tsubaki oil*, used for culinary purposes. The leaves serve as wrapping for *tsubaki-mochi*, festive rice cakes traditionally eaten on May 5th, in celebration of Boy's Festival or Sekku. They are also brewed into a tea. Eastern Asia, cultivated. BROUK, MACNICOL, SUGANO, TANAKA, ZEVEN; A79M, B32{PL}, B96, B96{PL}, E66T{PD}, GO{PD}, H4{PL}, I52{PL}, K38, N1M{PL}, N84, 053M, P49

*Camellia kissi* - *Let-pet tea*, *Kissi* {PL}. Leaves are used locally as a tea. The seeds yield an oil said to be similar to olive oil. Fruits are reportedly edible. Subtropical Asia. ALTSCHUL, TANAKA, WATT; 152, 152{SC}

*Camellia sasanqua* - *Sazanka*, *Sasanqua tea* {S}. Seeds are the source of *tea seed oil*. When refined it is suitable for use in foods. In Japan, the leaves are mixed with tea to give it a pleasant aroma. Japan-China, cultivated. HEDRICK 1919, TANAKA, UPHOF, ZEVEN; B32{PL}, B96, B96{PL}, G96{PL}, H4{PL}, I52{PL}, K38, N1M{PL}, N84, 093, P5

*Camellia sinensis* - *Tea plant*, *Cha* {S}. Cured leaves are the source of common tea. *Leppet*, *laphet* or *leppet tea* consists of green tea-leaves pressed and preserved, and afterwards prepared as a vegetable by mixing with garlic, salt, oil, and other ingredients. Both the leaves and brewed tea add flavor to meat and fish dishes. *Tea egg*, popular in China, is an egg boiled in leftover or fresh tea. Leaves are added to the paste that coats *pidan* or *hundred-year-old egg*. Green tea powder or *matcha* is used in Japanese confectionery, pasta and ice cream. *Kombucha* or *tea cider* is an effervescent, sub-acid, fermented beverage made from tea leaf extracts. *Bai-ming* are sour, fermented tea leaves eaten as a snack in Burma and northern Thailand. Smoke from the leaves flavors *tea-smoked duck*. In Tibet, salt and butter are added to boiled brick tea, and the mixture is churned until it resembles cocoa. The flowers are made into tempura using the edible seed oil. Fruits are eaten. Leaves are chewed to remove the odor of garlic or onions. Subtropical Asia, cultivated. ALTSCHUL, CAMPBELL-PLATT, CHOW, CREASY 1982 [Cu, Pre], HOU, LEE, G. [Re], MACMILLAN, MITCHELL [Cu], SCHERY, STEINKRAUS, TAIK [Re], TANAKA, VON REIS, WILKES; A79M, B74{PL}, C22{PD}, C27G{PD}, E60P{PD}, G20M{DF}, G39G{PD}, G47C{PD}, H4{PL}, H91{PD}, I52{PL}, N37M{PL}, N84, 093, P17M, Q46, etc.

#### CULTIVARS {GR}

**Blushing Maiden:** Similar to the Tea Breeze cultivar, except for the single flowers which are an attractive blushing pink color. Lush, dark green-red foliage. Hardy. Tolerates full sun. E87, 139, J61M

**Carolina:** Hybrid developed at the Charleston Tea Plantation in South Carolina. Produces a unique, limited edition, first flush black tea harvested only during the month of M\*y. Has a bright character, a smooth, mellow finish and the complexities of a fine wine. C22{DF}

**Large Leaf:** Similar to Small Leaf, but with larger foliage and flowers and slightly less hardy. Striking evergreen with very rich texture; very vigorous and free flowering. Hardy in Zone 7A. B96, B96{S}

**Longjing:** (Dragon Well) {DF} One of the most renowned teas in China. Famous for its green color, attractive shape, pleasant aroma, and mellow flavor. Flat green leaves produce a clear yellow-green tea with a sweet, aromatic fresh flavor and a lingering aftertaste. Frequently served in hot weather due to its cooling effect. Originated in the village of Longjing, in the province of Zhejiang. CHOW; C27G, C60D, G73, H36, H44M, L88D, N54

**Small Leaf:** An excellent shrub for the landscape that has small white flowers in the autumn, and a compact habit all year. The type of tea that is widely cultivated in Japan. Hardy in Zone 6B. B96, B96{S}

**Tea Breeze:** Dense, dark green leaves. Ornamental, single fragrant white blooms from September to November. Hardy. A cultivar that is extensively planted in commercial tea plantations. E87, 139, J61M

**Tiequanvin:** (Iron Goddess of Mercy) {DF} Most famous of all Chinese oolong teas. Short, spreading shrub with glossy, dark green leaves, soft and thick with curling serrated edges. Tightly twisted leaves produce an aromatic brownish-orange brew of high astringency, orchid-like flavor and long-lasting aftertaste. Can be used through many more infusions than other types. Often brewed *gongfu* style in tiny pottery teapots and sipped through thimble-sized cups. Named after Guanyin, the Buddhist Goddess of Mercy. CHOW; C60D, H36, H44M

*Thea sinensis* - *Camellia sinensis*

#### CAMPANULACEAE

*Adenophora triphylla* var. *japonica* - *Tsurigane-ninjin*, *Ch'andae* {S}. Young shoots are parboiled and used in soups, fried, sauteed, or preserved in salt or dried for future use. Very common in the markets of Korea where it is occasionally cultivated. Eastern Asia. PEMBERTON, TANAKA; 046

*Campanula glomerata* - *Clustered bellflower* {PL}. In Turkey, the bluish flowers are eaten raw. They have an excellent sweet flavor and make an attractive addition to a salad, along with the sweet leaves. Eumsia. OZTURK; B98T, D11T, D92M{S}, F35M, G89M, H29M, H63, I77M, K22, K63G{S}, L66, M82, Q24{S}, R49, R88, S55{S}, etc.

*Campanula punctata* - *Hotaru-bukuro* {S}. Flowers and leaves are used as potherbs. Eastern Asia. KUNKEL, TANAKA; A51M{PL}, A61, A61{PL}, B28{PL}, B98T, D92M, J37M{PL}, L66{PL}, L91M, M82{PL}, N84, 046, 053M, Q24

*Campanula rapunculoides* - *Rover bellflower*, *Creeping bellflower* {S}. The fleshy roots are somewhat sweet and are a pleasant addition to tossed green salads. They are also good when boiled for twenty minutes and served with butter or a cream sauce. Eurasia, naturalized in North America. CROWHURST 1972, FERNALD, GIBBONS 1979, HARRINGTON, H.; A61, B61M, F80, L66{PL}, N9M, N9M{PL}, N71M, N84, 053M, Q24, R88

*Campanula rapunculus* - *Rampion* {S}. Tender young leaves can be added to tossed salads or cooked as a potherb. The white, fleshy roots, when young, are agreeable sliced and eaten like radishes in salads, while the older roots are boiled, roasted, or fried like turnips. The young shoots may be blanched like asparagus and prepared in the same manner. Eurasia, cultivated. GRIEVE, LAUNERT, ORGAN, PAINTER, VILMORIN [Cu]; A61, B98T{PL}, F35M{PL}, J82, M82{PL}, N71M, N84, 053M, Q24, R88, S17, S55

*Campanula versicolor* - *Variouly-colored bellflower* {S}. The young leaves are very good in salads, tasting somewhat like sweet garden peas. In parts of Greece, they are eaten as a cooked vegetable. The flowers are also very good to eat. Eurasia. UPHOF; N84, Q24, R49{PL}

*Canarina campanulata* - *Canarina canariensis*

*Canarina canariensis* - *Bicacaro*, *Canary bellflower* {S}. Fruits are eaten out of hand or made into preserves. Roots and young shoots are also said to be edible. Canary Islands. HEDRICK 1919, KUNK-EL; 053M, R77{PL}

*Codonopsis lanceolata* - *Todok*, *Tsuru-ninjin* {PL}. The large, fibrous white root is commonly eaten in Korea after having been pounded, washed in salted water and cut into strips. It is then often seasoned with sesame oil, soy sauce and *kochujang* and grilled over charcoal or eaten as a salad. Also occasionally mixed with milk and honey to make a beverage. Said to be an appetite stimulant. Available in Korean stores—fresh, dried or frozen or as a prepared deli food. Eastern Asia, cultivated. LEE, F. 1988 [Re], MILLON [Cul, Re], NOH [Pre, Re], PEMBERTON; L59P, N84{S}

*Codonopsis pilosula* - *Dang shen*, *Bastard ginseng* {S}. Roots are eaten raw, baked or preserved in miso. In China, they are often an ingredient of sweet tonic drinks and soups—combined with rock sugar, Chrysanthemum petals, bird's nest, and *Astragalus membranaceus*. Frequently used as a substitute for ginseng. One of the ingredients of *Emperor's Secret* classic herbal tea, *Change of Season Soup*, and *Dragon Herbal*. Eastern Asia. BENSKY, FLAWS 1995, LEUNG, TAN [Re], TANAKA, TEEGUARDEN; A61, D40G, D56M, E14T{DF}, F35M{PL}, F37T{DF}, F68T, F86G, G6, G19P{DF}, H36{PD}, 174, J82, K18M{DF}, ZJ4{DF}, L90J{PL}, R53M, R53M{PL}, R47, etc.

*Phyteuma orbiculare* - *Round-headed rampion* {S}. The leaves and fleshy roots are occasionally consumed in salads and as a cooked vegetable, like the true rampion. Europe. UPHOF; A61, A61{PL}, N84, 048, Q24

*Phyteuma spicatum* - *Spiked rampion* {S}. The thick, fleshy roots can be eaten in salads or as a boiled vegetable. Europe. HEDRICK 1919; A61, A61{PL}, F80, N71M, N84, 053M, Q24, R88

*Platycodon grandiflorus* - *Balloon flower*, *Toraji*, *Mountain bellflower* {S}. The crunchy white root is a popular vegetable in Korea where it is usually cut into strips, seasoned with chilis, vinegar, sesame oil and soy sauce and eaten as a salad. Also used in soups and other dishes, vinegared dishes. One of the seven herbs that flavor *tosu*, sweet Japanese sake. Said to taste like a Available in Korean stores—fresh, dried or frozen and also as a prepared food. Boiled young leaves are eaten as a salad in mountainous regions of Japan. Eastern Asia, cultivated. COOK, LEE, F. 1988 [Re], MILLON [Cul, Re], NOH [Pre, Re], PEMBERTON YASHIRODA; A2, A61, C9{PL}, D24{PL}, D40G, D56M, E7M, F37T{PL}, F68T, F80, H63{PL}, J82, L94M, M98{PL}, N23, R47

## CANELLACEAE

### *Canella alba* - \**Canella winterana*

*Canella winterana* - *Canella*, *White cinnamon*, *Cinnamon bark* {PL}. The aromatic leaves and the bitter, very pungent bark are used as condiments in the West Indies. Was a common ingredient, along with *Capsicum*, in the food and drink of the ancient Caraiibs. In Russia, it was used to flavor *clove vodka*. Dried bark is exported to spice merchants and utilized in seasoning mixtures. Florida, West Indies. GRIEVE, GRIMfi, MORTON 1976, TOOMRE, UPHOF; D87G

## CANNABIDACEAE

*Cannabis sativa* - *Hemp*, *Marijuana* {PD}. Seeds are parched and eaten as a condiment, used as a substitute for coffee, or made into cakes and fried. In Japan, they are called *asanomi*, and are used in *ganmo* (deep-fried tofu burgers). They are also one of the ingredients of the Japanese spice mixture called *shichimi*, most commonly used as a topping for udon noodles. In natural foods cuisine they are eaten in cookies, brownies, pancakes, imitation cheese, porridges, nut butters, etc. *Hempen Ale* and *Hempen Gold* are beers made with hemp seeds. In Estonia, hemp seed milk was poured on soups and porridges. The highly nutritious seed oil may be used for culinary purposes. The herb is mixed with dried fruits, nuts and spices in the

Moroccan candy called *majoun*. In northern India, it is added to a type of sake known as *pachwai*. Considered an essential flavoring herb in Rastafarian *Ital* cooking. Sprouted seeds are eaten. Central Asia, cultivated. ERASMUS [Nu], FERNALD, FORGET, HARRINGTON, H., HEDRICK 1919, KALVIK, KIRK, MILLER, C. [Pre, Re], OSBORNE, SHURTLEFF 1975, TSUJI, WOLFERT 1973; A7, A25G, E14T, GO, H13M, I59L, 166, I76T, I79M, N49M

*Humulus lupulus* - *Hops* {S}. A bitter substance found in the glandular hairs of the female cones is used in beer to give it flavor and aroma, and to prevent decomposition by bacteria. Also used in herbal beers. Mennonite settlers in America boiled the cones with potato water to make a yeast starter for baking bread. *Hopfenkase* cheese is matured between layers of hops. Young shoots are eaten in salads or used as a substitute for asparagus. In France and Belgium, the cooked shoots are known as *jet de houblon*. The flavor is unique and to many tastes delicious. Leaves and cones are brewed into tea. Fleshy rhizomes are sometimes eaten. For the production of shoots, young root cuttings are grown in clumps or small hillocks. Northern temperate region, cultivated. BIANCHINI [Cul], CAMPBELL-PLATT, CREASY 1982, FERNALD, GRAY, P. [Cul], GRIEVE [Cu, Re], KUNKEL, MARCIN, ORGAN [Cu, Re], UPHOF, VOTH [fe], WEAVER 1993; A26, C82{PL}, D76{PL}, E12{ED}, E81M, G73{PL}, K54{PD}, N84, 053M, R47

### CULTIVARS {PL}

**Brewers Gold:** High quality hop with a pungent aroma and high alpha acid content. Similar to Bullion but the cone tends to be smaller, and matures a week to ten days later; exhibits the same lack of stability in storage. Perennial vine requires strong trellis and ample water. Mildew-resistant, high yielding. Hops ripen August to September. ROMANKO; H49, L90J, M81M

**Bullion:** A rich, aromatic hop with high bittering compounds and resins. Unusual taste and aroma. Very vigorous, produces 1,800 to 2,400 pounds per acre. In Oregon, it is harvested after Fuggle, usually during the first week in September. The oil content increases as the harvest is delayed. Lacks storage stability unless kept at temperatures below 32° F. Used mostly as a bittering hop in strong English-style bitter ales and stouts. ROMANKO; A99, L90J

**Cascade:** A Fuggle hybrid developed at Oregon State University. The cones are buttery to the rub and the aroma is at once fragrantly aromatic and powerful. In Oregon, it matures after Fuggle and before Bullion. It is a poor keeper and requires cold storage immediately after baling. Resistant to downy mildew. Excellent for giving both flavor and aroma to American light lagers. ROMANKO; A99, B8P, C43M, E12, E12{DF}, E68, F67T{PD}, F99, H65, I39, I39{DF}, J9P, J76, J82, L90J, L94M, L94{DF}, M81M, N24M, etc.

**Chinook:** Potential dual purpose hop. Similar to the new high alpha bittering cultivars, but also has an interesting pine-like aroma, much appreciated by some. Excellent for American-style pale ales. Average alpha acid content 12 to 14%. Matures early to mid-season. High yielding. Developed by C.E. Zimmerman. Introduced in 1985. B55M, B55M{DF}, E12, E12{DF}, F99, I39{DF}, J9P, L90J, L94M, L94{DF}

**Early Cluster:** An excellent hop with a consistently high brewing value. Has a relatively unrefined aroma and is usually blended with other hops that are more aromatic. Produces hops in small to medium clusters, averages 8 to 9 bales of cones per acre. Resistant to verticillium wilt; susceptible to downy mildew. The dominant hop cultivar in the United States. Originated in Oregon around 1908 as a mutation of English Clusters. ROMANKO; L90J

**Fucycyle:** Has an aroma which is fairly pronounced and somewhat spicy but not pungent. Usually used in dark beers and stouts. Vine reaches 20 feet in length. The most mildew resistant cultivar grown in the Northwest. It is early maturing and low yielding. Considered to be a cool weather hop. Baled hop has fair keeping qualities. The best cultivar for the home brew enthusiast. ROMANKO; A99, B55M, B55M{DF}, E12, F99, L90J, M81M, N84, 081, R53M

**Galena:** Outstanding high alpha acid hop. Clean and well balanced. Often used for double bocks and other heavy beers. Matures in mid-season. Average alpha acid content 12 to 14%; high storage ability. High yielding. Grown commercially in Washington and Idaho. Seedling of Brewer's Gold selected by R.R. Romanko. Released in 1978. E68, L90J

**Golden:** (Yellow. Aureus) An ornamental hop that grows 15 feet tall and has attractive, bright yellow-golden climbing foliage when young. Matures to a medium green color. Produces light green cones in September. B92, E87, H63, J76, N84{S}, R53M

**Hallertauer:** (Hallertauer Mittelfrueh) An excellent hop with a mellow, spicy aroma and flavor. Excellent for dry hopping, but a poor bittering hop. Good for light and dark lagers. Produces 700 to 900 pounds per acre. Susceptible to mite infestations. Grown commercially in the Kootenai Valley of Idaho. The traditional German aroma hop. Full German name translates as "Midseason Hop of the Hallertau District". ROMANKO; A99, B8P, E12, E12{DF}, F35M, F99, J82, L90J, L94{DF}, M15M{DF}, N24M, 081

**Hersbrucker:** (Hallertauer Hersbrucker) A German hop similar to Hallertauer but easier to grow. Versatile bittering and herbal finishing hop with a mild, crisp and spicy fragrance. Alpha acid content 2-5%. Used in wheat beers, American and German lagers, Belgian ales, and Pilsner-style beers. L90J

**Kent Golding:** Classic English aroma hop traditionally used for finishing premium pale ales, bitters, porters and stouts. Adds a distinctive, earthy, spicy flavor. Excellent for dry hopping ales. Alpha acid content 4 to 6%. Moderately productive. Also grown in British Columbia, Canada. E12, F67T{ED}, J9P, L90J, 081

**Mount Hood:** American hop with good aroma, mild flavor, and medium bitterness. Used as a Hallertauer equivalent, but with improved agronomic characteristics. Provides a light, delicate finish to American and Bavarian-style lagers and ales. Can also be used as a flavoring hop. Alpha acid content 4-8%. A99, B55M, B55M{DF}, C43M, E12, E12{DF}, F99, J9P, J82, L90J, L94M, L94{DF}, N24M

**Northern Brewer:** Strong, fragrant hop with a distinctive mint-like flavor. Good all-purpose hop, but ideal for steam beers and ales. Has a more pleasant aroma and flavor than most other older high alpha types. Alpha acid content 8 to 10%. Low to moderate yields. Grown commercially in Kent, England, Oregon and Washington. B55M, B55M{DF}, E12, E12{DF}, F99, J9P, L90J, L94{DF}

**IMuaaet:** A good yielding, high alpha bittering hop. Alpha acid content 11-16%. Used for giving a strong bitter flavor to ales and stouts. Heavily spiced and herbal. Occasionally used for lagers. Aroma only fkir. An American hop derived from Brewers Gold. Introduced in 1970. B8P, D95, E12, E12{DF}, 139, J9P, J76, J82, L90J, L94M, L94{DF}, N24M

**Perle:** Medium to high alpha hop with a pleasant, slightly spicy aroma similar to Hallertauer. Can be used for ales, lagers, wheat beers and pilsners. Alpha acid content 7 to 10%. Poorly adapted to high temperature areas like the Yakima Valley in Washington. Relatively new German cultivar. B8P, E12{DF}, L90J, L94M, L94{DF}

**Saaz:** Classic Bohemian aroma hop. The traditional cultivar for finishing true pilsner beers such as Pilsner Urquell. Famous for its spicy, clean bitterness. Also used in wheat beers. Alpha acid content 3 to 5%. Poor storage stability. Low yielding and difficult to grow outside its native region in the Czech Republic. B55M, B55M{DF}, E12, E12{DF}, F35M, F99, L90J

**Soalt:** Classic German aroma hop. Can be used as a replacement for Saaz. Very light, smooth bittering effect, but more assertive than Hallertauer. Excellent for all types of lagers and lighter bodied beers, especially where a delicate hopiness is needed. Alpha acid content 3 to 6%. L90J

**Sunbeam:** Ornamental type with brilliant golden-yellow foliage and red stems. Can also be used as an aroma hop in northern European style pilsners. Alpha acid content 4 to 5 %. Grows vigorously in filtered light or partial shade. Foliage may brown in full sun. Dual purpose Saaz hybrid released by the USDA in 1995. E12,139, J9P, L90J, L94M

**Tettnang:** (Tettnanger, Deutscher Fruehhopfen) Has an exceptionally mild aroma that seems to enhance grain aromas. Medium bitterness. Excellent for finishing lagers. Matures a few days earlier than Hallertauer. Produces about a thousand pounds of dried hops per acre. Used by some of America's major brewers. Originated in the Tettnang district of Germany. ROMANKO; A99, B55M, B55M{DF}, E12, E12{DF}, F35M, F99, K22,139,139{DF}, J9P, J76, L90J, L94M, L94 {DF}, N24M, etc.

**Willamette:** Excellent all-purpose hop. An improved Fuggle hybrid. Disease resistant. Traditional English ale type. Low in bitterness with a spicy, noble aroma. Often used as a finishing hop in ales and stout. Alpha acid content 5 to 7%. Introduced in 1967. A99, B8P, C43M, E12, E12{DF}, F35M, K22,139,139{DF}, J9P, J76, J82, L90J, L94M, L94{DF}, N24M, etc.

**Wve Challenger:** A red-stemmed, free flowering cultivar that is resistant to mildew. Vine reaches 15 to 20 feet in length. A female flowering type. N84, R53M

## CANNACEAE

*Canna coccinea* - *Indian shot* {PL}. The fleshy rhizomes are the source of a starch known as *corn le mois*. Tropical America, cultivated. HEDRICK 1919; N84

*Canna edulis* - *Achira*, *Edible canna* {PL}. Starchy rhizomes are sometimes boiled and eaten. In Peru, they are baked for up to twelve hours after which they become a white, translucent, fibrous and somewhat mucilaginous mass with a sweetish taste. Even after baking the large, glistening starch kernels can be seen with the naked eye. At Cuzco, the baked rhizomes are sold at the festival of Corpus Christi. Young shoots can be eaten as a green vegetable. Leaves are used for wrapping tamales. Immature seeds are cooked in *bocoles* (fat tortillas). Also the source of an *arrowroot* which is made into cakes in Colombia. Tropical America, cultivated. ALCORN, FRIED [Re], GADE 1966, HERKLOTS, MACMILLAN, NATIONAL RESEARCH COUNCIL 1989, OCHSE, UPHOF; C95, L55J, P38

## CULTIVARS {PL}

**Esmeralda's:** Improved type selected by Esmeralda Cazar in Ecuador. Introduced by Oregon Exotics Nursery. 174

## CAPPARIDACEAE

*Boscia albitrunca* - *Shepherd's tree* {S}. Flower buds are pickled and used as a caper substitute. The roasted and ground roots are used as a substitute for coffee. Fruits are crushed in fresh milk to make a tasty dish. Seeds are edible. Roots are also the source of meal and a syrup. Southern Africa. FOX, F., TREGOLD, UPHOF; M17{PL}, N84, 093, S28M

*Capparis aphylla* -> *Capparis decidua*

*Capparis decidua* - *Sodad*, *Kureel*, *Kerda*, *Kair* {S}. In India, the flower bud is eaten as a potherb or pickled. Both the ripe and unripe fruit are prepared into a bitter-tasting pickle. The unripe fruit is also cooked and eaten. Children enjoy sucking the floral nectar. The roots, when burned, yield a vegetable salt. North Africa. BHANDARI, HEDRICK 1919, SINGH, S., TANAKA; F74{ED}, Q46

*Capparis mitchellii* - *Native pomegranate*, *Wild orange* {S}. The aromatic fruits are eaten by the Aborigines, and are well regarded. Also becoming popular in the bushfoods market. When ripe, the pulpy flesh has an excellent bittersweet flavor and may be cooked with chicken, lamb, couscous and rice, or added to ice cream and



other desserts. Australia. CHERIKOFF, ROBINS [Re], UPHOF; N79{PL}, N84, P38, R15M

*Capparis sepiaria* - *Indian capers* {S}. Flower buds are pickled and used as a substitute for capers. Southern Africa to Asia. TANAKA; Q46

*Capparis spinosa* - *Caper*, *Alcapparra* {PL}. Flower buds are pickled and used to flavor *remoulade* and *putanesca* sauces, butters, salads, stuffings, hors d'oeuvres (<*caponata*), fish, meat, cheese, etc. Those preserved in sea salt are favored by many gourmets, because their fragrant bouquet and firm texture are better maintained. The young fruits, known as *caperberries*, and the tender branch tips are also pickled, the latter especially in Cyprus. These are sometimes found in specialty stores. In Turkey, the flowers are eaten and are often pickled together with the buds. Young sprouts are eaten like asparagus. Mediterranean region, cultivated. BIANCHINI, CREASY 1982, CUSUMANO [Cul, Re], GRIGSON, S., HEDRICK 1919, LANZA 1996, OZTURK, PAINTER [Re], PLOTKIN, SITAS, VILMORIN [Cu]; B71G{PD}, D92M{S}, E23M{PD}, E69{PQ}, F37T, I83M, I91{S}, I94{PD}, J66M{ED}, K85, O53M{S}, O89{S}

#### CULTIVARS {S}

**Pantelleria:** {PD} Very large capers from the island of Pantelleria, between Sicily and North Africa. Famous throughout the world. Plump, juicy, strongly aromatic and flavorful. Average size 1/4 to 1/2 inch. Usually cured in salt to maintain flavor. Harvested from May until the end of August. Will keep in excellent condition for 2 years. LANZA 1996; B71G, C60D, N54

**Spineless:** (Senza Spine, Inerme) A cultivar that is free of spines, making it easier to harvest. The flower buds and immature fruits are pickled in vinegar or brine and used as a condiment. D92M, N84, Q11M

*Crateva nurvala* -> *Crateva religiosa*

*Crateva religiosa* - *Garlic pear* {S}. Young shoots and leaves are eaten as a spinach substitute. The fruit is occasionally eaten, usually roasted. In Burma, the flowers are pickled and eaten for their digestive action. The seeds are also consumed. Tropical Africa, Tropical Asia. HEDRICK 1919, MENNINGER, TANAKA, UPHOF; F85, Q46

#### CAPRIFOLIACEAE

*Leycesteria formosa* - *Himalayan honeysuckle*, *Chocolate berry* {S}. The edible red berries are said to have the flavor of bitter chocolate. Himalayan region. D95{PL}, E87{PL}, J61M{PL}, K63G, L91M, M7M, M7M{PL}, N84, O53M, Q24

*Lonicera caerulea* var. *edulis* - *Edible honeysuckle*, *Sweetberry honeysuckle*, *Blueberried honeysuckle* {PL}. Milder in flavor than the fruits of other honeysuckles, they can be eaten raw but mostly they are used to make jams, jellies and refreshing drinks. Temperate Asia, cultivated. DARROW, TANAKA; A65, B47, G54, 160, 174, J61M, K64, L27M, L90J, M16, M35M, N24M

#### CULTIVARS {GR}

**Georae Buanet:** Dense upright bush with pale green leaves. Makes an excellent hedge. Edible blue fruits that make a very interesting jam. K81

*Lonicera japonica* - *Japanese honeysuckle*, *Suikazura* {S}. Leaves, buds, and flowers are made into a tea. The flowers are sucked for their sweet nectar, used as a vegetable or made into syrup, puddings and sorbet. Parboiled young leaves are eaten as a vegetable. China, Japan, naturalized in North America. BARASH [Re], CROWHURST 1973 [Re], LEGGATT [Re], TANAKA; F32D{PL}, F85, G66, H4{PL}, K38, N84, O93, P5, P49, R78

*Lonicera kamtchatica* - *Kamchatka honeysuckle*, *Honeyberry* {PL}. The aromatic, vitamin rich fruits are eaten, being juicy and somewhat sweet, with a sour after-taste. They are eaten as a dessert, and are also used for making juice, jams, jellies and fruit drinks. The

ascorbic acid content may reach 50 milligrams per 100 grams. Eastern Asia. BURMISTROV; D37

#### CULTIVARS {GR}

**Berry Blue:** Small fruits, about the size and flavor of a blueberry. Ripens early, about 2 weeks before strawberries. Very vigorous and upright growth habit. One of the largest varieties, often reaching 8 feet or more in height. Cross-pollination required from another variety. H49, 146, 149P, I66T

**Blue Belle:** Small, bluish-purple fruits with a flavor reminiscent of blueberries. Ripens early, about 2 weeks before strawberries. Moderately vigorous and more spreading in growth habit. Should grow 4 to 5 feet in height with an equivalent spread. Cross-pollination required from another variety. B74, 146, 149P, I66T

**Blue Bird:** Small, elongated, glaucous fruit, about the size of a blueberry; wry tasty. Ripens about 2 weeks before strawberries. Not self-fertile; plant with another variety if fruit is desired. Upright growth habit, but less vigorous than Berry Blue growing only 5 or 6 feet tall. H49, 146, 149P, I66T, J61M

**Blue Velvet:** A newer cultivar with attractive, grayish-green, velvet-like foliage. Should grow 3 to 4 feet tall with an equivalent spread. Cross-pollination required from another variety. B74, 146, 149P, I66T

*Symphoricarpos albus* - *Snowberry* {PL}. The fruits are eaten or made into jelly. They are white, juicy, fleshy, somewhat acid and have an aromatic wintergreen flavor. Leaves can be used for brewing a pleasant, wintergreen-flavored tea. The flowers are the source of a very light-colored honey with a mild, delicate flavor. An important source of honey in Washington and British Columbia. North America. CRANE 1984, FREITUS [Re], PELLETT, YANOVSKY; C9, C43V{S}, E47, F88M{S}, G66{S}, G89M, H47{PD}, H90, 147{S}, K38{S}, K63G{S}, L90M, M35M, M69M

*Symphoricarpos racemosus* -> *Symphoricarpos albus*

*Triosetum aurantiacum* - *Wild coffee*, *Horse gentian* {S}. The roasted seeds are ground and used as a substitute for coffee. North America. PETERSON, L., UPHOF; H61M, N84

*Triosetum perfoliatum* - *Tinker's weed*, *Wild coffee* {S}. The dried and roasted berries were highly regarded by the early Pennsylvania Germans as a substitute for coffee. Eastern North America. FERNALD, HEDRICK 1919, MEDSGER, UPHOF; N84

*Viburnum alnifolium* - *Hobblebush*, *Moosewood* {S}. Ripe fruits are sweet and palatable, tasting like raisins or dates. However, the stone is large and the edible pulp is thin. North America. FERNALD, GIBBONS 1979, SIMMONS 1972; 131

*Viburnum cassinoides* - *Withe-rod*, *Nannyberry*, *Appalachian tea*, *False Paraguay tea* {PL}. The scant pulp of the fruit is sweet and well flavored, hanging on the tree into the winter. A bright amber tea with a pleasant taste can be prepared from the dried leaves. They are first steamed over boiling water, rolled between the fingers, allowed to stand overnight, and then dried in an oven. Eastern North America. GIBBONS 1966b; B15M, B47, D95, K63G{S}, M16, M92, N84{S}

*Viburnum edule* - *Squashberry*, *Mooseberry* {S}. Fully ripe fruits are mildly acid, pleasant tasting, and can be eaten raw. They are also used for *squash*, juice, sauces, jams, and jellies. The Indians dried or preserved them for winter use. North America. FERNALD, GIBBONS 1966b, HARRINGTON, H. [Re], HELLER; D95{PL}, 147, K49Q, N61

*Viburnum lentago* - *Wild raisin*, *Sweet viburnum*, *Sheepberry* {PL}. The bluish-black fruits are edible. They are variable in size and quality, the best being half an inch long, pulpy, very sweet, somewhat juicy, and pleasant to the taste. North America. GIBBONS 1966b, MEDSGER, SIMMONS 1972; C47, E33M, H45M, I49G, K38{S}, K63G{S}, K64, K89, L27M, M16, M35M, M69M, N24M

*Viburnum nudum* - *Smooth withe-rod*, *Possum haw* {PL}. The fruits are apple-shaped, compressed, about a quarter inch long, deep blue in color, of a sweetish taste and may be eaten raw. Eastern North America. HEDRICK 1919; A50, A93M, C9, E87, H4, H14M, I31{S}, N37M

*Viburnum opulus* - *Guelder-rose*, *European cranberry-bush* {S}. Bright red fruits are sour and are used as a substitute for the cranberry in making jelly, preserves, sauce, and wine. In Norway and Sweden they are eaten with honey and flour. Northern temperate region, cultivated. HEDRICK 1919, SIMMONS 1972; C9M, C47{PL}, F80, K38, K63G, M69M{PL}, N84, 053M, Q32, R53M{PL}

#### CULTIVARS {GR}

**Ukraine:** Selected at the Kiev Botanic Garden for its productivity and for its large fruit of superior quality. I66T

*Viburnum opulus* 'Xanthocarpuntf' - *Yellow guelder-rose*, *Golden European cranberry* {PL}. The yellow fruits, becoming translucent gold in the fall, are recommended for wine making. Makes an excellent color accent when grown with red-fruited forms. Cultivated. SIMMONS 1972; A74, D95, I77M, K63G{S}, L49, N84

*Viburnum pauciflorum* - *Viburnum edule*

*Viburnum prunifolium* - *Black haw*, *Stagbush* {PL}. Bluish-black fruits are variable as to size, sweetness, and amount of pulp. At their best they are good to eat out of hand, otherwise they are used for jams, jellies, sauces, drinks, etc. North America. GIBBONS 1966b, MEDSGER; A93M, B9M, B32, C9, D95, E33M, G66{S}, H29M, 174, K38{S}, K63G{S}, K67, K89, L12, M77, etc.

*Viburnum setigerum* - *Tea viburnum* {PL}. Leaves are used as a tea substitute. China. UPHOF; B96, C9, F85{S}, H8, H29M, 160, I77M, K22, K38{S}, K63G{S}, M77, M92, M92, N84{S}

*Viburnum theiferum* - \**Viburnum setigerum*

*Viburnum trilobum* - *High-bush cranberry*, *American cranberry-bush*, *Pembina* {PL}. The red fruits make an excellent substitute for cranberries. They can be used to make sauce, juice, jams, jellies, syrup and wine. A good source of vitamin C. The flowers can be added to pancake and cake batters or made into fritters. North America. DARROW, GIBBONS 1966b, SCHOFIELD, SIMMONS 1972, TURNER 1979; A15M{PD}, A91, C47, D45, D65, D76, G66{S}, G89, H68M{PD}, K63G{S}, L49, M35M, N9M, N9M{S}

#### CULTIVARS {GR}

**Canber:** Improved type with very large fruits. Tart, aromatic, brilliant red fruits make excellent sauce and cranberry-like jelly. Maple-like leaves turn scarlet in the fall. Fruits hang on plant all winter. N24M

**Phillips:** Selected for fruit in which the bitterness has disappeared, making it excellent for jelly. Jells without added pectin. Does not omit offensive musky odor when heated. Red-veined, red-tinged leaves. Developed from plants found in West Acton, Maine. Introduced by Professor E.M. Meader of New Hampshire. Much superior to Wentworth. D69, F43M

**Wentworth:** An outstanding early cultivar selected and named by the United States Bureau of Plant Industry in the early 1900\*8 after analyses of acid and pectin content of 3,000 accessions were made, and jelly tests were undertaken. Abundant, large red fruits with excellent flavor. Good for making preserves. DARROW; A74, D69, E63, G4, G66{S}, G89M, H8, 174, K63G{S}, K89, L27M

### CARICACEAE

*Carica candamarcensis* - *Carica pubescens*

*Carica chrysopetala* - *Carica x heilbomii*

*Carica goudotiana* - *Papayuelo* {S}. Fruits are pale yellow tinged with magenta, and can be eaten raw. The flesh has the taste of a mildly acid apple, with the pulp around the seeds being milder and

more pleasant. Natives eat the pulp with sugar as a dessert. Colombia. BADILLO, NATIONAL RESEARCH COUNCIL 1989, VON REIS; N84, P38

*Carica x heilbomii* (C. pubescens x C. stipulata) - *Mountain papaya* {S}. Natural and artificial hybrids. The fruits are eaten raw or cooked. Usually produces parthenocarpic fruit. Andean South America. BADILLO. N84

#### CULTIVARS {GR}

**Babaco:** Fruits are bright-yellow, commonly 12 inches in length, 5-angled, with hollowed sides. The juicy flesh is distinctly fragrant and somewhat acid in flavor. The large cavity in the center contains a white cottony substance that is usually sweeter than the outside flesh. Eaten out of hand skin and all, stewed, added to salads, or made into *dulces*, preserves, cakes, puddings, and sauces. A small amount of sugar sprinkled over the fruit greatly improves the flavor. Sometimes available in specialty markets. BADILLO, BISSELL, ENDT [Pre, Re], FRIED [Re], NATIONAL RESEARCH COUNCIL 1989, POPENOE, W. 1924, UPHOF, VAN AKEN; A41G, D57, E13G{PR}, G49, 174, I83M, J61M, L55J, N40{PR}, 097, Q49M

**Toronchi:** Fruits are yellow, 4 to 6 inches long, very fragrant. The higher level of the papain enzyme in the Toronchi makes it less desirable as a fresh fruit. The best way to eat this one fresh is to blend it together with a banana as this seems to counteract the enzyme. To deactivate the enzyme altogether, boiling is the only way. It is useful in making sauces, jams, pie fillings, and pickles. ENDT [Pre, Re], FRIED; D57, L55J{S}, Q49M

*Carica monoica* - *Orange papaya*, *Peladera* {S}. Small to very small fruits that have a high level of papain. Most can only be eaten in a cooked form, when they are said to resemble stewed apricots. The flesh is somewhat tough and is excellent for dried or candied fruit, and also freezes well. Used for hybridizing with other mountain papayas. Andean South America. BADILLO, ENDT [Pre, Re], NATIONAL RESEARCH COUNCIL 1989; P38, Q49M{PL}

*Carica papaya* - *Papaya* {S}. Ripe fruits are eaten out of hand, preserved, dried, candied, added to salads, or made into pies, jams, ice cream, juice, jellies, sherbets, etc. Unripe green fruits are boiled, baked, pickled, made into chutney, jam or relish, added to mixed vegetable soups or used as an extender in soy *tempeh*. In Mexico, they are cooked in cane juice during raw sugar manufacture. The peppery seeds are used as a spice, especially in salad dressings. Leaves, inflorescences, and flowers are steamed and eaten with rice, or added to soups and stews. In Indonesia, the flowers are candied. The Balinese often wrap a chicken or a tough piece of meat in papaya leaves and let it sit for several hours or overnight, the leaves tenderizing the meat. In Jamaica, pork is wrapped in green papaya skins before roasting. *Papain*, a latex collected from unripe fruits, is widely used in tenderizing commercial meat products, and is the active ingredient of *Accent* and other instant meat tenderizers. Papain is also used for chillproofing beer, clarifying fruit juices, modifying dough in baking, and in manufacturing edible collagen films and sausage casings. Green papaya powder is a papain-rich food supplement that aids digestion. Young stems are cooked and eaten. The pith of older ones is eaten raw. Tropical America, cultivated. ALCORN, EISEMAN, GARNER [Pio], HAWKES [Re], LEUNG MAY, R. [Nu, Re], MORTON 1987a, OCHSE, ORTIZ 1973 [Re], POPENOE, W. 1920 [Cu], RICHARDSON, M. [Re], SCHNEIDER 1986 [Cul, Re], SHURTLEFF 1979, STURROCK, TANAKA, UPHOF, WALDRON [Re]; A79M, B60M{m}, C9M, F85, H13M{ED}, J82, L33M{PR}, L54{PD}, N84, 053M, 093, P5, Q12. (for cultivars see Papaya, page 447)

*Carica parviflora* - *Papaya de monte*, *Coral* {PL}. The small, edible fruits are orange-colored, nearly red when ripe, and are said to have the fragrance and flavor of Spondias. Ecuador, Peru. BADILLO; Q49M

*Carica pentagona* - *Carica x heilbomii*

*Carica pubescens* - *Mountain papaya, Chamburo, Chihualcan* {S}. The small, fragrant fruits are usually too acid for eating out of hand. They can be stewed, preserved, candied, or used in cakes, sauces, chutneys, marmalades, cocktails, etc. When cooked, the fruit holds its shape and the juice remains clear. South America, cultivated. BADILLO, ENDT [Pre, Re], FRIED, MACMILLAN, NATIONAL RESEARCH COUNCIL 1989, POPENOE, W. 1920, SIMMONS 1972, UPHOF; A26, A79M, D56M, I49M{PL}, I74{PL}, I83M{PL}, M7M{PL}, N40M, N51{PL}, N84, 093, Q49M{PL}, R47

#### CULTIVARS

**Ababai:** Small to medium-sized, smooth, angled fruits; skin yellow-orange; flesh firm and succulent. Usually not eaten out of hand due to the high papain content. Only available as preserves or marmalade, which can be used in salads, salsas, with entrees, or as a dessert. The wide seed cavity also makes it ideal for stuffing. Grown commercially within a unique climatic niche along the Petorca River Valley of Andean Chile. UMANAMURRAY [Re]; G5M{PD}, N40{PD}

*Carica quercifolia* - *Higuera del monte* {S}. The date-sized fruits, said to have a quite agreeable flavor, are eaten candied or made into preserves. Tropical South America. BADILLO, POPENOE, W. 1920, UPHOF, WILDER; F85, N7J{PL}, N84, 093

*Carica stipulata* - *Chamburo, Siglalon* {S}. The seedy fruits have a high papain content and are best eaten cooked and peeled. They are excellent for jams and sauces, and are also made into fruit drinks, normally in blends with other juices. Small, firm fruits can be frozen fresh. Tropical South America. BADILLO, ENDT [Pre, Re], NATIONAL RESEARCH COUNCIL 1989; L55J, N84, Q49M{PL}

#### CARYOCARACEAE

*Caryocar nuciferum* - *Souari nut, Butternut* {S}. Large white kernels, having a rich, delicious, almond-like flavor, are eaten raw, roasted or cooked in salt water. They also yield an edible oil that is excellent for preparing meat, fish, and bakery products. The oily, yellow pulp of the fruit may be cooked and eaten as a vegetable. Brazil, Guiana. HEDRICK 1919, MACMILLAN, MENNINGER, ROSENGARTEN, UPHOF; X79

*Caryocar villosum* - *Piquia, Arbre a beurre* {S}. The fruit pulp is eaten, having a faint smell of rancid butter. Also the source of an edible oil. Seeds are edible. Guiana, Brazil. BURKILL, IDONE, NATIONAL RESEARCH COUNCIL 1975a, PRANCE, SCHERY, VON REIS; X88M

#### CARYOPHYLLACEAE

*Agrostemmagithago* - *Corn cockle* {S}. Young leaves have been used as a vegetable with vinegar and bacon for emergency food during times of want. Eurasia. UPHOF; F85, K49T, N71M, N84, 053M, 089, Q34, R32, S55

#### *Arenaria peploides* - *Honkenya peploides*

*Dianthus barbatus* - *Sweet William* {S}. The flowers have a mild flavor and are used as a garnish for vegetable and fruit salads, cakes and other desserts, soups, cold drinks, icings and deviled eggs. Cultivated. A53M, D92M, E7M, F24D, F80, F85, I63Z, 191, J5M, J5M{PL}, J99D, K53, K66, M82, N40M, N84, R47

*Dianthus caryophyllus* - *Clove pink, Carnation* {S}. Flower petals smell strongly of cloves and are candied, used as a garnish in salads, for flavoring fruits, fruit salads, ice cream and vinegars, or as a substitute for roses in the making of syrup. The flowers can also be infused in wine or pickled in vinegar and mashed into a sauce for lamb. They should be removed from their calyx and have the bitter white bottom of the petals snapped off. Cultivated. GESSERT, MACNICOL [Cul, Re], MORTON 1976, PAINTER [Re]; C81M{PL}, D92M, E7M, E81M, F24D, J82{PL}, M82{PL}, N84

*Dianthus plumarius* - *Cottage pink* {S}. Flower petals are made into butters, cordials, syrups, sauces, vinegars, etc. Cultivated. CLARKE [Re], GESSERT; D11T{PL}, D92M, E7M, E81M, F24D, F80, K53, L91M, M82{PL}, N84, 053M

*Dianthus superbus* - *Fringed pink, Nadeshiko* {S}. Leaves, stems, and tops are boiled and steeped in water, then eaten as a potherb, fried, oil-roasted, etc. Young plants are also eaten. Children suck the flower for its sweet nectar. Eastern Asia, cultivated. TANAKA; E7M, F24D, J5M, J5M{PL}, K53, L66{PL}, L91M, N71M, N84, 053M, Q24

*Gypsophila paniculata* - *Baby's breath, Soapwort root* {S}. The roots can be used in the preparation of *natif*— a foaming white, vegetable cream much appreciated in parts of the Middle East. They add a frothy texture and an unusual, bittersweet flavor. *Natif* is often used as a dip for Arabic cookies such as *mamool*. Eurasia, cultivated. DWIDSON 1994; A2, C95, E5T, F92, 191, I99P{PL}, J5M, J88, K49M, N84, R47

*Honkenya peploides* - *Seabeach sandwort, Sea chickweed* {S}. Young leaves and stems are eaten raw as a salad or relish, or boiled and used as a potherb. The succulent stems can be made into pickles which are said to have a pleasant pungent taste. In Iceland, the plant is steeped in sour whey and allowed to ferment. The resulting liquor is said to taste like olive oil and is used as a beverage. Northern temperate region. FERNALD, HEDRICK 1919, HELLER, SCHOFIELD [Re], UPHOF; C95, N84, 048

*Paronychia argentea* - *The Arabe, Algerian tea* {S}. An infusion of the flowers is used as a tea. Mediterranean region. HUTCHINSON, UPHOF; N84

*Saponaria officinalis* - *Soapwort, Bouncing Bet* {S}. An extract of the roots is used as an emulsifying agent in the manufacture of sesame seed *halava*, a popular Middle Eastern confection. It gives the product a light color and a distinctive fluffy texture. In the Ukraine, it is added to sunflower seed *halava*. The flowers are occasionally added to salads. Eurasia, naturalized in North America. BREMNESS, DAGHER, DWIDSON 1994; A2, A61, A61IPL, E5T, E7{PL}, E7M, E14T{DF}, F68T, F80, GO{DF}, H49IPL, H61M, H63{PL}, 139, I99P, J5M, J5M{PL}, J82, K18M{DF}, R47, etc.

*Silene acaulis* - *Moss campion* {S}. It has been reported that boiled parts of the plant with butter are consumed as a vegetable among the Icelanders. Arctic and Alpine regions. FERNALD, KIRK, UPHOF; D35G, H98{PL}, J93T, K79{PL}, L66{PL}, N84, 053M, Q24

*Silene alba* - *White campion* {S}. In the Val Colvera region of Western Friuli, Italy the leaves are mixed with more than fifty other greens in a spring dish known as *pistic*. This dish is known as *frita* in Carnia, *lidiim* in Pinzano al Tagliamento, and *litum* in Cividale del Friuli. Northern regions. PAOLETTI; E7M, N71M, 053M, Q24, S55

#### *Silene cucubalis* - *Silene vulgaris*

*Silene dioica* - *Red campion* {S}. Young leaves are added to *pistic*, like those of *S. alba* and *S. vulgaris*. They are boiled for several minutes, drained, then sauteed with butter, garlic and small pieces of lard. *Pistic* is eaten as an ancient rite of spring in parts of northern Italy. Europe. PAOLETTI; C95, D92M, M77M{PL}, N71M, N84, Q24, R32, S55

*Silene vulgaris* - *Bladder campion* {S}. The young shoots when about two inches long are a palatable cooked green, having a flavor suggestive of green peas, but with a slight bitter taste. Blanching the new shoots as they emerge from the ground will reduce bitterness. A puree made from the boiled shoots is said to be nearly equal to the best puree of spinach. The leaves can be chopped and added to salads or used in soups, stews, sauces, *herbal cheese*, and *pistic*. Eurasia, naturalized in North America. CROWHURST 1972, FERNALD, GIBBONS 1979, HEDRICK 1919, LAUNERT, OZTURK, PAO-

LETTI, WEAVER 1993; H61M, K63G, M34M, N71M, N84, 053M, Q24, Q34, S55

*Stellaria media* - *Chickweed* {S}. The tender, juicy leaves and stems are added to tossed green salads and sandwiches, or they can be boiled and eaten like spinach. Natural foods enthusiasts liquify chickweed, along with other assorted greens, to make what they call *green drink*. Indians used the tiny seeds for bread or to thicken soup. Young seedlings can be cut with scissors and left to regrow. Flowering tops are used as a vegetable or garnish. Northern temperate region. CLARKE [Re], CRIBB, FERNALD, GIBBONS 1966b, HARRINGTON, H., LARKCOM 1984, LEGGATT [Re], MABEY, MICHAEL [Re]; A2, A49D{DF}, C95, F68T, F85, J82, N7G, N71M, N84, PIG, R47

#### CECROPIACEAE

*Cecropia palmata* - *Trumpet tree, Snakewood tree* {S}. The ripe fruits have die consistency and somewhat the flavor of figs. They are eaten fresh or used as a filling for cakes Young buds are eaten as potherbs. West Indies, Northern South America. KUNKEL, MOWRY, RICHARDSON, M. [Re]; N84, 093

*Cecropia peltata* - *Indian snakewood, Trumpet tiee* {S}. Young buds are eaten as a potherb. The leaves and flowers were used by Black Americans in their broths. Tropical America. GRIME, HEDRICK 1919; F85, P38

*Myrianthus arboreus* - *Monkeyfruit* {S}. The large, yellow fruit has numerous four or five-sided sections that release a flavorful juice when bitten into. The juice can be either sweet or sour, depending on the tree and ripeness of the fruit. Young shoots and leaves are eaten in soups. Tropical Africa. DALZIEL, DANFORTH, TANAKA; Y40

*Pourouma cecropiaefolia* - *Amazon grape, Uvilla* {S}. Fruits are purple, grape-like, up to an inch and a half in diameter, with a large pit and a sweet, juicy white pulp. They are consumed out of hand and are also made into wine, jams and jellies. A relatively fast grower, it begins to fruit in three years. The tree is recommended for testing as a home-garden crop throughout the humid tropics. Western Amazon. MORTON 1987a, NATIONAL RESEARCH COUNCIL 1975a, WILLAN; I74{PL}, N84, 019, R78M

#### CELASTRACEAE

*Catha edulis* - *Khat, Arabian tea, Abyssinian tea* {PL}. Dried leaves are occasionally used in the preparation of a tea, much esteemed in Arabia and adjacent territories. More commonly, the fresh leaves and tender shoots are chewed to produce a stimulating effect not unlike amphetamines or several cups of strong black coffee. In Ethiopia, the leaves form an ingredient of *tej*, a honey wine or *mead*. Drier Africa to Arabia. FOX, E, HEDRICK 1919, MACMILLAN, SCHERY, UPHOF, VARISCO; A26, C43M, D92M{S}, F37T, F85{S}, G96, 112, I81M, I81M{S}, J73{S}, L90J, M7M, M17, M82, N84{S}, P38{S}, etc.

*Euonymus europaeus* - *Spindle tree* {S}. Fruits and seeds are the source of a yellow dye used for coloring butter. Also reported to be the source of an edible manna. Eurasia. DONKIN, UPHOF; G66, G89M{PL}, K38, K63G, N71M, N84, 053M, 093, P49, R78

*Euonymus japonicus* - *Japanese spindle tree, Masaki* {S}. Young leaves are eaten. Older ones are powdered and used for coloring other foods. Japan, cultivated. HEDRICK 1919, TANAKA; B41{PL}, F53M{PL}, F85, K63G, N84, P49, R78

*Maytenus boaria* - *Mayten tree* {S}. The seeds are the source of a cooking oil. Chile, Argentina. CORREA; C9M, G66, H71, 76S{PL}, I83M{PL}, K46{PL}, 053M, 093

#### CELTIDACEAE

*Celtis australis* - *European hackberry, Lotus berry* {S}. The small, insipidly sweet, cherry-like fruits are eaten raw or made into wine. Sometimes sold in markets of the Balkans. Said to have been the

lotus fruit of the ancient Lotophagi or Lotus eaters. Mediterranean region. DARBY, HEDRICK 1919, SIMMONS 1972, UPHOF, WATT; C9M, D56M, D95{PL}, 7777, 76S{PL}, I74{PL}, K63G, 053M, 093, P5, P49, Q46, R78

*Celtis laevigata* - *Southern hackberry* {PL}. The orange-red fruits, although sweet and edible, are generally small with very little pulp. North America. HENDRICKSON, MEDSGER, SIMMONS 1972; D95, F57, F73, F85{S}, G66{S}, H14M, 160, K63G{S}, N73

*Celtis mississippiensis*-*Celtis laevigata*

*Celtis occidentalis* - *Hackberry, Sugarberry* {PL}. The small, cherry-like fruits are very sweet and pleasant to the taste. They are eaten out of hand or can be used to make jellies and jams. The Indians ate the pounded fruits with parched corn and fat, or used them as a flavoring for meat. North America. FREITUS [Re], GIBBONS 1979, HENDRICKSON, MEDSGER, YANOVSKY; B9M, C9M{S}, C33, D45, D95, F57, G66{S}, H49,19M, 147{S}, K38{S}, M69M, 053M{S}

*Celtis reticulata* - *Western hackberry, Palo blanco* {S}. The sweet, fleshy berries are eaten raw, made into jelly and cakes or used as a seasoning for meat. Western North America. KINDSCHER, MEDSGER, YANOVSKY; B94, D95{PL}, F85, G66, 147,198M, K63G, L55J, N84

*Celtis sinensis* - *Chinese hackberry* {S}. Leaves are eaten boiled, or used as a substitute for tea. Ripe fruits are also eaten. Eastern Asia. TANAKA; C9M, D56M, F85, G66,7777,160{PL}, K63G, L47{PL}, N84, 053M, 093, R78

#### CEPHALOTAXACEAE

*Cephalotaxus drupacea*-*Cephalotaxus harringtonia*

*Cephalotaxus harringtonia* - *Japanese plum-yew, Inu-gaya* {S}. The female plant bears a fleshy fruit that is thick, juicy, and remarkably sweet, with a faint suggestion of the pine in its flavor. Eastern Asia. HEDRICK 1919; D95{PL}, B96{PL}, G66, H4{PL}, K38, K63G, M75{PL}, N37M{PL}, N51{PL}, N84, 093, P49, R78

#### CHENOPODIACEAE

*Ambrosinia mexicana* - \**Chenopodium botrys*

*Atriplex canescens* - *Fourwing saltbush, Chamisa*{S}. The seeds may be ground into a meal, mixed with water, and drunk as a refreshing beverage, or mixed with some other meal and used as flour. The leaves and young shoots have a distinct salty taste and can be used as greens. When burned the green herb yields culinary ashes high in mineral content, which are used by Hopi cooks to enhance the color in blue corn products, especially *piki* bread. Southwestern North America. KAVENA [Pre, Re], KIRK, UPHOF; A12M, C9M, C98, E53, F63M, G66,147,198M{PL}, J25M, J25M{PL}, J26{PL}, N84, 053M, P5, R33M, etc.

*Atriplex confertifolia* - *Shadscale* {S}. Seeds are ground into a meal that is used for bread and mush. Water in which the leaves are boiled is used for corn pudding. Southwestern North America. YANOVSKY; C4, C43V, C98, E53, E66M, G66, 7777,147, K15, K63G, K62, N79M, N84, P17M

*Atriplex halimus* - *Sea orache, Sea purslane* {S}. Young leaves and tips of branches are eaten raw in salads or used in soups, casseroles, pastas, quiches, and vegetable dishes. Also the source of an edible manna. Mediterranean region, Southwest Asia. BRACKETT [Re], DONKIN, KUNKEL; N61, N79M, N84, 093, P5, P17M, Q15G, R49{PL}

*Atriplex hastata* - *Hastate orache* {S}. The leaves are used as a spinach substitute. They are somewhat bland and are best mixed with stronger flavored greens, such as Portulaca, Lepidium, or Alliaria. Their natural salt content blends well with a little lemon juice. Seeds can be ground into a flour. Northern temperate region. CLARKE, LAUNERT; N84

*Atriplex hortensis* - *Orach, Mountain spinach, Butter leaves* {S}. Young leaves are used as a warm weather spinach substitute. Traditionally, they are mixed with sorrel leaves to modify the acidity of the latter. Also used in soups, stews, pastas, quiches, and crepes. Seeds are used in soups and muffins. Eurasia, cultivated. HALPIN, HEDRICK 1919, KRAFT [Re], KUNKEL, VILMORIN [Cu]; A2, C95, D92M, E24, F35M{PL}, 139, J20, J82, K49M, R47

#### CULTIVARS

**Chakwat:** An improved cultivar from northern India with dark green leaves. Both the leaves and plant size are slightly smaller than Yellow orach. E83T, RO, R50

**Crimson Plume:** Ornamental red orach that does not lose its color when cooked. Popular as a garnish in the restaurant trade. C53, D92M, Q34

**Giant Calite:** Hardy strain that can apparently withstand temperatures of 16° F. Large, rather juicy leaves of fine flavor, remain tender well into the growing season. Leaves do not turn bitter, even after boiling. B49

**Green Spires:** Dark green leaves that are delicious either raw or cooked. Grows to 5 feet tall. Also a very ornamental plant, having been bred for the European florist trade. F80

**Magenta V:** Vigorous new strain with true magenta foliage and much more vibrant color than Crimson Plume. About 40% of plants will be velvety green in color. Uniform, husk free seed for precision planting. Recommended for mesclun mixes as an inexpensive substitute for radicchio. 177

**Purple:** Very dark purple leaves, almost black under some growing conditions. Useful raw in salad mixes or as a colorful cooked "green". Suitable for edible landscaping due to its colorful foliage and ornamental seed heads. Developed by Peters Seed & Research. J9M

**Purple Savoved:** An especially thick-leaved and ruffled selection. Very ornamental as well as useful. Excellent for edible landscaping. Becoming popular in the gourmet restaurant market as a specialty salad green. F80, N7G

**Red:** (Rubra) Both stems and leaves are a dark-red color, giving the whole plant an attractive appearance. Popular as a garnish in the restaurant trade. Usually turns green when cooked, it is claimed that some clones retain their color. A2, D92M, E24, F35M{PL}, F80, H73{PR}, J9M, J20, K17M, K49M, M82{PL}, S55

**Ruby:** (Magenta Purple) Very attractive, brilliant deep-purple orach with excellent flavor. The 2 to 3 inch long leaves turn green when cooked. Harvest when young for salads or gather older leaves and saute. Grows 4 to 6 feet tall. An heirloom, cultivated since at least the 1800's. C95, K23{PL}, K49T, L11

**Yellow:** (Golden, White, Blonde, Belle Dame) Leaves are very pale green, almost yellow. The most widely grown cultivar in France, considered to be the sweetest and most tender type for use as a boiled or steamed vegetable. D92M, F80, N7G, 048, S55

*Atriplex patula* - *Halberd-leaved saltbush, Spearscale* {S}. Young plants, or tender growing tips of older plants, are very good eaten raw in salads or cooked and served like spinach. Zuni Indians mix the ground seeds with black Indian corn to make round meal-balls which are steamed on a rack over boiling water. Northern temperate region. FERNALD, GIBBONS 1979, HARRINGTON, H.; F88M, G47M{PL}, M34M, N84, 048

*Atriplex patula* ssp. *hastata* -+ *Atriplex hastata*

*Atriplex semibaccata* - *Australian saltbush* {S}. The red berries are eaten as tasty snacks or they are added to salads. The flavor is said to be reminiscent of tomatoes. Young leaves are eaten raw in salads, steamed like spinach, or cooked with meat. Australia, naturalized in North America. CLARKE, FARNSWORTH [Re]; A41M, C9M, E66M, G66, H71, K15, N79M, N84, 093, P5, P17M, Q15G, R15M, R33M

*Axyris amaranthoides* - *Inu-hdkjgi* {S}. Young plants and young leaves are eaten as potherbs. China. TANAKA; N84

*Beta vulgaris* ssp. *maritima* - *Wild sea beet, Sea spinach* {S}. Young, tender leaves are eaten in salads. Older ones are boiled or steamed and used as a spinach substitute. The flavor is considered to be superior to the cultivated beets and chards. Mediterranean region, Atlantic Coast of Europe. MABEY, MICHAEL [Re]; N84, 048

*Beta vulgaris* Cicla Group - *Swiss chard, Spinach beet, Seakale beet, Indian spinach*. The leaves are used as a hot weather substitute for spinach. They are also a popular wrapper in "nouvelle cuisine". Leaf stalks of chard are usually cut from the leaf and cooked separately as an asparagus substitute. One popular way is to braise them and serve with buttered breadcrumbs. Some cultivars of chard have edible roots. BRYAN [Cu, Re], CUSUMANO [Cul, Re], FELL 1982b, ROUTHIER 1993, SCHNEIDER 1986 [Cul, Re]; (for cultivars see Swiss Chard, page 551)

*Beta vulgaris* Crassa Group - *Beet, Sugar beet, Mangel wurzel* (PD). Young leaves can be used in salads, either raw or lightly cooked. Older leaves are sometimes used as a spinach substitute. Roots are eaten cooked, pickled, made into *borscht*, or grated and used raw in salads. Cooked roots are also added to salads when cold. Shredded roots are one of the ingredients of *Cafix*, a commercial coffee substitute. In the Middle East, cut beets or beet juice are added to pickles, especially the pickled turnips called *lift makboos*, to give them a bright pinkish-red color. Fermented beet root juice is sold under the brand names *Biotta* and *Eden*. Sugar beets are a source of sugar, syrup and molasses. *Belgian candi sugar*, made from sugar beets, is used by professional brewers in Belgium to produce some of their unique indigenous beer styles. Powdered beet root and beet root juice are used commercially for coloring and flavoring various food products. CARCIONE [Pie], COLE, C. 1990 [Re], HAMADY [Re], HUNTER 1973a, LARKCOM 1984, LEUNG; A25G, A52M, B8P, G29, J19M, K32M{EQ}, L17, L36M, N84{S}. (for cultivars see Beet, page 299)

*Chenopodium album* - *Lamb's quarters, White goosefoot, Fat hen* {S}. Leaves and young stem tips, while still tender, make a very acceptable spinach substitute. They are particularly good when mixed with dock greens (*Rumex* spp.). Seeds are ground into a flour used in breads, pancakes, muffins, and biscuits. Young inflorescences are cooked and eaten. Sprouted seeds are edible. Eurasia, naturalized in North America. CUSUMANO [Cul, Re], FERNALD, GIBBONS 1962, GIBBONS 1979, MICHAEL [Re]; A2, C43M, C95, D92M, F80, F85, J82, K22, K49M, L3J, M34M, N71M, N84

#### CULTIVARS

**Edulis:** Selected for its very compact growth habit. The stem internodes are approximately half the length of the common form, so the plants are twice as leafy. Excellent flavor for salad use, picked by the leaf or by cutting the tender stem tips. Very high in protein, potassium, calcium and Vitamin A. Introduced by Peace Seeds. C95, N7G

**Magenta:** A distinct strain developed by Oak and Stone of Covelo, California which supplies the San Francisco restaurant trade. Leaves are an attractive, fluorescent magenta. Considered by the developers to be one of the best tasting of all potherbs. B49, J9M

*Chenopodium ambrosioides* - *Epasote, Mexican tea* {S}. The herb is used to flavor corn, black beans, mushrooms, fish, soups, stews, chili sauces, shellfish, and freshwater snails. An infusion of the leaves is used as a tea substitute. Tender leaves are sometimes used as a potherb. Cooking the leaves with beans is said to reduce flatulence. In the Himalayas, the seeds are ground into a black flour that is mixed with warm water and eaten, and they are roasted and added to *chang* and *rakshi*—alcoholic beverages. Mexico, naturalized in North America. DUKE, HUTSON 1987 [Re], LATORRE 1977a [Re], MORION 1976, PAINTER, POHLE, WILLIAMS, L.; B73T{PR}, C34G{DF}, C43M, D92M, F80, 116, 116{DF}, J25M, J73, K22{PL}, K370, K370{DF}, N40{DF}, R47

*Chenopodium berlandieri* - *Southern huauzontle*, *Bledo extranjero* {S}. Leaves are fried in butter with onion and used like spinach. Young leaves and tender shoots are sometimes used in salads. Seeds are the source of a meal used for bread or gruel. Southwestern North America. HARRINGTON, H., HUGHES, P. [Re], KINDSCHER, TANAKA; C95,116, L77D, K49M, N84

## CULTIVARS

**Aztec Red:** (Aztec Red Spinach) Excellent summer spinach substitute, as heat only produces a larger crop of leaves without the plants bolting to seed. Lower leaves turn bright magenta as they mature, cook in only 30 to 60 seconds, and retain their color after cooking. Selected to grow among corn stalks, so its size and shape resembles a corn plant, growing 3 to 12 feet tall and only 1 foot across. May produce up to one pound of leaves per plant. J73

**Chual:** Leaves are eaten raw or cooked. Collected from a Mayo gardener near Piedras Verdes, Sonora, Mexico. Planted in the fall there. 116, N84

**Guerrero:** Cultivated race from Guerrero, Mexico. Leaves and stems are eaten when young. Seed stalks are blanched then fried in a batter of egg and cheese, or stripped from the stem and made into patties. 116

**Quelite:** Cultivated race originally from Atlixco, Mexico. Leaves and stems are prepared and eaten like spinach, having an excellent flavor. Seeds are translucent amber-brown in color. Planted in the spring and summer. 116, N84

*Chenopodium bonus-henricus* - *Good King Henry*, *Mercury*, *Allgood* {S}. The young leaves are eaten as a potherb, either alone or mixed with other greens like cabbage, chad, or spinach. Young shoots are cut under the ground like asparagus, peeled, and used as a substitute for that vegetable, called *Lincolnshire asparagus*. Tender flower clusters are eaten, considered by some to be the best part. Eurasia, cultivated. HALPIN [Cul], HEDRICK 1919, ORGAN, PAINTER [Re], VILMORIN [Cu]; B49, C67M{PL}, E61{PL}, F35M{PL}, F80, 139, J6, K22, K22{PL}, K49M, K85, N71M, N84, 053M

*Chenopodium botrys* - *Jerusalem oak*, *Feather geranium*, *Ambrosia* {S}. Leaves are sometimes used as a potherb. Also used as a tea substitute. Northern temperate region. FERNALD, TANAKA; A2, C43M, C81M{PL}, C95, D92M, E81M, F37T{PL}, F80, J20, K2{DF}, M82{PL}, N84, 053M

## CULTIVARS

**Green Magic:** 31 days. Vigorous plant with oak-leaf shaped leaves; taller than the type. Relatively strong scented. Delicious, nutty flavor. Used like epasote in Mexican bean dishes and sauces. Developed in The Netherlands. D68, D92M, J82, K49M, K57{PL}, N84

*Chenopodium capitatum* - *Strawberry blite*, *Strawberry spinach*, *Beetberry* {S}. The young leaves and tender shoots are used raw in salads or cooked like spinach. Succulent fruits may be added to a tossed salad, or eaten boiled and seasoned. They can also be used as a red dye for other foods. Northern temperate region. FERNALD, GIBBONS 1979, HARRINGTON, H., HELLER; B49, D92M, F80,139, J9M, K20M, K49M, K49Q, K71, M82, M82{PL}, N7G, 053M, Q34

## CULTIVARS

**Strawberry Sticks:** Branching plant, to 16 inches tall. Produces numerous very bright red fruits all along the stem until the end of September. Suitable for border plantings or in patio containers. D11M, D56M, F70, L91M, M65, N84, 053M, S55

*Chenopodium foliosum*-*Chenopodium capitatum*

*Chenopodium giganteum* - *Tree spinach*, *Purple goosefoot* {S}. The leaves are used as a potherb. Eurasia. KUNKEL; F80, L3J, N84

## CULTIVARS

**Maentaspreen:** (Magentaspreen Lamb's Quarters) Vigorous plant, 5 to 8 feet tall; large leaves; new growth is a brilliant iridescent magenta color. Tastiest eaten young, raw or cooked as spinach. Young flowers are also showy and of good flavor. Sow spring into early summer. A2, C43M, C95, D92M, E24, K49M, L11, L77D, L88J, N7G, 053M

*Chenopodium murale* - *Australian spinach*, *Sowbane*, *Salt greens* {S}. Leaves are eaten as a potherb or used in the preparation of sauces. Seeds are parched and ground and made into gruel or popped like popcorn. Eurasia. CRIBB, FELGER 1985, FCK, E, WATT, YANOVSKY; C95,116, L77D, N84

*Chenopodium nuttaliae* - *Huauzontle* {S}. Flower clusters are steamed like broccoli, or mixed with cheese, dipped in egg batter, and fried. They are a menu item at some of the finer Mexican restaurants. Young leaves are used as a mild flavored spinach substitute. Seeds are eaten or ground into a flour. Southwestern North America to Central America. KRAIG [Re], NATIONAL RESEARCH COUNCIL 1975a, QUINTANA 1994, WILSON, H.; DIT, F80, J82, N84

## CULTIVARS

**Chia Roia:** Rare grain type, only grown by Tarascan Indians of Michoacan, Mexico near Lake Petzcuaro. Has red seeds which are made into red tamales called *chapates*, for the fall holiday season. Also toasted and used for *pinole* and *atole*. Leaves are eaten. 116

*Chenopodium pallidicaule* - *Cahihua*, *Kaniwa* {S}. The small seed is toasted and ground into a nutty-tasting flour that is mixed with sugar and milk and eaten as a breakfast cereal. Cahihua flour or *cahihuaco* is also made into small cookies (*quispiho*), is used with wheat flour in breads, cakes and puddings, and is made into a hot beverage similar to hot chocolate. Andean South America, cultivated. GADE 1970, NATIONAL RESEARCH COUNCIL 1989, SIMMONDS 1965; L3J

*Chenopodium quinoa* - *Quinoa*, *Petty rice* {S}. The nutritious seeds are used in soups, stews, breads, biscuits, cakes, cereals and pasta, made into *tempeh* and *chicha*, puffed, or eaten as a side dish like rice. Young leaves can be used like spinach. Sprouted seeds are eaten in salads. An alkaline ash from the burned stems is chewed with coca leaf. Andean South America, cultivated. BROUK, CUSUMANO [Cul, Re], FRIED [Re], KHAC [Nu, Re], NATIONAL RESEARCH COUNCIL 1989, SIMMONDS 1965, STEINKRAUS, WOOD, R. [Pre, Re]; B31{DF}, E31{PD}, E56{DF}, E56{PD}, G29{DF}, H91{DF}, I43T{PD}, J25M, J56{DF}, J56{PD}, K49M, L14G{DF}, L14G{PE>}, M63M{DF}, N84, Q34, etc. (for cultivars see Quinoa, page 499, see also Sprouting Seeds, page 524)

*Chenopodium* sp. - *California Yokuts lamb's quarters* {S}. The seeds, which resemble amaranth, are used as a grain crop. They are easily harvested when ripe, and can be readily cleaned through a screen. Leaves are also edible. Semi-domesticated plant found at Yokuts Indian village sites in the Central Valley of California. J73

*Enchylaena tomentosa* - *Barrier saltbush*, *Ruby saltbush* {S}. Young leaves can be used as a green vegetable. Red berry-like fruits are sweet and succulent. Australia. CRIBB; N84, 053M, R15M, S92

*Halimione portulacoides* - *Sea purslane* {S}. Leaves are eaten raw in salads or cooked as a potherb. They are thick and succulent, and have a good crunchy texture and natural saltiness. Mediterranean region, Eurasia. KUNKEL, LARKCOM 1984, MABEY, MICHAEL [Pre, Re]; F85

*Spinacia oleracea* - *Spinach*, *Epinard*, *Hdren-so* {DF}. Leaves are eaten raw in salads, steamed, sauteed, pureed, used in soups, pastas, omelettes, souffles, as wrappers, etc. Also widely used as a filling for pies and pie-like pastries such as *hortopita* and *spanakopita*. For the sweetest tasting spinach it is best to remove the leaves from their stalks before cooking or eating. In France, the phrase *a la florentine*

usually refers to a dish containing spinach since it was a favorite of Catherine de' Medici of Florence. The leaf stalks and the top of the root, called *testine* or *spinach heads* by Italian Jews, are removed from the leaves and prepared as a separate vegetable, usually in a warm salad dressed with oil and vinegar. They have a much more earthy flavor than the leaves, reminiscent of beets or chard. Spinach juice is often combined with carrot, parsley and celery juices. Sprouted seeds are used in salads. Eurasia, cultivated. GURSCHE [Nu], HEDRICK 1919, MACHLIN [Pre, Re], ROOT 1980a, ROUTHIER 1993, VILMORIN [Cu], WOLFERT 1994a [Cul, Re]; B21P, E14T, E68M{PD}, G73, L17. (for cultivars see Spinach, page 523)

*Suaeda maritima* - *Sea blite* {PR}. Leaves and tender growing tips are eaten as a cooked vegetable after some of the saltiness has been removed. Or the salty leaves can be added to other foods to season them. Young shoots are pickled in vinegar and eaten alone or used as a relish. Widespread. CRIBB [Pre], GIBBONS 1964 [Pre, Cul], GIBBONS 1979; N79

*Tecticornia verrucosa* - {S}. The small seeds were ground into flour and used for making bread by the Aborigines. A salt-tolerant species recommended for saline agriculture. Australia. CHERIKOFF, NATIONAL RESEARCH COUNCIL 1990; N84

#### CHLORANTHACEAE

*Chloranthus braehystachys* -> *Sarcandra glabra*

*Hedyosmum mexicanum* - *Te azteco*, *Vara blanca* {S}. Mature fruits are whitish, succulent, sweet and edible. A substitute for tea can be made by placing two or three leaves in a cup of hot water. Leaves are used to flavor contraband liquor in Colombia. Tropical America. DUKE, WILLIAMS, L.; YOM

*Sarcandra glabra* - *Tea scent*, *Senryo* {S}. Seeds are dried, roasted and used as a substitute for sesame seeds. Leaves are used for scenting tea. Indomalaya, cultivated. MARTIN 1975, TANAKA; F85

#### CHRYSOBALANACEAE

*Chrysobalanus icaco* - *Coco plum*, *Icaco plum* {S}. Fruits are eaten raw, stewed with sugar, dried like prunes, or made into jams and jelly. In Cuba, the wild fruit is gathered and made into a sweet preserve, which is served in Havana restaurants as a *sobremesa* or dessert. Seed kernels are roasted and eaten. In preserving the fruits, they are pierced right through the seed which permits the syrup to penetrate, and after separation from the shell, the nut-like kernel is eaten with the fruits. Tropical America, cultivated. HEDRICK 1919, JOHNS [Cul], MENNINGER, MORTON 1977, POPENOE, W. 1920, STURROCK; D87G, E29, N84{S}, S97M

##### CULTIVARS

Butt: Largest of all coco plums. Grown for its large seeds. Quality of fruit only fair. Introduced into Florida from Costa Rica. WHITMAN; T73M

*Couepia polyandra* - *Olosapo*, *Zapote bolo*, *Zapotillo amarillo* {S}. The fruit is two to three inches long with juicy, yellow pulp, sweet and quite good but fibrous. Not popular enough to be sold at local markets. Central America. UPHOF, WILLIAMS, L.; F85

*Licania platypus* - *Sansapote*, *Monkey apple* {S}. The fruit has deep yellow fibrous flesh that is sweet and juicy, and an odor that is similar to pumpkin pie. Often sold in markets but not universally appreciated since it is thought to be unwholesome. Tropical America. MORTON 1987a, TANAKA, UPHOF, WILLIAMS, L.; T73M

*Parinari capensis* - *Dwarf mobolo*, *Sand apple* {S}. The sweet outer flesh of the fruit, although somewhat dry and astringent, is eaten. It has a strong characteristic flavor, and is buried in the sand for some time before it is considered fit to eat. It can also be dried and eaten as a soft cake. In Botswana, it is used for making beer. Juice of the fruit can be drunk fresh or boiled to the consistency of a

liquid porridge or gruel. Crushed kernels are eaten as a relish with meat. Southern Africa. FOX, E; F85

#### CISTACEAE

*Cistus albidus* - {S}. Leaves are used among the Arabs of Algeria as a tea. Dried leaves are often used to adulterate marjoram. Mediterranean region. BROUK, UPHOF; N84, 053M, 093, P10

*Cistus ladanifer* - *Labdanum*, *Spanish manna* {S}. Source of a fragrant, balsam-like resin that is sometimes eaten. In the food industry, it is employed for flavoring baked goods, soft drinks, ice cream, candy, and chewing gum. The seeds are ground into flour and used for making cakes and breads. Also yields a sweet manna. Mediterranean region. DONKIN, HEDRICK 1919, KUNKEL, MORTON 1976; C95, E61{PL}, F53M{PL}, G66, H71, 139, JO, K15, K49T, N84, 053M, 093, Q32

*Cistus salviifolius* - *Rock rose* {S}. Dried leaves are used as an adulterant of marjoram. Mediterranean region. BROUK; F80, H71, H94M{PL}, K15, N84, 053M, 093, P5, P17M, Q32

*Cistus villosus* - *Shaggy rock-rose* {S}. The plant is used in Greece as a substitute for tea. Also said to be used as a condiment. Mediterranean region. HEDRICK 1919, KUNKEL; C9M, E7M, G66, H71, K15, 093, P17M

#### CLEOMACEAE

*Cleome gynandra* - *Gynandropsis gynandra*

*Cleome icosandra* -> *Cleome viscosa*

*Cleome integrifolia* - *Rocky Mountain beeplant* {S}. Young shoots, leaves, and flowers are boiled and eaten as potherbs. Plants were gathered by the Tewa Indians of New Mexico and after removing the alkaline taste, were eaten with commel porridge. The seeds were sometimes ground into a meal for gruel or bread. Seedpods can be boiled and eaten. North America. GIBBONS 1979, HARRINGTON, H., KINDSCHER, UPHOF, YANOVSKY; C43V, E66M, 116, J25M, L55J, N7M, N84

*Cleome serrulata* -+ *Cleome integrifolia*

*Cleome viscosa* - *Spider flower* {S}. Young shoots and leaves, having a sharp, mustard-like flavor, are eaten boiled with chilis and salt. The pungent seeds are used as a substitute for mustard in curries. Pods are made into pickles. The juice is used as a condiment. Tropics. BURKILL, HEDRICK 1919, TANAKA, UPHOF, WATT; D92M, F80, F85, N84, 033, 053M, R15M

*Gynandropsis gynandra* - *Cat's whiskers*, *Spiderherb*, *Mamang* {S}. Leaves are eaten as a potherb, added to soups and stews, or used to flavor sauces. The pungent seeds are used as a substitute for mustard. They also yield an edible oil. In Thailand, the leaves are mixed with salt and sugar and fermented into a pickle-like product, called *pak-sian-dong*. Flowers are also eaten. Tropics, Subtropics. FOX, E, HEDRICK 1919, JACQUAT, OCHSE, STEINKRAUS, UPHOF; F85, J73, N84, 053M

*Gynandropsis pentaphylla* - *Gynandropsis gynandra*

*Isomeris arborea* - *Bladderpod* {S}. Green pods are eaten cooked by the Cahuilla Indians. Southwestern North America. UPHOF, YANOVSKY; B94, C43V, E66M, F85, G60{PL}, 198M, 198M{PL}, K15, N84

#### CLUSIACEAE (GUTTIFERAE)

*Calophyllum inophyllum* - *Alexandrian laurel*, *Kamani* {S}. Ripe fruits and seeds are edible. Unripe fruits are pickled. Tropics. ALTSCHUL, GIBBONS 1967, TANAKA; E21D{PL}, F85, N84, 094, P5, P17M, R15M, R50{PL}, Q46

*Garcinia atroviridis* - *Asam gelugur* {S}. The acid pulp of the large yellow fruit makes very good jelly and compote. Dried rind segments are used as a sour tamarind-like flavoring in curries,

soups, fish dishes, and the famous spicy meat dish of Sumatra called *rendang*. Traditionally eaten with fatty foods to prevent weight gain and obesity. Also rubbed on fatty meats to dissolve fat. Occasionally available in ethnic markets as *tamarind slices* or *tamarind skins*. Tropical Asia. FAIRCHILD 1930, OWEN [Cul], UPHOF, YOONG [Re]; N84

*Garcinia benthami* - *Bentham mangosteen*, *Bunag* {S}. Small, obpyriform fruits that are eaten out of hand, having acid white pulp of an agreeable flavor. Malaysia. UPHOF; F85

*Garcinia cambogia* - *Goraka* {DF}. Fruits are eaten as an appetizer, having succulent yellow pulp and a pleasant subacid flavor. The rind is dried, or made into a brine with salt, and used as a sour tamarind-like condiment for fish, curries and other foods. It has the ability to tenderize other ingredients. An extract is added to *Colombo-cured fish*. Considered essential in Sri Lankan cuisine. Seeds are the source of an edible fat. Tropical Asia. BALASURIYA [Re], CAMPBELL-PLATT, GARNER, HEDRICK 1919, MACMILLAN, UPHOF, WATT; GO, K18M

*Garcinia cochinchinensis* - *Bua nha* {S}. The fruit is the size of a plum, reddish-yellow, with a juicy, pleasantly acid pulp. Cut in slices, it is eaten raw or used as a flavoring in place of vinegar. The leaves are used as a condiment in fish dishes. Indochina. HEDRICK 1919, TANAKA; X88M

*Garcinia dulcis* - *Sweet garcinia*, *Taklang-anak*, *Moendoe* {S}. Despite the specific epithet, the fruits are usually sour. They can be eaten fresh, but are mostly used in preserves, jams, drinks, candied, or dried. Indonesia to the Philippines RIFAL, TANAKA; E29{PL}, F85, N84

*Garcinia hombroniana* - *Bruas*, *Mangis hutan*, *Luli* {S}. Fruits are eaten raw or in preserves, being of fine quality. The juicy, melting white pulp has a subacid flavor reminiscent of the peach. Has been recommended for improvement by selection and hybridization with other species. Malaysia. BURKILL, TANAKA, TINGGAL, UPHOF; N84, 019

*Garcinia indica* - *Cocum*, *Kokam butter tree* {DF}. The purple fruits are eaten raw or made into jelly, syrup and vinegar. They have a pleasant, somewhat acid flavor. Dried fruits are used for flavoring curries, fish dishes, and other foods, and for making acidulous beverages. Seeds are the source of *kokam butter*, reportedly used for adulterating ghee or butter. The dried fruits are usually available at Indian markets. HEDRICK 1919, MISRA [Re], REEJHSINGHANI 1975 [Re], UPHOF, WATT; F74, G0{PD}

*Garcinia kola* - *Kola bitter* {S}. Seeds are chewed with those of true kola (*Cola* spp.), and are thought to enhance one's enjoyment of the latter as well as allowing for consumption of larger quantities without indisposition. They have a bitter, astringent, aromatic flavor which enhances a local liquor. The extremely sour fruits are occasionally eaten. Sometimes available in African markets in the United States. West Tropical Africa. DANFORTH, DALZIEL, MENNINGER, UPHOF; Y40

*Garcinia livingstonei* - *Imbe*, *African mangosteen* {PL}. Ripe fruit is the size of a small plum, orange-red, with a thin layer of sweet, acidulous flesh of very pleasant taste. The highly colored pulp is used in the preparation of a purplish, claret-like wine. Tropical Africa, cultivated. KENNARD, MOWRY, UPHOF; E29, M17, N84{S}

*Garcinia mangostana* - *Mangosteen* {S}. One of the best tasting tropical fruits, often called the "queen of fruits". The white pulp is aromatic, juicy, with a texture so soft it almost melts in the mouth, and a sweet, delicate flavor. Usually eaten out of hand, but also made into desserts or cooked with rice or syrup. Seeds are occasionally eaten after boiling or roasting. They add a delicious, nutty flavor to preserves when cooked with the pulp. Indonesia, cultivated. ALMEYDA 1976a [Cu, Pro], CORONEL 1983, GARNER [Pro], MORTON 1987a, POPENOE, W. 1920 [Cu], UPHOF; E8M{PL},

F85, J22{PL}, K8{PL}, N84, 019, 093, Q93{PL}, R50{PL}, R78M

#### CULTIVARS {PL}

**Yellow:** Upright growing tree. More cold hardy than the common purple mangosteen. Somewhat more precocious, will generally begin fruiting in about seven years. The fruit is said to have the flavor of a tangy mango. Q93

*Garcinia morella* - *Indian gamboge tree*, *Tamal* {S}. The small, yellow fruit is eaten, being esteemed as a dessert fruit. Seeds yield a yellow fat used in cooking and confectionery, and also as a substitute for *ghee*. Source of *gamboge*, a gum-resin sometimes used in food. Indochina. HEDRICK 1919, TANAKA, UPHOF, WATT; F85

*Garcinia parvifolia* - *Brunei cherry*, *Assam aur aur* {S}. Very popular in Brunei where various parts of the fruit, both young and mature, have special culinary uses. Ripe fruits are eaten as a dessert, having juicy white pulp with a delicious sweet-tart flavor. Young golden-brown fruits are sliced into wedge shaped pieces, sun-dried and used as a sour condiment. The dried, brilliant crimson rind is the most esteemed product and is considered an essential flavoring for curries and other dishes requiring a sour flavor. Southeast Asia. TINGGAL, UPHOF; 019

*Garcinia pictorius* - *Cochin gorka* {S}. The yellow, juicy fruits have a pleasantly acid flavor and can be eaten raw. Also used for jams and preserves. Southeast Asia. MACMILLAN, TANAKA; E29{PL}, F85, N84, P38

*Garcinia prainiana* - *Cherapu* {S}. The roundish fruit is smooth, yellow in color, and has an acid edible pericarp and a subacid pulp. It is eaten like the mangosteen. Malaysia. TANAKA, UPHOF; R78M

*Garcinia venulosa* - *Gatsan* {S}. The fruit is oblate, about 2 inches in diameter, smooth, greenish in color and has agreeably acid pulp. In the Philippines, it is usually eaten with fish. Southeast Asia, Philippines. BROWN, W, TANAKA; F85

#### *Garcinia xanthochymus* - \**Garcinia pictorius*

*Mammea africana* - *African mammee apple* {S}. Seeds are consumed as food in some parts of Africa. The fruit is also edible. It has fibrous, musly, whitish-yellow flesh and a mostly acidic flavor, although sweet types are known. Tropical Africa. DALZIEL, DANFORTH, UPHOF; Y40

*Mammea americana* - *Mammee apple*, *Mamey de Santo Domingo*, *Abrico do Bard* {PL}. The ripe fruit is eaten out of hand, with wine, with sugar and cream, or made into sauces, pies, tarts and jams. Preserves made from the pulp taste remarkably like apricot preserves. Mature green fruits are high in pectin and make an excellent jelly when combined with high-acid fruits that are low in pectin, like the pineapple. From the fragrant white flowers a liqueur is distilled, which is known as *eau de creole*, or *creme de creole*. In Brazil, fermented *toddy* is made from the sap of the tree. Caribbean region, cultivated. JOHNS [Cul], MORTON 1987a, POPENOE, W. 1920, STURROCK; E21D, E29, F85{S}, K8, N84, 019{S}, S97M

#### CULTIVARS {GR}

**Lancetilla:** An improved type with large fruits of good quality. Originated in Lancetilla, Honduras. E8M

**Waimanalo:** An improved type with large fruits of good quality. Originated in Waimanalo, Hawaii. E8M

*Mesua ferrea* - *Ceylon ironwood*, *Nag champa*, *Indian rose chestnut* {S}. Young leaves, having a sourish, astringent flavor, can be eaten raw. If well cooked, the oily seeds are edible. The fruit is reddish and wrinkled when ripe. It resembles a chestnut in size, shape, and taste. Also a major ingredient of *Amrit Kalash*. Tropical Asia. HEDRICK 1919, PONGPANGAN, TANAKA, ZEVEN; F85, H14{ED}, N84, P5, Q12, Q18, R50{PL}

*Ochrocarpus africana* - *Mammea africana*



*Pentadesma butyracea* - *Owala oil tree*, *Butter tree* {S}. Seeds are the source of a pale yellow edible fat, known as *Sierra Leone butter*, used for cooking and in the manufacture of margarine. When young they are edible, but become sour or bitter when old and are then occasionally used as a substitute for cola nuts. West Tropical Africa. BURKILL, DALZIEL, IRVINE 1961, UPHOF; F85

*Rheedia acuminata* - *Madrone* {PL}. The fruits have a translucent whitish pulp that is juicy, slightly aromatic, and pleasantly subacid. They can be eaten out of hand or used in jams, preserves and drinks. Tropical America. KENNARD, MORION 1987a, POPENOE, W. 1924, UPHOF; E29,174, N84, 019{S}

*Rheedia brasiliensis* - *Bacuparl* {S}. The aril-like, translucent, subacid white pulp of the fruit is eaten, having an excellent flavor suggesting that of the mangosteen. It is highly prized eaten out of hand, or especially when made into a *doce* or jam. Brazil. IDONE, MORTON 1987a, POPENOE, W. 1920; T73M, X88M

*Rheedia edulis* - *Limao do Motto*, *Berba* {PL}. The oval, yellowish or orange fruits are eaten, having white flesh and an agreeable acid flavor. Often used for making jams. Cultivated locally, especially in Brazil. Central America. MORTON 1987a, POPENOE, W. 1920, UPHOF, WILLIAMS, L.; E8M

#### *Rheedia madruno* - *Rheedia acuminata*

*Rheedia magnifolia* - *Madrone* {S}. The fruits are eaten, and are rated by some as the best in the genus. They have smooth skin and a delicious, subacid flavor, sweeter than other types. South America. N84, R78M

#### COCHLOSPERMACEAE

*Cochlospermum religiosum* - *Silk cotton tree* {S}. The oil-cakes from the pressed seeds may be eaten. Source of an insoluble gum used as a substitute for tragacanth in ice-cream making. Tropical Asia. BURKILL, TANAKA, UPHOF; F85, N84

#### COMBRETACEAE

*Anogeissus latifolia* - *Ghatti tree* {S}. Source of *ghatti gum* or *India gum*, an exudation of the stem that is used in sweetmeats. Also used in the food industry as an emulsifier. Southern Asia. BROUK, SCHERY, UPHOF; F85, N84, Q46

*Anogeissus leiocarpus* - *Savannah tree* {S}. Source of an insoluble gum, eaten in Kordofan mixed with or as a substitute for gum arabic. The calyx and the fruit are used for the preparation of sauces or tea. Roots are made into chewsticks. Tropical Africa. UPHOF, VON MAYDELL; F85

*Combretum hereroense* - *Russet bush-willow* {S}. The brilliant red fruits are eaten fresh. Leaves are dried and brewed into a substitute for tea, called *mokabi* or *mokata*. Southern Africa. FOX, F.; N84, S28M

#### *Terminalia arjuna* -> *Terminalia glabra*

*Terminalia bellarica* - *Beleric*, *Vibhitaki* {S}. Fruits are dark red, somewhat like a small plum, with a pleasant, subacid flavor. They are called in commerce *baleric myrobalans* and are used for making preserves. The kernels are also edible but are said to have a narcotic effect. Also an essential ingredient of the Ayurvedic tonic formula known as *triphalala*, along with *T. chebula*. The bark is fermented into a type of wine known as *akshi-ki-sidhu*. Southern Asia to the Philippines. BURKILL, CAMPBELL-PLATT, FRAWLEY, MORNINGSTAR, SIVARAJAN, TANAKA, UPHOF, WATT; F85, M15M{PD}, N7D{DF}, N7D{PD}, N84, Q12, Q18, Q46

*Terminalia catappa* - *Tropical almond*, *Indian almond*, *False kamani* {S}. Seed kernels are eaten out of hand or roasted, having the flavor of almonds. They may be chopped and added to cookie or bread mixes, or stirred into icings, dessert fillings, candies, soups, or stews. The sun-dried kernels yield 38-54% of a bland, yellow, semi-drying oil which is edible and not as likely to become rancid as

true almond oil. It is used in cooking. The fruits have a tender skin and a thin layer of edible, subacid, juicy flesh. Tropical Asia, cultivated. DUKE, GIBBONS 1967, KENNARD, MENNINGER, MORTON 1985 [Nu], ROSENGARTEN; A79M, E29{PL}, F85, M17{PL}, N84, P5, P17M, Q12, Q18, Q46, R50{PL}

*Terminalia chebula* - *Black myrobalan*, *Chebula*, *Haritaki*, *Indian gallnut* {S}. The seed kernels are occasionally eaten as a snack, having a flavor reminiscent of almonds or filberts. They also yield an edible oil. The sour fruits are eaten raw in salads or with *nam phrik*, preserved in brine, or fried. They are also an essential ingredient of *Triphala* and *Amrit Kalash*, famous Ayurvedic tonic formulas widely used in India since ancient times. They have also been used there in the manufacture of *black salt* or *kala nimak*. Black salt, actually reddish-gray, has a distinctive smokey flavor and is a major ingredient of the spice blend known as *chat masala*. Tropical Asia. DEVI [Be], FRAWLEY, JACQUAT, KIRCHNER, MENNINGER, MORNINGSTAR, NORMAN [Re], PONGPANGAN, SIVARAJAN, TANMCA, WATT; C34G{DE}, F74{DF}, H14{PD}, H36{DF}, M15M{PD}, N7D{DF}, N7D{P£}, Q12, Q18, Q46

*Terminalia ferdinandiana* - *Kakadu plum*, *Billy goat plum*, *Mammohpan* {S}. The fruit, which looks and tastes like an English gooseberry, is one of the world's richest known sources of natural ascorbic acid. Samples of the fruit were found to contain between 2,300 and 3,150 milligrams of ascorbic acid per 100 grams of edible fruit. Aborigines have eaten the fruit for years, but it was not until 1981 that scientists from Sydney University discovered its unusual properties. Has become a popular bushfood for making preserves, pickles, sauces, chutneys and jams. Australia. BRAND, CHERIKOFF, ROBINS [Cui, Re]; C95, N79{PR}, N84, 032M{PD}, R15M, R33M, S92

*Terminalia glabra* - *Arjoon sadura* {S}. In India, a decoction of the bark with milk is used as a beverage. Seeds are also edible. Tropical Asia. HEDRICK 1919, KUNKEL, WATT; C9M, F85, G66, N84, Q12, Q18, Q46, R50{PL}

*Terminalia kaernbachii* - *Okari nut* {S}. Seed kernels, having an excellent mild, almond-like flavor, are eaten raw, roasted or baked. The flavor is improved by light roasting, with salt. Also the source of a vegetable butter. New Guinea, cultivated. ALTSCHUL, MASSAL [Nu], MAY, R., MENNINGER, UPHOF; F85, 019

*Terminalia tomentosa* - *Saj*, *Laurel* {S}. The astringent juice from the bark is employed in the manufacture of palm sugar. Ashes of the bark are used as a substitute for lime in betel-nut chewing. Southern Asia. TANAKA, UPHOF, WATT; Q12, Q18

#### COMMELINACEAE

*Commelina communis* - *Day-flower* {PL}. Young leaves, shoots, and flowers are cooked as a potherb, and served with butter, salt and miso, or rice. They can also be chopped fine and added to salads. Japan-China, naturalized in North America. ALTSCHUL, FERNALD, GIBBONS 1979, MEDSGER, PETERSON, L., TANAKA; N9M, N9M{S}

*Tradescantia virginiana* - *Spiderwort* {PL}. Very young shoots and leaves are eaten in tossed salads, parboiled and fried, or chopped fine they can be added to potato salad. Also good as a potherb served with butter or an oil and vinegar dressing, or added to soups and stews. The flowers make an attractive edible garnish, and can also be candied. North America. CROWHURST 1972 [Re], FERNALD, KINDSCHER, PETERSON, L., UPHOF; B29, B29{S}, C81M, E33M, F37T, I37M, J5M, L55, N7T, N84{S}, 053M{S}

#### CONVOLVULACEAE

##### *Calonyction aculeatum* - *Calonyction album*

*Calonyction album* - *Moonflower* {S}. Young leaves and fleshy calyces are steamed and eaten as a vegetable, or used in curries, soups, stews, etc. They may be used either fresh or dried. In India, the young seeds are also eaten. North America, cultivated.

BURKILL, MACMILLAN, MACNICOL, MARTIN 1975, MORTON 1977, OCHSE, WATT; C44, D92M, E7M, F73D, F80, H54, L91M, N84, 053M, 089

*Ipomoea alba* - \**Colonyction album*

*Ipomoea aquatica* - *Water spinach, Kangkong, Ong choy, Engtsai* {S}. Young leaves and stems are eaten boiled, steamed, stir-fried, or added to soups, stews, curries and sambals. Young stems are used as an ingredient in pickles. The protein content of the leaves is high making this one of the best green-leaved foods. Cultural methods emphasize the production of young, succulent tips. These can be eaten raw in salads. The roots are occasionally cooked and eaten. Tropics, cultivated. COST 1988, DAHLEN [Pre, Re], HEDRICK 1919, HERKLOTS [Cu, Re], MACMILLAN, MARTIN 1975, OCHSE, ROUTHIER 1989 [Cul, Re], UPHOF; C74{PL}, F73D, F85, 177, J82, L59, L79G, N24M, N40{PR}, N84, PIG, Q34, R47, S55, S70, etc.

CULTIVARS

**Bamboo Leaved:** New and unique strain of water spinach with small, light-green, arrow-shaped leaves on long hollow stalks. Very vigorous; tolerant of heat and dampness. Requires less water for growth than other types. N84, Q34, S70

*Ipomoea batatas* - *Sweet potato* {S}. Tubers are eaten raw, boiled, steamed, baked, fried, mashed, batter-fried as tempura, dried for later use, or fermented into the alcoholic beverages *aw amori, shochu, masato*, and *chicha*. They can also be used in pies, cakes, breads, puddings, cookies, ice cream, candies, jams, *dulce de batata*, etc. In Japan, they are used for *imo miso* and *harusame* noodles. Chopped and dried tubers are boiled with rice or ground into flour which is mixed with wheat flour and made into cake or bread. *Mushikiriboshi, imokarinto*, and *sembei* are popular Japanese snacks made from sweet potato. Also the source of a starch, called *Brazilian arrowroot*. The leaves and tips of actively growing shoots are used as a substitute for spinach. In Korea, the leafless stems, both fresh and dried, are made into *namul* and *kimchi*. In Japan, the petioles are boiled in soy sauce. Part of the traditional diet of the Majorcan black pig, the sweet potatoes adding a unique flavor to the famous pork products made from this breed. Tropical America, cultivated. BROWN, G., CARCIONE, CARTER, FELL 1982b, HALPIN [Cu, Cul], HERKLOTS [Cu], HESSELTINE, LEE, F. 1988 [Re], MILLON, OCHSE, ORTIZ 1973 [Re], SHURTLEFF 1976, STEINKRAUS, TANAKA, UPHOF, VILMORIN, WOODRUFF [Re], WOOLFE; A7{DF}, D97{ED}, E60P{PD}, N84. (for cultivars see Sweet potato, page 549)

*Ipomoea digitata* - *Spanish woodbine, Khoai xiem* {S}. The oblong tubers have a slightly sweet taste, and are eaten like sweet potatoes. Leaves are also eaten. Tropics. HEDRICK 1919, MARTIN 1975, TANAKA; A79M, C95, F85, G73, 181M, 181M{PL}, 053M, Q38

*Ipomoea tuberosa* - \**Ipomoea digitata*

*Ipomoea turpethum* - *Operculina turpethum*

*Ipomoea* sp. - *Jicama montes* {S}. Vining plant with heart-shaped leaves and white flowers that grows in wet areas. Produces sweet tubers that are edible. Oaxaca, Mexico. THEODOROPOULOS; F80

*Operculina turpethum* - *Indian jalap, Turpeth* {S}. The soft, sweet stem is sucked or chewed. Fleisty, unripe fruits are eaten raw or boiled like peas. Leaves are also edible. Tropical Asia, Australia. CRIBB, HEDRICK 1919, MARTIN 1975; F85

*Rivea corymbosa* - *Ololuiqui, Aguinaldo blanco* {S}. Source of a water-white, low mineral content honey with a delicate flavor. It is reportedly the lightest honey in the world. Tropical America. CRANE 1975; A26, C43M{PL}, F73D, F80, G73{PL}, G73, 181M{PL}, 181M, J82{PL}

CORNACEAE

*Cornus canadensis* - *Bunchberry, Dwarf cornel* {PL}. The rather dry fruits can be added to breakfast cereals, or used in jellies, fruit sauces, pies, and puddings. Bunchberries are said to be an excellent ingredient for steamed plum puddings. Northern temperate region. CROWHURST 1972, FERNALD, GIBBONS 1979, HALL [Re], KIRK, MEDSGER, TURNER 1979 [Re]; A2{S}, D75M, D95, E15{S}, 144, J26, K63G{S}, K75M, N84{S}

*Cornus capitata* - *Thammal, Thanboi* {S}. The fruit is sweetish, mingled with a slight bitter taste, and is eaten or made into preserves in India. Himalayan region. HEDRICK 1919, WATT; D95{PL}, G66, H4{PL}, I77M{PL}, K38, K63G, N37M{PL}, N84, 093, P17M, P38

*Cornus kmsa* - *Yamaboshi* {PL}. The oblate red fruits, called *yang-mei*, are very juicy and of a fair flavor. Consumed in some parts of China. Young leaves are eaten by mountain people in Japan. Japan-China. TANAKA, WILSON, E.H.; B32, B74, C92{S}, D37, E47, E47{S}, F51, G66{S}, H4, J16, K38{S}, K63G{S}, J61M, NO, N84{S}, 093{S}, etc.

CULTIVARS {GR}

**Big Apple:** A vigorous and unique variety with large, attractive flowers in the spring followed by cascades of very large, bright red fruit in the fall. Grows to 15 feet tall. Striking both in bloom and in fruit. D37, 146, 149P, I66T

**Milky Wav:** Large, one inch fruits that are said to have somewhat the flavor of papaya. Ripens in October. Also a prolific producer of attractive white flowers beginning in late June. Heavier blooming and more fruitful than other types. A50, B52, C9, D95, G21M, H4, 160, 177M

*Cornus mas* - *Cornelian cherry, Sorbet* {PL}. The pleasant-tasting fruits are eaten raw, dried, preserved in syrup (*rob de comis*), or made into tarts, conserves, sauces, sweetmeats and marmalades. In England, they were at one time commonly kept in brine and used like olives. Cornelian cherry juice is used in the Turkish fruit drink *serbert*, carbonated beverages, and as an addition to cider and *perry*. Also the source of an alcoholic beverage, known in France as *vin de cornouille*. In Norw<sup>^</sup>, the flowers are used for flavoring distilled spirits. Seeds were ground and used as a coffee substitute. Eurasia, cultivated. BIANCHINI, BRYAN [Cul, Re], GOLDSTEIN [Re], HEDRICK 1919, HENDRICKSON, JOHNS, SIMMONS 1972 [Cu], UPHOF; B32, D37, D95, E47{S}, E87, F43M, G66{S}, I77M, J61M, K38{S}, K63G{S}, N84{S}, 053M{S}

CULTIVARS {GR}

**Bulgarian:** Large, pear-shaped fruit; skin deep scarlet to violet; flesh lighter scarlet, high in sugar, of excellent flavor; stone small. High in vitamin C. Tree very productive. Originated in Bulgaria. Introduced into the United States by Alexander I. Eppler. D47

**Cream:** An improved cream-colored cultivar from eastern Europe. Creamy skin; lighter cream flesh. Excellent quality. Introduced into the United States by Alexander I. Eppler. D47

**Elegant:** Striking, bright red, long pear-shaped fruit; very large, 1 to 1 1/2 inches in length; sweet and delicious. A superior cultivar developed by Svetlana Klimenko at the Kiev Botanical Garden in the Ukraine. D37, E87, 146, 149P, I66T

**Eppler's Yellow:** Medium to large, barrel-shaped fruit, 3/4 to 1 inch in length; golden-green in color; honey sweet, with a nice balance of acidity. Heavy bearing shrub. Originated in Seattle, Washington as a chance seedling. Introduced by A.I. Eppler. D47

**Pioneer:** Large, dark red, pear-shaped fruit, up to 1 1/2 inch long; juicy, sweet and aromatic. A superior cultivar developed by Svetlana Klimenko at the Kiev Botanical Garden in the Ukraine. E87, H49, 146, 149P, I66T

**Red Star:** Large, long oval fruit, about 1 1/4 inch long; glos<sup>^</sup>, dark-red skin; sweet, very juicy and aromatic. A superior cultivar

developed by Svetlana Klimenko at the Kiev Botanical Garden in the Ukraine. E87, H49,146,149P, 166T

**Red Stone:** Blooms very early, before leaves appear, flowers over a long period. Red fruits appear in late summer. More productive of fruit than the common type. Reddish-purple fell color. Resistant to anthracnose. Hardy to -30° F. Released by the USDA. B74{PL}

**Romanian:** Large, spherical fruit; skin bright red; flesh lighter red, high in sugar, very delicately flavored; quality excellent. Tree highly productive. Originated in Romania. Introduced into the United States by Alexander I. Eppler. D47

**Russian Giant:** Very large, barrel-shaped fruit; skin deep scarlet; flesh lighter scarlet, high in sugar, of excellent flavor; stone small. Tree high yielding. Originated in the former U.S.S.R. Introduced into the United States by Alexander I. Eppler. D47

**Yellow:** An improved yellow cultivar from eastern Europe Yellow skin; lighter yellow flesh. Excellent quality. Introduced into the United States by Alexander I. Eppler. D47

**Yellow Kiev:** Large cylindrical fruit, 1 inch in length; an attractive yellow color. Delicious sweet-tart flavor. Makes excellent jam and compote. A superior cultivar developed by Svetlana Klimenko at the Kiev Botanical Garden in the Ukraine. I66T

*Cornus officinalis* - *Sanshuyu* {PL}. Fruits are eaten fresh, although they are not very sweet. In Korea, they are used for making a liqueur-like beverage by placing them in a jar with sugar and allowing them to ferment, then adding *soju*, a distilled spirit made from sweet potatoes. Eastern Asia. PEMBERTON, TANAKA; B96, C9, D95, E87, F37T{DF}, G21M, G66{S}, H8, I77M, K38{S}, K63G{S}, J61M, M92, O93{S}, P5{S}, etc.

*Dendrobenthamia capitata* - \**Cornus capitata*

*Dendrobenthamia japonica* - *Cornus kousa*

*Macrocarpium mas* - *Comus mas*

#### CORYLACEAE

*Corylus americana* - *American hazelnut*, *Wild filbert* {PL}. The thick-shelled nuts have small, sweet kernels that are eaten raw or used in soups, breads, cookies, cakes and candies. Indians of the prairie regions preferred them in the milk stage when they are softer and sweeter. North America. FERNALD, GIBBONS 1979, KINDSCHER, MEDSGER, TURNER 1979 [Pre, Re]; A91, B52, B74, C11M, C38, D45, G23, G66, G72, H4,160, K38{S}, K63G{S}

#### CULTIVARS

**Winkler:** Prolific bearer of large nuts. Winter hardy to at least 30° below zero. Highly resistant to eastern filbert blight. Widely used as a parent in breeding with *C. avellana*. Introduced by Snyder Bros., Center Point, Iowa, in 1918. B99,125M{SC}

*Corylus avellana* - *Filbert*, *Hazelnut*, *Cobnut* {S}. The nut is eaten raw, as *noces* in oil, or roasted and used in breads, cakes, *torrone* and other confections, cookies, pies, *picada* and *romesco* sauces, cereals and nut milks. Also the source of a clear, yellow, edible oil with a buttery flavor used in salad dressings, sauces, cookies, etc. In Egypt, ground hazelnuts are an ingredient of *dukka*, a spice blend that is used with olive oil as a dip for bread. *Frangelico* is a hazelnut-flavored liqueur. In Turkey, the leaves serve as wrappers for *samosas*. Eurasia, cultivated. CUSUMANO [Cul, Re], GRAY, P. [Cul], MABEY, MENNINGER, NORMAN, ROSENGARTEN, UPHOF, VON WELANETZ, WOLFERT 1998; A52M{PD}, B31{PD}, G29{PD}, G66, G66{PL}, G72{PL}, H72{PD}, H73{PD}, 166 {PD}, I66M{PD}, K38, K54{PD}, K63G, L14G{PD}, L17{PD}, M63M{PD}, N71M, O53M, O93, R78, etc. (for cultivars see Filbert, page 369)

*Corylus avellana* f. *fusco-rubra* - *Red filbert*, *Red-leaf filbert*, *Purple-leaved filbert* {GR}. Nuts are edible, having a reddish or deep purple husk. Cultivated. REHDER. D37, P68M, R77, R83

#### CULTIVARS

**Fortin:** Superior to other red leaf filberts in that it maintains its red foliage throughout the summer. Catkins and nut husks are also red. Produces an abundance of small flavorful nuts. Pollinated by Butler and Ennis. Selected by Michael Dolan of Burnt Ridge Nursery. 174

**Rote Zeller:** Ornamental tree with small, oval-shaped, tasty nuts. Long reddish-purple catkins appear in winter and early spring, red leaves in spring, and reddish husks and nuts in summer. Leaves later turn bronze, except for the tips of new growth. Light producer. B74, D95,174, J15M, NO

*Corylus californica* - *Corylus comuta van californica*

*Corylus chinensis* - *Chinese tree hazel*, *Chen* {S}. The nuts are edible. A large upright tree that does not produce suckers. Drought resistant. Eastern Asia. TANAKA; D95{PL}, G66

*Corylus colurna* - *Turkish tree hazel*, *Constantinople nut* {PL}. Nuts are edible. The tree is upright, non-suckering, and very drought resistant. Useful in hybridizing with *C. avellana*. Eurasia. JAYNES, ZEVEN; A91, B74, D95, E87, G66, G66{S}, H4, H49, 174, K38{S}, K63G{S}, N71M{S}

*Corylus colurna van chinensis* - \**Corylus chinensis*

*Corylus x colurnoides* (*C. avellana* x *C. colurna*) - *Trazel*, *Turkish trazel* {PL}. Artificial hybrid. The edible nut can be eaten raw or used in breads, cakes, puddings, nut milks, etc. Combines the non-suckering, winter-hardy, vigorous growth of the tree hazel with the free falling, early bearing, large nut size of the filbert. TANAKA; A91, B74, E97, J61M

#### CULTIVARS {GR}

**Bill's Hybrid:** Hybrid of Turkish trazel back crossed to filbert, making the progeny 3/4 filbert and 1/4 trazel. Appears to retain most of the desirable nut qualities of both parents, especially a large, clean kernel. Hardy to Zone 4. A91, A91{PL}

**Chinoka:** Attractive, medium to large nut with a mild flavor; free falling; matures early. Tree bears heavy crops annually; a good producer of catkins, making it a good pollinator. Selected by J.U. Gellatly. N24M

**Faroka:** Plump, light colored nut of excellent quality, strongly resembles the tree hazel parent. Resistant to hazel blight. Strong, upright growth habit. Selected by J.U. Gellatly. Presumed to be a natural hybrid. E62{SC}

**Finaerlakes:** Large, elongated nut of excellent quality. Vigorous, shapely tree; precocious and productive; very hardy. Resistant to aphids and bud mites. Requires a pollinator. Introduced by Miller Nurseries. H65

**Gellatly Mix:** A mixture of seedlings of the best named trazels, mostly Gellatly selections, including Chinoka, Eastoka, Faroka, Laroka, Erioka, Zeroka, and Morrisoka. A91{PL}

**Laroka:** Long nut of good size and very good flavor; shell thin; generally free falling. Excellent landscape value; vigorous growth; large, dark green leaves to 6 inches in diameter. Selected by J.U. Gellatly. E62, E62{DF}, E62{SC}, E91M{PL}, I60{PL}

*Corylus cornuta* - *Beaked hazelnut* {PL}. The nuts can be eaten raw, dried for later use, or ground into a flour or meal. The meal can be mixed with sugar, water, and candied orange peel and then used to fill turnovers, pies, etc. North America. GIBBONS 1979, HARRINGTON, H., MEDSGER; A91, B74, G66{S}, J41M, K63G{S}, K89, N84{S}

*Corylus cornuta* var. *californica* - *California hazel* {PL}. The nuts are eaten fresh or preserved for winter use by several Indian tribes, among which the Cowlitz, Squaxin, and Snohomish. Western North America. UPHOF; B92, B94{S}, D95, E15{S}, G60, N84

*Corylus ferox* - *Himalayan hazelnut* {S}. The small, thick-shelled nuts are edible, tasting like the common filbert. Himalayan region. HEDRICK 1919; N84

*Corylus heterophylla* - *Siberian filbert* {S}. Nuts are hard-shelled, of a relatively good flavor, and are eaten raw. Leaves are variegated, with a deep carmine, heart-shaped spot at the center. Eastern Asia. TANAKA, ZEVEN; F85, G66, G66{PL}, N73{PL}

*Corylus maxima* - *Lambert's filbert*, *Giant filbert* {PL}. The large, edible nuts are eaten raw or used in nut milks, nut butters, cakes, pies, breads, etc. Nuts of this species were once called filberts and those of *C. avellana*, hazelnuts or *comnuts*, but the distinctions have been obscured by breeding and selection. Mediterranean region, cultivated. MASEFIELD; E87, G66{S}, 081, R83. (for cultivars see Filbert, page 369)

*Corylus rostrata* - *Corylus cornuta*

*Corylus tibetica* - *Tibetan tree filbert* {S}. The nuts are edible. A non-suckering upright grower, whose eventual height is the smallest of the tree hazels. Himalayan region. TANAKA; T41M

*Corylus x vilmorinii* (*C. chinensis* x *C. avellana*) - *Chinese trazel* {PL}. Artificial hybrid. Nuts are eaten. The Chinese tree hazel parent contributes a characteristic rounded nut with a slightly thinner shell than the Turkish trazel. REHDER; A91, H49

*Corylus x sp.* (*C. avellana* x *C. americana*) - *Hazelbert, Mildred filbert* {PL}. Artificial hybrid. The nuts are edible. Combines the cold hardiness and resistance to eastern filbert blight of the American hazelnut, with the desirable nut qualities of the European filbert. JAYNES; H49

CULTIVARS

**Buchanan:** Rush x a European filbert. Pale brownish-gray nut; medium-brown, ovoid pointed kernel of good flavor. Hardy, productive tree; reaches 10 feet in height. Originated in Lancaster, Pennsylvania by J.F. Jones. Introduced in 1930. Named after President Buchanan who is buried in Lancaster. BROOKS 1972; B99,160

**George Slate:** Mixed seedlings of hybrids made by George Slate at Geneva, Nov York, using *C. americana* 'Rush' as one of the parents. They were never named due to poor yield, shy catkin production, and susceptibility to big bud mite. JAYNES; E62{PL}, E62{DF}, E62{SC}

**Graham:** Nut is large, of good quality. Tree is resistant to Eastern filbert blight; an annual bearer. Originated in Ithaca, Nov York. Winkler x Longfellow. BROOKS 1972; B99, E62, E62{SC}

**Potomac:** Rush x Du Chilly, introduced in 1951. Nut averages 185-195 per pound, yields 50% kernels, resembles Barcelona. Tree is vigorous, productive, suited to areas where the European filbert cannot be grown due to lack of hardiness. BROOKS 1972; B99

**Reed:** Rush x Bolwyller, introduced in 1951. Nut averages 180-190 per pound, yielding 48% kernels, resembles Red Aveline. Tree is vigorous, productive, suited to areas where the European species cannot be successfully grown due to lack of hardiness. BROOKS 1972; B99

**Rutter:** Seedlings from named cultivars growing as an F<sub>2</sub> population in Minnesota. Nuts are similar to wild American hazels but have a much thinner shell. Some seedlings will produce very large nuts. Particularly valuable to growers in short season areas. A91

**Skinner:** Originated by Fred Ashworth, St. Lawrence Nurseries, Heuvelton, Nov York. Nut large, a little wider than long; kernel plump, flavor good; resembles Barcelona; ripens Sept. 24 in Heuvelton. Tree is very hardy, tolerant of blight. Dropmore x Italian Red seedling. BROOKS 1972; A91, L27M

*Corylus x sp.* (*C. avellana* x *C. cornuta*) - *Filazel* {PL}. Artificial hybrid. Nuts are edible. The hybrids are intended to combine the hardiness of the beaked hazel with the nut quality of the European

filbert. Many of the hybrids have the Peace River strain erf C. comuta as the pistillate parent. JAYNES; D69, H49, J61M

CULTIVARS

**Big Red:** Nut large, about the size of a Barcelona, kernel well-filled; moderately thick shell. Early ripening. Tree has a multi-stem, suckering habit of growth. Of interest to short season growers for home use, breeding material, or local markets. A91

**Gellatlv 502:** Medium-sized nuts with good quality and excellent flavor; very good kernel filling. Haidy, productive tree; produces vigorous seedlings. Peace River x European. E91M, E91M{GR}

**Gellatlv Mix:** A mixture of seedlings from the best quality, early ripening Gellatlv selections including Myoka, Petoka, and Manoka. Recommended for growers in short season areas. Seedlings from seeds collected at the original Gellatlv planting. A91, B74,160

**Grimo 188P:** A seedling selection resulting from a cross of the Myoka and Petoka cultivars. E91M, E91M{GR}

**Mvoka:** Nut is well filled, with a prominent fuzzy skin on the kernel; thick shell. Ripens very early, making it suitable for short season areas. E91M, J89M

**Peace River Cross:** Seedlings of the original Peace River hybrids made by J.U. Gellatlv. Likely back-crossed to *C. avellana*. Of interest to breeders and growers in short season areas as it produces large nuts early in the season. A91

COSTACEAE

*Costus guanaiensis* - *Cahahuate* {S}. The stalks yield a very tasty, acidulous juice which can be consumed as is or made into a refreshing beverage by sweetening with sugar. The flowers are also edible, having the same flavor as the juice squeezed from the stalks. Ecuador. N40M, N84, R78M

*Costus speciosus* - *Crepe ginger, Tebu, Setamr* {PL}. Tender shoots are boiled or steamed and eaten as a vegetable. Fruits and rhizomes are occasionally eaten. Tropical Asia. BURKILL, HEDRICK 1919, MACMILLAN, TANAKA, WATT; A28, A79M, A79M{S}, F85{S}, H4, J27, L43, L62M, N84{S}, 053M{S}, 093{S}, P5{S}

CRASSULACEAE

*Dudleya edulis* - *Mission lettuce* {PL}. The fleshy leaves are eaten raw. Stems are slightly sweet and are refreshing to chew, though often leaving a chalky aftertaste. These plants were considered a delicacy by the Cahuilla Indians. Southwestern North America. CLARKE; F85

*Rhodiola rhodantha* - *Sedum rhodanthum*

*Rhodiola rosea* - *Roseiroot* {S}. Young, succulent leaves and shoots are eaten raw in salads, steamed and served like spinach, pickled, or preserved in oil. The stems can be cooked and eaten like asparagus. Roots are boiled, seasoned with butter, and served with meat or fish. Northern temperate region. ANGIER, FERNALD, GIBBONS 1979, HELLER, UPHOF; A61, A61{PL}, D92M, D95{PL}, N84, 053M, Q24

*Sedum acre* - *Wall pepper, Biting stonecrop* {S}. The leaves are dried and ground for a spicy seasoning. Eurasia, naturalized in North America. D92M, H4{PL}, I37M{PL}, L26{PL}, N42{PL}, N71M, N84, 053M, 093, Q24, Q41

*Sedum reflexum* - *Jenny stonecrop* {PL}. Young leaves and shoots are eaten raw in salads by the Dutch. The slightly astringent sour taste of this plant makes it a useful addition to a tossed green salad. It can also be used as a potherb or added to soups. One of the ingredients of Alexander von Humboldt's favorite soup. Eurasia. LARKCOM1984, LAUNERT [Re], ROOT 1980b, UPHOF; B77, F80{S}, G23D, H4, J37M, N71M{S}, N84{S}, 053M{S}, Q24{S}

*Sedum rhodanthum* - *Queen's crown* {S}. The young shoots can be cut into small pieces and mixed with lettuce for a salad. Young leaves are very acceptable eaten raw or boiled as a potherb. North America. HARRINGTON, H.; A61, A61{PL}, D35G, J93T, N84{PL}

*Sedum roseum* -> *Rhodiola rosea*

*Sedum sarmentosum* - *Tsuru-mannen-gusa, Tollamul* {PL}. Young leaves and shoots are eaten. In Korea, both the leaves and flowers are used in *namul*, cooked side dishes usually seasoned with sesame oil and soy sauce. Eastern Asia. PEMBERTON, TANAKA; G23D, H60, J37M, L26, N42

#### CUCURBITACEAE

*Acanthosicyos horridus* - *Naras, Narra melon* {S}. The fruits have a pleasant, sweet-acid flavor and are eaten fresh or preserved. Seeds, called *butter pits*, are eaten roasted or boiled or stored for later use. The kernel has a soft consistency like butter. They also yield an edible oil. Pulp of the fruit is used to separate casein from milk after being heated. Southern Africa. FOX, E, MENNINGER, UPHOF; F85

*Acanthosicyos naudinianus* - *Herero cucumber* {S}. Fruits are eaten boiled, roasted, or made into pickles. When fresh they are a thirst quencher. Also used as a rennet for curdling milk. The seeds contain 35% protein and are roasted and ground into flour or used in confectionery. Southwest Africa. FOX, F., MENNINGER; N84, S28M \*

*Benincasa cerifera* - \* *Benincasa hispida*

*Benincasa hispida* - *Wax gourd, Winter melon, White gourd, Ash pumpkin, Doan gwa, Tong qua, Petha* {S}. Mature fruits are eaten raw, stir-fried, braised, stuffed, pickled in miso, added to curries and *moon cakes*, or made into sweet pickles, preserves, and sweetmeats. Also used as an adulterant of candied citron. In the classic Chinese dish *tung kwa chung* or *winter melon pond*, the pulp and seeds are scooped out, the cavity is filled with soup ingredients, and the gourd is steamed for 2 1/2 hours. Young leaves, flower-buds, and immature fruits are steamed and eaten or added to stews. Seeds are eaten fried or roasted. Tropical Asia, cultivated. BURKILL, COST 1988 [Cul], DAHLEN [Pre, Cul], HARRINGTON, G. [Cu, Cul], HAWKES [Re], HERKLOTS [Cu, Re], KRAFT, OCHSE, PARMAR, P. [Re], SHURTLEFF 1976, VILMORIN; A79M, C27G{PD}, C82, D33, F73D, G33, G93M, 139, J82, N84, RO

#### CULTIVARS

**Larae Round:** 90 days. Fruits are round in shape, 20 inches in diameter; weight 15 to 20 pounds; skin is light green covered with a white bloom when mature. Fine, white flesh. Very productive plant. Round type wax gourds are very popular in Japan. C20M, D55, K49M, L59, N84, S70

**Oblong:** 90 days. Extra long cylindrical fruits, can be up to 2 or 3 feet long and 20 inches in diameter, weighing about 20 pounds. Oblong wax gourds are widely grown in Taiwan and Southern Asia. D55, N84, S70

**Small:** Small fruits, weighing about 5 pounds. Fine, white flesh. Matures early, therefore it does well in more temperate climates. Good for home gardens and for making *wax gourd pond*. L59

*Benincasa hispida* 'Chieh-Qwa' - *Fuzzy gourd, Hairy melon, Mao qua, Mao gwa, Chieh-kwa, Small white gourd* {S}. Young fruits are cooked and eaten like zucchini in soups, breads, casseroles, stir-fried dishes, etc. Their size and shape are ideal for stuffing, just large enough so that each half makes a single portion. To prepare, the fuzzy coat is removed and the green skin peeled. CHANG, W. [Re], DAHLEN [Cul, Re], HARRINGTON, G. [Cu, Cul], HERKLOTS, TANAKA; A79M, C82, D55, E13G{PR}, F73D, F80, G93M, K20M, K49M, L42, L59, N84

*Cephatandra quinqueloba* - \* *Coccinia quinqueloba*

*Citrullus colocynthis* - *Colocynth* {S}. The fruits, after being boiled repeatedly to remove the bitter principles, are pickled or made into preserves. Seeds are roasted and eaten or ground into flour and used in the preparation of *chapaties*. They also yield an edible oil. Northern Africa, Southern Europe. BHANDARI, HEDRICK 1919, KUNKEL, TANAKA, WATT; D56M, F85, N40M, N84

*Citrullus ecirrhosus* - *Namib tsama* {S}. The nutritious seeds are eaten by Bushmen in remote parts of the Kalahari Desert. Southern Africa. FOX, E; N84, S28M

*Citrullus lanatus* - *Watermelon* {S}. Ripe fruits are cooled and eaten raw, in fruit salads, preserved, or made into wine and pottage. Watermelon juice is a popular item in natural foods stores. Watermelon syrup—the favorite sweetener for baking among Russian Mennonites—was made from a small, syrupy, cream-colored melon called *zuckerarbus*. The syrup was used as a spread, in jam making, and in baking cookies and cakes such as *Kuchen* and *Siaroppspapanat*. Unripe fruits are eaten in soups or pickled in sake lees. In China, the roasted seeds are widely eaten and the fruit pulp is made into jam. Seeds are also ground into flour for breads and cakes, added to soups and stews, pressed for their edible oil, or fermented into *rob heb* and *amilinguwi*. Leaves are used as potherbs or relish. Tropical Africa, cultivated. BHANDARI, CHANG, W., DIRAR 1993, HEDRICK 1919, JOHNS [Cul], MENNINGER, OCHSE, ROSENGARTEN, TANAKA, TREGOLD, UPHOF, VILMORIN [Cu], VOTH [Re]; C27G{DE}, C73P{ED}, F85, H72{DF}, L50M{DF}, N84. (for cultivars see Watermelon, page 570, see also Rootstocks, page 510)

*Citrullus lanatus* ssp. *coiocynthoides* - *Wild watermelon, Tsama, Egusi-ibara* {S}. Seeds can be eaten whole as snacks but are more often dried, stripped of their coats, ground, and used to enrich and thicken sauces, broths, stews, and egusi soup. Cakes of egusi mixed with pepper are sold in West African markets. Fermented seeds are employed as a seasoning for soup or pottage. Roasted seeds, along with peanuts and chilis, are ground into a delicious oily paste called *ose-aji*, eaten with kola nuts, eggplants, or spread on bread. They also yield an edible oil used in salads and cooking. Leaves are cooked and eaten as potherbs. Tropical Africa. FOX, F., OKOLI 1984, VANEPENHUSEN, WILSON, E.G. [Re], ZEVEN; D33, S28M

*Citrullus lanatus* Citroides Group - *Citron melon, Preserving melon, Jam melon* {S}. The rind of the fruit is pickled, crystallized, or made into jams, jellies, sweetmeats, and preserves. Fruit pulp is inedible. BURR, CARCIONE [Re], HAWKES [Re], JOHNS [Cul], TANAKA; B65{PD}, C95, J24M{PD}, R47

#### CULTIVARS

**A Confiture a Graine Verte:** 90 days. A green-seeded type from France. Average weight of fruit is 10 to 15 pounds. K20M

**D'Espaane a Confiture:** 100 days. A red-seeded type that originated in Spain. Average weight of fruit is 10 to 15 pounds. K20M

**Green Seeded:** (Colorado Preserving Melon) 100 days. This is quite distinct from the ordinary preserving melon, the seeds being of light green color. Flesh very firm and solid, with few seeds. Very productive, one vine producing up to 25 fruits. Makes beautiful, clear, nearly transparent preserves. ANONYMOUS 1888; G87, J39

**Red Seeded:** 100 days. Round, light green fruit, marbled and striped with darker shades of green; flesh white with red marks, solid, seedy; seeds red. Will keep until December. Makes excellent transparent preserves, C95, G87, J39, K49M, K71, L88J, PIG

**Red Shine:** 85 days. Small, dark-green fruits with light striping, 6 to 7 inches across; light colored, very firm flesh. The whole melon is cut into chunks and used for making sweet pickles. Widely used commercially for the production of candied fruit, only recently made available to home gardeners. L89

*Citrullus vulgaris* -+ *Citrullus lanatus*

*Citrullus vulgaris* var. *fistulosus* -\* *Praecitrullus fistulosus*

*Coccinia cordifolia* - *Coccinia grandis*

*Coccinia grandis* - *Ivy gourd*, *Scarlet gourd*, *Tindora* {S}. The young leaves and long slender tops of the stems are cooked and eaten as a potherb, in soups, or as a side dish with rice. Young and tender green fruits are eaten raw in salads, boiled, steamed, fried, added to curries, or fermented and added to soups. The ripe, scarlet fruit is fleshy and somewhat sweet and is eaten raw, or it is occasionally candied. Sometimes available at ethnic and specialty food markets. Tropical Asia, cultivated. GRIGSON, J. 1986 [Re], GRIGSON, S. [Re], HERKLOTS, JACQUAT, OCHSE, RAMACHANDRAN [Nu], TANAKA; B60M{PR}, F74{PD}, F85, N84

CULTIVARS {PL}

**Sweet:** A form with mild, sweet non-bitter fruit that is eaten when green and immature. Young leaves and leafy shoots can also be used. Fast growing perennial with tuberous roots. Propagated from stem cuttings as the seed is sterile. H29

*Coccinia quinqueloba* - *Bobbajaankomkommer* {S}. The leaves are used as a potherb. In Malawi they are cooked with peanuts and tomatoes, and are also mixed with pumpkin leaves or *Bidens pilosa* to form a well-liked dish. Southern Africa. FOX, R, MARTIN 1975; N84, S28M

*Colocynthis vulgaris* - *Citrullus colocynthis*

*Cucumis africanus* - *Horned cucumber*, *Jelly melon* {S}. Young leaves are eaten as a potherb. The bitter fruit is occasionally eaten. Southern Africa. FOX, E, MARTIN 1975; F80, N84

*Cucumis anguria* - *West Indian gherkin*, *Bur cucumber* {S}. Young, prickly fruits are peeled and eaten raw, boiled and served with hot pepper sauce, added to soups or made into pickles. The flesh is white, firm, and of a very agreeable cucumber flavor, without the slightest bitterness. In the process of pickling, the spongy flesh absorbs a large quantity of vinegar. Young leaves are said to be edible. Tropics, cultivated. BURR, HAWKES [Cu], HERKLOTS, KUNKEL, UPHOF, VILMORIN [Cu]; D56M, E5T, F60, G57M, I63Z, J20, J73, K71, N84

*Cucumis dipsaceus* - *Teasel gourd*, *Arabian cucumber*, *Ekaleruk* {S}. Seeds are cooked and eaten. Leaves and fruits are also edible. Tropical Africa. KUNKEL, MARTIN 1975, MORGAN, W; F80, F85, N84

*Cucumis melo* - *Melon* {S}. Fruits are eaten out of hand, dried, candied, or made into jams, compotes, jellies, syrups and preserves. Italians traditionally serve melon with *prosciutto* (cured ham) as an appetizer. In the Van region of Armenia, melons are stuffed with rice and meat, then baked. Surplus melons are sometimes converted into molasses and sugar. Seeds are eaten as a snack or blended with fruit juice to form a refreshing drink. In India, a type of *burfi* is made from roasted *chamagaz*—a mixture of peeled melon, cucumber, pumpkin and watermelon seeds. Also the source of an edible oil. Cultivated. CARCIONE, HEDRICK 1919, MENNINGER, PARMAR, P. [Re], RODALE [Cu], TANAKA, UVEZIAN [Re], VILMORIN [Cu], VON BREMZEN; B65{PD}, F85. (for cultivars see Melon, page 422)

*Cucumis melo* ssp. *agrestis* - *Wild melon* {S}. The bitter fruit pulp is edible, and the seeds are collected and eaten. Tropical Africa, naturalized in Southwestern North America. TANAKA, UPHOF, ZEVEN; X54, Z91

*Cucumis melo* Chito Group - *Vine peach*, *Mango melon*, *Vegetable orange*, *Lemon cucumber* {S}. The fruit is the size of an orange or a lemon, yellow or greenish yellow when ripe, with a thin, leathery skin. It is peeled and eaten out of hand, added to fruits salads, or more commonly made into pies, preserves, and marmalades. Unripe fruits are pickled whole. FISHER, TANAKA, UPHOF; B73M, DI 1M, F60, F70, G57M, K49M, K71

*Cucumis melo* Conomon Group - *Pickling melon*, *Tea melon*, *Tsa gwa* {S}. Fruits are eaten raw, preserved, or stuffed with minced meats and then cooked. They are also chopped fine and used to season steamed meat or fish, salads and soups. Both immature and mature fruits are made into sweet or sour pickles, or pickled in shiro-miso. Those pickled in sake lees, called *nara-zuke*, form one of the most expensive and popular pickles sold in Japan. CHANG, W. [Re], HARRINGTON, G [Cu, Cul], HAWKES [Re], HERKLOTS [Re], SHURTLEFF 1975, TANAKA, UPHOF, VON WELANETZ, YAMAGUCHI [Re]; G20M{PD}, L59

CULTIVARS

**Ao-Uri:** (Viridis, Green Melon, Green Striped) 73 days. Medium-sized fruit, 10 to 12 inches long, 4 to 4 1/2 inches in diameter; rind smooth, bright deep-green with distinct slender white stripes; flesh white, thick. Excellent for pickles as well as for cooking. G33, S63M

**Havauma:** (F.) Cylindrical fruits, about 10 inches long and 2 to 3 inches in diameter; dark green skin, mottled and streaked with light green; white flesh. Very good flavor, suitable for eating raw in salads as well as pickling. D55, N84, S70

**Katsura Giant:** Oblong fruit; 14 to 15 inches long, 4 to 8 inches in diameter, slightly tapered at the stem end; skin light green, turning almost white when fully ripe; flesh white, crisp, very thick. Good for pickling. An old favorite. Imported from Japan. C20M, K73, S63M

**Imumame Early:** Cylindrical fruit, 8 to 12 inches long and 2 to 3 inches in diameter. Light green skin turns almost white when fully ripe. Very thick, juicy, crisp flesh with a relatively small seed cavity. Excellent for pickling. Popular in cool northern areas of Japan. C20M, E83T, 139, S63M

**Shima-Uri:** (Variegata, Striped Melon) Rich green fruits with pale green stripes, about 6 or 7 inches long. Good for home gardens and pickling. Popular Japanese pickling melon. D55, N84, S70

**Shiro-Uri:** (Albus, White Melon) 50 days. Long-oval fruit, somewhat club-shaped; 8 inches long, 3 inches at the widest section at full maturity; very light green rind, turns white on maturing. Medium-thick, crisp flesh. Can be harvested when young for the early market. Widely used for *nara-zuke*. YAMAGUCHI; G33, Q39

**Silver Charm:** (F.) 68 days. Slender, straight fruit; 10 inches long, 2 to 2 1/2 inches in diameter; light green skin with few shallow ribs; thin, tender flesh. For salads, pickling and cooking. Vigorous, prolific vine; mosaic and downy mildew resistant. Also tolerant to wet, hot and humid weather conditions. Q39

**Tokyo Earlv White:** Medium fruits, about 10 inches long. Much earlier in maturity than Tokyo Large White. Very good for fresh market and pickling. S70

**Tokyo Lame White:** Large fruit, about 12 inches long; light green, turning almost white when fully ripe. Good for pickling. Very prolific. S70

*Cucumis melo* Dudaim Group - *Queen Anne's pocket melon*, *Pomegranate melon*, *Plum granny* {S}. Small fruits, having a very fragrant, musky aroma, are occasionally used for preserves. Popular in some areas of the South where the rind is said to make excellent marmalade, or pickles similar to watermelon rind pickles. Primarily used as a fragrance material. Has been employed by plant breeders to introduce resistance to foliar disease and to incorporate aroma into the fruit of sweet melons. HEDRICK 1919, UPHOF, VILMORIN; A21, E7M, K20M, L4, N84

*Cucumis melo* Flexuosus Group - *Serpent melon*, *Snake melon*, *Kakri*, *Adzhur* {S}. The fruits, tasting like cucumber, are often crooknecked or coiled. They are refreshing when eaten raw in hot weather. Or they may be added to salads with salt and vinegar, preserved, cooked in curries, or pickled. Seeds are eaten or used in confectionery. CHAUHAN, D., TANAKA, UPHOF, VILMORIN. D11M, F70

## CULTIVARS

**Lucknow Linen:** Long, slender fruit with sweet, juicy flesh. Grown during the hot, dry season in India. S36, S93M

**Mektv White Trailing:** 70 days. Slightly curved fruit, 30 inches long and 3 1/2 inches in diameter; skin creamy white, spineless. Recommended for home gardens and fresh market. Also a good item for specialty and ethnic markets. Monoecious, indeterminate vine. C20M

**Painted Serpent:** (Chinese Sweet and Striped) 65 days. Very long, slim fruits, 11/2 inches in diameter and 18 inches or more in length. Light greenish-yellow skin, overlaid with dark green ribs. Mild, sweet, crisp flesh. Slices into perfect scallop shapes. Long twining vines, best grown on trellises or stakes. G57M, K66, 089, Q34

Cucumis melo Flexuosus Group 'Armenian' - *Armenian cucumber*, *Yard long cucumber* {S}. Fruits are eaten raw or cooked. They are long, ribbed, pale green in color, sometimes coiled in shape, and are easily digested even by those who cannot digest standard cucumbers. The flesh remains crisp and hard even when the fruit becomes soft or flexible. Vines should be trellised if straight fruit is desired. CARCIONE, CREASY 1982; B73M, F60, F80, G33, G68, G83M, H95, 139, J73, 089, R47

## CULTIVARS

**The Duke:** Improved type with bitter-free, crunchy fruits that never get pithy or hollow-hearted. Their texture is juicy and crisp, and the skins do not need peeling. Best harvested at about 12 inches. When cut crosswise, the ridged exteriors form neatly scalloped slices. K66

Cucumis melo Momordica Group - *Phoot*, *Kachra*, *Snap melon* {S}. Fruits are small, smooth, oval or cylindrical, with mealy, somewhat insipid or slightly sour flesh. When young and tender, they are eaten raw or cooked as a vegetable. Ripe fruits are used as a dessert. CHAUHAN, D., WATT; S36, S93M

Cucumis metuliferus - *African homed cucumber*, *Kiwano*, *Jelly melon* {S}. The distinctive fruit is orange-red when ripe and studded with numerous spiny protuberances. The flesh is bright green, translucent, slightly mucilaginous, with a more or less bland flavor. Can be eaten raw, cooked, sun-dried or pickled. Sold in specialty markets in the United States, where it is promoted as having a banana-lime flavor and recommended for use in fruit cups, cocktails, sundaes, parfaits, and drinks. In France, it is used in making a seaweed sorbet. Leaves are sometimes cooked and eaten with peanut butter. Used as a rootstock and a source of resistance to diseases for *C. sativus*. Tropical Africa. FOX, F., MATIGNON [Re], RICHARDSON, J. [Re], TANAKA, TREGOLQ VAN AKEN [Re], ZEVEN; C89{PR}, C95, E13G{PR}, F15{PR}, F80, H53M, J82, N40{PR}, N84, 053M, 093, PIG, P5, R47, S28M,

**Cuke-Asaurus:** Selected strain used at two different stages of development. The young, green fruit is eaten in salads or pickled like a cucumber. Mature fruits, ripening to a yellow-orange color and having the flavor of wild bananas, are marketed as fresh fruits. Introduced by Ismael Gomberoff of Artistic Farms. A62{PR}, A62{PD}

Cucumis prophetarum - *Globe cucumber* {S}. Unripe fruits are pickled like the common cucumber. Ripe fruits are bitter, but are sometimes boiled and eaten. The leaves are edible. Tropical Africa to Arabia. BURR, MARTIN 1975, VILMORIN; X77M

Cucumis sativus - *Cucumber* {DF}. The fruits are eaten raw, in salads, sauteed, marinated, added to stews, stuffed with minced meat, oil-roasted or pickled. In Japan, they are pickled in rice bran. Often mixed with sour cream or yogurt, mint and garlic to form cool refreshing sauces or dips, such as the Indian *kheera raita* or the Greek *tzatziki*. *Kimchi* made from cucumbers is known as *oisobaegi* and *oiji*. *Kurundu*, a Sudanese meat substitute, is made from a local cucumber. Seed kernels are eaten raw or roasted. They yield an oil,

*huile de concombre*, resembling olive oil, used in salads and French cooking. Young leaves and stems are eaten as a potherb. In Indonesia, the steamed leaves are pounded together with rhizomes of galanga, wrapped in banana leaves and roasted. Southern Asia, cultivated. DEVI [Re], DIRAR 1993, FELL 1982b, HARRINGTON, G. [Cu], LARKCOM 1984, OCHSE, STEINKRAUS, TANAKA, UPHOF, VILMORIN [Cu], WOLFERT 1994a [Re]; H72. (for cultivars see Cucumber, page 351)

*Cucurbita argyrosperma* - *Cucurbita mixta*

*Cucurbita ficifolia* - *Chilacoyote*, *Malabar gourd*, *Figleaf gourd*, *Zambo[S]*. Young fruits can be cut and used like a cucumber or zucchini. Ripe fruits are sometimes boiled and eaten with milk and cinnamon, or made into an alcoholic drink. A confection is made from the flesh by boiling it with crude sugar. Seeds are roasted and eaten like peanuts. The fruits will keep for two years or longer, the flesh becoming sweeter with age. Central America, cultivated. BROUK, FRIED [Re], HERKLOTS, LOVELOCK, NATIONAL RESEARCH COUNCIL 1989, TANAKA, WILLIAMS, L.; F80, 116, L55J, N81, N84, 053M, PIG. (see also Rootstocks, page 510)

## CULTIVARS {PD}

**Alcayota:** Unique type with a brittle, cream-colored, easy to peel shell and pulp that separates into crystal white strands resembling shredded daikon, marketed as *du kon* or *vegetable noodles*. The sweet, crunchy "noodles" can be eaten as a fresh salad with dressing, stir-fried, pickled, in tempura, or added to soups and stews. The young green, squash-like form is marketed as *chilagreño*. Developed by Ismael Gomberoff from seed originally collected in the Andean highlands of Chile: Very popular with Asian Americans. UMANA-MURRAY [Re]; A62, N40

**Zambo Grande:** Large-fruited form collected at 11,000 feet in the Andean highlands of Ecuador. Introduced by Oregon Exotics Nursery. 174

*Cucurbita foetidissima* - *Buffalo gourd*, *Calabazilla* {S}. The seeds, containing 30-35% protein and up to 34% oil, are roasted and eaten, ground into a meal for gruel, or pressed for their edible oil. Roots are the source of a starch used as a sweetener or stabilizer, and for making pudding similar to tapioca. Young fruits, although bitter, are sometimes eaten or dried for future use. Flowers are said to be edible after preparation. Southwestern North America. DE VEAUX, KINDSCHER, KIRK, NATIONAL RESEARCH COUNCIL 1975a, NIETHAMMER [Re]; C95, F80, 198M, J25M, N84, R88

*Cucurbita maxima* - *Calabaza*, *Winter squash*, *Pumpkin* {DF}. Fruits are eaten baked, boiled, fried, steamed, mashed, used in pies, breads, cakes, and confectionery, or processed into starch. Seeds are eaten raw, roasted and salted, or ground to a meal. Young stems, leaves, and flowers are cooked and eaten. Leaves contain 5% protein. Southern America, cultivated. DUKE, HERKLOTS, TANAKA, VILMORIN [Cu]; H72, L50M. (for cultivars see Pumpkin, page 497, and Squash, page 528, see also Rootstocks, page 510)

*Cucurbita melanosperma* - \**Cucurbita flcifotta*

*Cucurbita mixta* - *Cushaw*, *Winter squash*. Fruits are eaten boiled, baked, fried and mashed, or made into pies, breads, cakes, candies, etc. They are generally strigry, watery, and less rich in flavor than those of *C. maxima*, *C. moschata*, and *C. pepo*. Widely grown in Mexico for the large, tasty seeds, which are eaten raw, fried, roasted, or ground and used in sauces. In Mexico, the flowers are fried, sometimes with cotton-seed. Central America. ALCORN, BROUK, HERKLOTS, SCHERY, VILMORIN; (for cultivars see Squash, page 528)

*Cucurbita moschata* - *Kabocha*, *Winter squash*. Fruits are eaten raw, boiled, fried, baked, mashed, steamed, stuffed, or used in pies, puddings, soups, breads, cakes, etc. They are sometimes dried, ground into flour and made into bread. Young fruits can be pickled. Mashed butternut squash makes an excellent fat substitute for cakes containing pineapple, orange or apple. Flowers, leaves, and young

stems are eaten as potherbs or added to soups and stews. The oily seeds are eaten raw, or roasted in salt. Central America, cultivated. DUKE, FELL 1982b, HERKLOTS, MORTON 1977, OCHSE, TANAKA, VILMORIN, WOODRUFF [Re]; (for cultivars see Squash, page 528, see also Rootstocks, page 510)

*Cucurbita pepo* - *Summer squash, Rimpkin* {PD}. Young fruits are eaten steamed, boiled, fried, stuffed, in breads, etc. Mature fruits are baked, mashed, pureed, or used in pies, soups, stews, cakes, breads, custards, fruit butters and pancakes. The pulp can be used as a natural fat substitute in pumpkin breads and cakes. Paper-thin slices of zucchini are a popular wrapping for other foods. Seeds are eaten raw, parched, roasted and salted, ground into meal, made into nut butter, nut milks, or pressed for their edible oil. Roasted seeds are known as *pepitas*. *Pepitorio* is a confection, resembling popcorn balls, made of the seeds combined with a heavy syrup. Leaves, young shoots, and tendrils are eaten as potherbs or stir-fried. Flowers and flower buds are eaten boiled, stuffed, added to sandwiches, made into fritters, or dried for later use. Sprouted seeds are used in salads. Central America, cultivated. COLE, C. 1990 [Re], FELL 1982b [Cul, Re], HARRINGTON, G. [Cul], HERKLOTS, LEGGATT [Re], MACNICOL [Re], ROSENGARTEN, ROUTHIER 1993, SAWYER, TANAKA, UPHOF, VILMORIN [Cu], WILLIAMS, L., WILSON, G., WOODRUFF [Re]; C56G, D87D, H72,166, L14G, L50M. (for cultivars see Pumpkin, page 497, and Squash, page 528)

*Cyclanthera explodens* - *Pepino diablito* {S}. The small, protuberance-covered fruits are eaten in salads, pickled or boiled like squash. They often explode when ripe, hence the Latin name. Andean region. NATIONAL RESEARCH COUNCIL 1989, PEREZ-ARBELAEZ; 174,174{PL}

*Cyclanthera pedata* - *Achocha, Korila, Pepino de rellenar* {S}. Young fruits, having the taste of cucumbers, are eaten raw or made into pickles. Mature fruits are cooked with oil and vinegar, added to soups and stews, or stuffed with ground meat or other fillings and baked. Leaves and tender shoots are eaten. Tropical America. DUKE, FRIED, HERKLOTS, NATIONAL RESEARCH COUNCIL 1989, UPHOF, WILLIAMS, L.; 174,174{PL}, N84, P38

#### CULTIVARS

**Fat Baby:** Smaller, thicker fruit than Lady's Slipper. Well suited for use in salads when immature, or for making pickles. L55J, 053M

**Lady's Slipper:** Longer, thinner fruit than Fat Baby. Perfect for stuffing and baking or adding to soups and stews. L55J, 053M

*Fevillea cordifolia* - *Sequa, Antidote vine* {S}. The seeds yield an edible, pleasant tasting oil with an odor somewhat reminiscent of peanut oil. On a weight per fruit basis, the seed oil content of *Fevillea* is apparently higher than in any other dicotyledon and among the highest ever recorded for any plant. Recommended as a commercial oil crop for tropical rain forests. Tropical America. GENTRY; U71M

*Gynostemma pentaphyllum* - *Amacha-zuru, Jiao gu lan* {S}. Leaves and stems are cooked and eaten. The leaves have a sweet taste and are used as tea. *Panta tea*, a popular herbal tea with a rich, slightly smoky flavor, is a mixture of the leaves and toasted rice. Eastern Asia. TANAKA; E48{PL}, F85, H36{DF}, H36{PD}

*Hodgsonia capniocarpa* - \**Hodgsonia macrocarpa*

*Hodgsonia macrocarpa* - *Hodgsonia seed, Lard seed, Akar kapajang* {S}. Seed kernels are eaten after roasting or baking. They are often crushed and cooked together with fish, meat or vegetables. Also the source of an oil used for culinary purposes. The yellow fruits are also edible. Indomalaya, cultivated. MENNINGER, SING, TANAKA, UPHOF, ZEVEN; F85

*Lagenaria leucantha* - *Lagenaria siceraria*

*Lagenaria longissima* - *Lagenaria siceraria*

*Lagenaria siceraria* - *Bottle gourd, Calabash, Lauki, Opo* {S}. Young fruits are eaten boiled, steamed, fried, pickled, added to soups and curries, or made into fritters. They vary in quality, but the carefully selected cultivars of India and China are choice vegetables, as good as summer squashes of the Temperate Zone. Leaves and young shoots are used as potherbs. In West Africa, the seeds are sometimes used in melon soups. A vegetable curd similar to soybean *tofu* can be made from the seeds. They also yield an oil used in cooking. Paleotropics, cultivated. CHAUHAN, D., DAHLEN [Cul, Re], DALZIEL, FOX, F., HERKLOTS, MARTIN 1979 [Cu, Nu]; A79M, B60M{PR}, C20M, E13G{PR}, F85, N40{PR}

#### CULTIVARS

**Early Green Long:** Fruits about 11/2 feet long and 3 1/2 inches in diameter, with the stem end somewhat narrower than the blossom end. L59, L79G

**Larae Lona:** Fruits about 3 feet long and 8 inches in diameter, weighing about 20 pounds. For vegetable use, they should be picked when young. L79G

**Long White Prolific:** Bears a heavy crop of fruits 16 to 20 inches in length and 3 to 4 inches in diameter, but when fully matured the fruits will attain 30 inches in length. An all-season strain. Q45M, S59M

**Medium Long:** 90 days. Bat-shaped, yellowish green fruit, 15 inches long by 3 or 4 inches in diameter. Firm white flesh, sweet and delicious. Used for stir-frying and soup when young. Can be grown on the ground like a pumpkin or along a trellis. Very popular in southern China and Taiwan. D55

**Pusa Summer Prolific Lona:** Large fruits, 1 1/2 to 2 feet long and of very good quality. Best picked when young and tender. An improved cultivar that is a prolific bearer. Suitable for growing in spring and summer. E83T, R0, R50, S59M

*Lagenaria siceraria* 'Clavata' - *Yugao* {S}. *Kampyo*, the dried, ribbon-like, peeled pulp of the fruit, when seasoned with soy sauce, forms one of the essential ingredients of *sushi*, and the Buddhist ceremonial dishes *gomoku-meshi* and *shojin-ryori*. Also called *dried gourd shavings*, they are reconstituted in lightly salted water for 20 to 30 minutes before use. Used for tying foods into rolls, little packages, or bundles, they are simmered until soft and transparent and can be eaten with the rolled food. SHURTLEFF 1975, TANAKA, TSUJI [Pre, Re]; D55, G20M{DF}, G33, N49M{DF}, N84, S63M, S70

*Lagenaria siceraria* 'Longissima' - *Cucuzzi, Cucuzzi caravasi, Italian edible gourd, New Guinea bean, New Guinea butter vine* {S}. The fruits are thin, up to 4 feet long or more, and have a flavor and texture said to be like cooked green beans. Normally harvested when 6 to 25 inches long, under ideal growing conditions they can remain tender up to 5 1/2 pounds. They are eaten steamed, sauteed, stuffed and baked, or coated with an egg-flour batter and fried in hot oil. In Sicily, they are boiled with their tender shoots (*tennerumi*), and are also made into *marmellata di zucca*. For straight, blemish-free fruits, grow on a trellis. DARK, LANZA 1993 [Re]; B73M, C44, C92, D33, E13G{PR}, F80, G93M, H61, 139, J20, K49M, L59, N16, N40{PR}, 089, Q11M, etc.

#### CULTIVARS

**Healing Squash:** Very long fruits, up to 4 feet when mature. When 15 to 18 inches long, half the fruit can be cut off for eating. The remainder of the fruit will "heal" itself and continue to grow, hence the name. Maintained in the family of Edith and Bill Gambrel of Clayton, Georgia for almost 200 years. Originally from Italy. L4

*Lagenaria vulgaris* - *Lagenaria siceraria*

*Luffa acutangula* - *Angled luffa, Cee gwa, Chinese okra, Jhinga* {S}. Young fruits are eaten raw in salads, boiled, steamed, stuffed, stir-fried, coated with batter and fried, pickled, cooked with coconut milk, or added to soups, stews, and curries. In China and Japan, they are sliced and dried before being cooked in broths. Young leaves may be eaten in salads or cooked as greens. Flowers and



flower buds are dipped in batter and sauteed. Mature seeds are roasted, salted, and eaten as a snack. Tropical Asia, cultivated. COST 1988 [Cu, Re], HALPIN [Cu, Cu], HARRINGTON, G. [Cu, Cu], HERKLOTS [Cu], KRAFT [Re], OCHSE, TANAKA; A79M, C82, D55, F80, G93M, K49M, L42, L59, N84

CULTIVARS

**Pina-Ann:** (F.) Long, slender green fruit with 10 angular ridges; ready for harvest when 13 to 14 inches long and 1 1/2 to 2 inches in diameter. Used as a summer squash after the peel is removed. Early, prolific vine; highly tolerant to heat and wet weather. Q39

**Pusa Nasdar:** Light-green, medium size fruit. Mid early plant; flowers in 60 days in summer crop only; bears 15-20 fruits. Recommended for sowing in spring and also during the rainy season. Also used for frame culture. N91, Q45M, R0, S36, S59M

*Luffa aegyptiaca* - \**Luffa cylindrica*

*Luffa cylindrica* - *Smooth luffa*, *Vine okra*, *Dishcloth gourd*, *Dhundhul* {S}. Young fruits are eaten raw in salads like cucumbers, sliced and dried for later use, pickled, or used in soups, stews, and curries. The stem tops, young leaves, flower-buds, and flowers are steamed and served with rice. Seeds are roasted with salt and eaten as a delicacy. Also the source of a cooking oil and a product similar to *tofu*. Tropical Asia, cultivated. HERKLOTS, JACQUAT, MARTIN 1979, OCHSE, TANAKA; A21, B75, C9M, C43M, C43M{PL}, C82, D33, D55, D92M, E13G {PR}, F80, J73, M46, N84, 053M, R47, etc. (see also Rootstocks, page 510)

CULTIVARS

**Long Green:** Cylindrical fruits of excellent quality. Very heavy bearing over a long period of time. R0, S36, S93M

**Satputla:** Also known as "bunch sponge gourd", since it produces up to 7 fruits at one node. R0, S36

**Seven Star:** (F.) Short, cylindrical, light green fruit; 7 inches long, 2 1/2 to 3 inches in diameter; weight 17 1/2 ounces. High quality fruit with very good texture. Vigorous, prolific, early plant; not sensitive to day-length for fruit setting. Especially recommended for long day planting. Q39

**Smooth Short:** 90 days. Round, short cylindrical type Young fruits are harvested for vegetable use when about 6 inches long. L59

*Momordica balsamina* - *Balsam apple* {S}. The fruits are pickled, or after prolonged soaking are cooked or added to soups. Young leaves and tendrils are used as potherbs. Seeds are eaten. Tropics, cultivated. DALZIEL, FOX, E, HEDRICK 1919, WATT; F80, F85, K49M, N84

*Momordica charantia* - *Bitter melon*, *Balsam pear*, *Bitter gourd*, *Foo gwa*, *Karela* {S}. Unripe fruits are eaten boiled, stuffed, fried, pickled, or used in soups, stews, chop suey, and stir-fried dishes. In classic Chinese cuisine, they are prepared with fermented black soybeans. To prepare the fruit, cut in half lengthwise, scoop out seeds and fiber, and parboil or soak in salt to reduce bitterness. Leaves and young shoots are boiled and eaten as a vegetable or added to curries. Tropics, cultivated. CREASY 1982, HARRINGTON, G. [Cu, Cu], HERKLOTS [Cu, Re], KRAFT [Re], OCHSE, TANAKA; A79M, C82, E13G{PR}, F80, G33, G93M, 139, J82, K49M, L42, N40{PR}, N84

CULTIVARS

**Coimbatore Long:** (Coimbatore Long White) Fruits are greenish-white, pale cream in color when ripe, 5 to 8 inches long. Prolific bearer. Most popular cultivar of South India. Usually grown during the rainy season. Developed by the National Seed Corporation of India. R0, R50, S59M, S93M

**Hona Kona:** 80 days. Short, slightly tapered fruit, about 5 inches long. Dark green, relatively smooth skin. Rich bitter flavor. Used in Canton for making various stuffed foods. Plant is susceptible to wind damage; needs to be grown with supports. Very productive. D55, N84

**Moonshine:** (F.) Attractive, ivory-white fruits; 6 inches long, up to 1 pound each. Needs a long growing season. Does well trellised in a cold frame. A second generation hybrid. C20M

**Prodigy:** Oblong-shaped fruit, about 8 inches long and 2 1/4 inches in diameter. Distinctive white skin and flesh. Refreshing slight bitterness. Good for stir-frying; also very tasty in salads. Vigorous, heat-tolerant plant. Suitable for open field growing. S63M

**Taiwan Large:** (Large) 80 days. Large, dark green fruit, 10 inches long by 3 inches in diameter, with a tapering end. Relatively smooth skin. Thick, white flesh. Quality very high. Very popular in Taiwan. Disease resistant plants. A high yielder for planting in spring or summer. D55, L59, N84

**Taiwan White:** (F.) Unique white bitter gourd developed in Taiwan. Top quality, attractive, white-skinned fruits; slightly less bitter than green-skinned types. Has good market appeal and is becoming one of the dominate varieties sold in the supermarkets of Taiwan and the West Coast. D55, N84

**Uchchhe:** (Small Bitter Gourd) Very small fruit, 3 to 4 inches long. Excellent boiled and mashed, sliced and fried crisp, or added to *shukto*. Prolific plant. Sown from February to July in India. BANERJI [Re]; N91, S59M

*Momordica cochinchinensis* - *Spiny bitter melon*, *Bhat karela*, *Fakkao*, *Kantola* {S}. Young, immature fruits are boiled and eaten as a vegetable, stuffed, stir-fried, or cooked in curries. In Vietnam, they are usually cooked with sweet rice to form the popular dish called *xoi gac*. Not as bitter as *M. charantia*, and therefore requires less time soaking in salt. Young leaves and shoots are blanched and served with chili sauce or added to soups. Tropical Asia, cultivated. BISSELL [Pre], BROWN, W., BURKILL, GRIGSON, J. 1986 [Re], GRIGSON, S. [Re], HERKLOTS, JACQUAT, MARTIN 1975, UPHOF, VAN DUONG; F85, N84, Q41

*Momordica dioica* - *Kaksa*, *Kakiol* {PL}. Young, green, spiny fruits are much esteemed as a curry-vegetable. They are quite palatable, rather sweet, and free from bitterness. The tender shoots and leaves, and the roots are also edible. Occasionally cultivated on the Gangetic plain of India for its fruits. Tropical Asia. CHAKRAVARTY, HEDRICK 1919, MACMILLAN; N84

*Momordica grosvenorii* - *Thladiantha grosvenorii*

*Praecitrullus fistulosus* - *Tinda*, *Squash melon*, *Dilpasand* {S}. The young fruits are cooked and eaten as a vegetable, either alone or with lentils, dal, gram, etc. They can also be pickled, candied, or made into preserves. The fruit is at its best for cooking when it can be easily cut with a knife and the seeds have not hardened. It is the most popular vegetable during summer in North India. The seeds are roasted and eaten. Cultivated. CHAKRAVARTY, CHAUHAN, D., TANAKA, WATT, ZEVEN; A79M, F74{ED}, N16, Q45M, R50

CULTIVARS

**Round White:** Globular, whitish fruits produced in great abundance. Sown from February to July in India. S36, S93M

**Summer Prolific Long:** Fruits are best harvested when immature. They should be tender and somewhat hairy. Sown from February to April or during June and July in India. S59M

*Sechium edule* - *Chayote*, *Vegetable pear*, *Mirliton*, *Christophine*, *Chocho* {PL}. Fruits are eaten raw, pickled, sauteed, baked, steamed, stuffed, or made into fritters, sauces, tarts, puddings, sweet-meats, etc. In tropical areas, they are mixed with lime juice and used as a substitute for apples in pies and tarts. The mature, protruding seeds, which might be called *vegetable scallops*, are the best part. Briefly sauteed in butter they have a delicious nutty flavor. When deep-fried, they taste remarkably like french-fried potatoes. Young shoots, leaves, and tendrils are eaten like asparagus. The roots, known as *chinchayote* or *chinta*, are eaten boiled, baked, fried, or candied in syrup. Also the source of a starch. Tropical America, cultivated. BENGHIAT [Cu, Re], FELL 1982b, HALPIN [Cu,

Cul], HAWKES [Re], HERKLOTS [Cu], OCHSE, ORTIZ 1973 [Re], SCHNEIDER 1986 [Re], SHURTLEFF 1979, TANAKA, WILLIAMS, L.; *B60M*{PR}, C82, D35, E13G{PR}, G47F{PR}, H4, K49M, L55J, N40{PR}, N84, S70

#### CULTIVARS

**Perlita:** (Little Pearl) Small, translucent white fruit; firm and dense. Slightly richer and nuttier in flavor than the common light-green chayote offered in supermarkets. Ideal for stuffing or single servings. Two or more should be planted for better production. Originated in Guatemala. D57

*Sicana odorifera* - *Casa banana*, *Melocoton*, *Musk cucumber*, *Zucchini melon* {S}. The ripe fruits, having a pleasant aromatic flavor, are sliced thinly and eaten raw, or made into jams, fudge, preserves and alcoholic beverages. In Nicaragua, they are used to flavor a refreshing drink known as *cojombro*. Unripe fruits are cooked as a vegetable or added to soups and stews. Tropical America. DE CERDAS [ft], DUKE, HAWKES, KENNARD, MACMILLAN, MORTON 1987a [Cu], NATIONAL RESEARCH COUNCIL 1989, UPHOF, WILLIAMS, L.; D26G, D56M, F80, G73, L55J, N40M, N84, 053M, R47, R78M

*Telfairia occidentalis* - *Fluted gourd*, *Fluted pumpkin* {S}. The seeds, having a pleasant almond-like flavor, are eaten roasted, boiled, or ground and used in egusi soup. When thoroughly dried they are powdered and used to thicken soups. They also yield a cooking oil, and are fermented into *ogiri-nm*. Young shoots and leaves are eaten as a potherb, added to soups and stews, or cooked with yam and palm oil. Tropical Africa. CAMPBELL-PLATT, HERKLOTS, MARTIN 1975 [Cu], OKOLI 1983 [Cu], OOMEN, TANAKA, VAN EPENHUHSEN; X82

*Thladiantha dubia* - *Wang kua*, *Tu kua*, *Red bone vine* {PL}. The reddish fruit has sweet succulent flesh that is occasionally eaten. The young spring shoots and the crisp, sweet, starchy carrot-like roots are also edible. China. HEDRICK 1919, TANAKA; 174

*Thladiantha grosvenorii* - *Lo han kuo*, *Buddha's fruit* {DF}. The pulp of the fruit is intensely sweet, owing to the presence of a glycoside, and may have economic potential as the source of a non-caloric sweetener. An extract is made into a refreshing, bottled drink sometimes available at Oriental markets. Widely used in Chinese tonic soups, often combined with *ma tsao* and sweet and bitter almonds. Eastern Asia. HSU, JEFFREY, TAN [Re]; F85{S}, G19P, H36, H36{PD}, L21T

*Trichosanthes anguina* - \**Trichosanthes cucumerina*

*Trichosanthes cucumerina* - *Snake gourd*, *Padval*, *Chichinda*, *Chichinga*, *Snake tomato* {S}. The young fruits are peeled, sliced or cut into pieces, and boiled and eaten like green beans, baked, stuffed, or used in curries, sambals, and stews. The bright red pulp around the mature seeds is extracted and used in cooking, like tomatoes. Leaves and young shoots are eaten. It is the usual practice to tie a small stone to the tip of a developing fruit to ensure that it grows straight. Tropical Asia. GRIGSON, J. 1986 [Re], HEDRICK 1919, HERKLOTS [Cu, Re], MACMILLAN, MARTIN 1975, OKOLI 1984, VAN EPENHUHSEN; A79M, D33, F85,174, J82, K71, N84, N91, P38, R15M, S36, 570, S92

#### CULTIVARS

**Deccan Queen:** Long, narrow green fruit, with or without stripes. Should be grown on a trellis for best results. N91

**Green Stripe:** Broadly cylindrical fruit, tapered on either end; deep green, with 4 or 5 narrow yellowish stripes; about 3 feet long. Should be grown on a trellis for best results. N91

**Extra Long:** (Extra Long Special) Very long, narrow fruits, 3 to 4 feet in length. May also be picked while quite young. Q45M, RO, R50

*Trichosanthes cucumeroides* - *Japanese snake gourd*, *Karasu-uri* {S}. Immature fruits are preserved in salt or miso. Tubers are the source of a starch. Japan, China. TANAKA; 053M

*Trichosanthes dioica* - *Parval*, *Pointed gourd*, *Patol* {PD}. The young, unripe fruits are widely eaten as a vegetable in India. They can be fried, curried, pickled, added to stews, or used in confectionery. In Nepal, they are stuffed with mutton or beef. Similar to tindora but more highly prized, and commanding greater prices. The bitter leaves and tender shoots are used for making soups and stews such as *shukto*. Both striped and unstriped forms are grown. Available fresh or canned at Indian markets. Tropical Asia, cultivated. BANERJI [ft], CHAKRAVAKTY, CHAUHAN, D. [Cu], HEDRICK 1919, MAJUPURIA [Re], REEJHSINGHANI 1975 [Re]; F74

*Trichosanthes kirilowii* - *Chdsen-karasu-uri* {S}. Fruits are eaten. Young budlings are boiled and eaten as a vegetable. Roots are the source of a starch. Eastern Asia. TANAKA; F37T{PL}, F68T, F85, F86G, J82, N84, 053M

*Trichosanthes kirilowii* var. *japonica* - *Ki-karasu-uri* {S}. Fruits are preserved in salt or made into gruel. Seeds are the source of an edible oil. The starch obtained from the roots is mixed with rice or wheat flour and made into rice crackers, dumplings, or noodles. Japan. TANAKA; V29M

#### CUNONIACEAE

*Weinmannia racemosa* - *Kamahi* {PD}. Flowers are the source of an extra light amber, creamy honey that is exported from New Zealand. The sweet, pleasant-tasting fruits are also edible. New Zealand. CRANE 1975, HEDRICK 1919; C3M, G5M, H15T, N84{S}, 053M{S}

#### CUPRESSACEAE

*Callitris quadrivalvis* - \**Tetraclinis articulata*

*Juniperus communis* - *Juniper* {S}. The aromatic fruits are used as a pepper substitute and for flavoring sauerkraut, stuffings, pickling brines, and pates. In Sweden, they are made into a conserve. They are often used in cooking to cut the odor of cabbage and turnips. Roasted berries are used as a substitute for coffee. The dried berries and the oil distilled from them are utilized commercially to flavor *gin*, liqueurs such as *Ginepro*, cordials, meat products, etc. In France, a kind of beer called *genevrette* is made from fermented juniperberries and barley. Tea made from the berries has a spicy, gin-like flavor. *Westphalian ham* is smoked with both juniper twigs and berries. Eurasia, cultivated. BRYAN [Cu, Culi], CAMPBELL-PRATT, CUSUMANO [Cul, ft], GRAY, P. [Cul], GRIEVE, HEDRICK 1919, HENDRICKSON, KNAB, MARGIN, MICHAEL [Pre, Re], MORTON 1976, PAINTER [Re], UPHOF; B55M{DF}, B94, C94M{DF}, E47, F80, *G89M*{PL}, K32M{ffi}, K38, K63G, L17{DF}, L36M{DF}, M35M{PL}, 053M, 093, P5, *Q32*, R53M, etc.

*Juniperus deppeana* - *Juniperus pachyphlaea*

*Juniperus horizontalis* - *Creeping juniper* {PL}. Fruits are roasted and used in the preparation of a coffee-like beverage. Young branch tips are used as a substitute for tea. North America. TURNER 1978; B9M, B94{S}, *G66*{S}, *G89M*, K38{S}, M92, N84{S}

*Juniperus osteosperma* - +*Juniperus utahensis*

*Juniperus pachyphlaea* - *Alligator juniper*, *Sweet-fruited juniper* {S}. The fruits are eaten raw, roasted, or dried, ground into meal, and prepared as mush or cakes. They are purplish, globose, half an inch in diameter and have a sweetish, palatable pulp. Southwestern North America. HEDRICK 1919, KIRK, YANOVSKY; B94, F80, H4{PL}, I83M{PL}, J25M, K38, K63G, L55J, N84, 053M, 093

*Juniperus scopulorum* - *Rocky Mountain juniper*, *Colorado red-cedar* {S}. Fruits are eaten raw, boiled, or roasted. They can be used to flavor meat, imparting a taste somewhat like sage. The fruits and the young shoots have been used to make a kind of tea. Dried fruits are ground into a meal for mush and cakes, or roasted and made into a substitute for coffee: Western North America.

HARRINGTON, H., TURNER 1978; B94, D95{PL}, E47, G66, G66{PL}, 147, 183M{PL}, J25M, J26{PL}, K38, K63G, L55J, L75

*Juniperus utahensis* - *Utah juniper* {S}. Fresh and ground fruits were consumed by the Indians. They were often put into cakes. Ash made from burned twigs is added to blue com products to enhance color, as well as boost flavor and release more nutrients. Southwestern North America. KAVASCH [Re], UPHOF; B94, C43V, N84, 093

*Tetraclinis articulata* - *Arartree* {S}. The tree exudes a resin called *sandarac*, which is distilled into an essential oil used commercially as a flavoring for alcoholic beverages. In Greece, the dried and powdered resin is added to *retsina* and *kokkineli* wines. Northern Africa. BURDOCK, LIPINSKI; Q15G

*Thuja occidentalis* - *American arbor-vitae*, *Northern white cedar* {PL}. The Ojibwe Indians made a pleasantly sweet soup from the pith of the young shoots. Leafy branchlets are sometimes brewed into an aromatic tea. North America. FERNALD, GIBBONS 1966b, HEDRICK 1919; C9M{S}, C33, E47, H49, 14, J16, K38{S}, £75{S}, N71M{S}

*Thuja plicata* - *Western red cedar* {S}. The wood is used for making planks, on which salmon and other foods are oven baked. Foods cooked on the planks retain more of their moisture, and they also acquire a sweet, smoky flavor. The bark is also edible: Western North America. BEAN, A. [Re], HEDRICK 1919; A2, A18{PL}, C9M, C26M{PD}, E87{PL}, E15, F88M, G66, 147, J26{PL}, K38, K43{PD}, K63G, £75, £75{PL}, NO{PL}, 093, etc.

#### CYCADACEAE

*Cycas circinalis* - *Sago tree* {PL}. The trunk and seeds both yield a sago starch, that from the trunk being of commercial importance. Fruits are occasionally eaten. Tropical Asia. HEDRICK 1919, MACMILLAN, MENNINGER [Pie], UPHOF; A41G, C78, 157, K47G, N84{S}, 093, P17M{S}, R33M{S}

*Cycas revoluta* - *Japanese sago-palm*, *Sotetsu* {S}. Seeds are eaten fresh or roasted. Dried and ground to a powder, they are mixed with brown rice and fermented into *date miso* or *sotetsu miso*. After the removal of a toxic principle, the heart of the trunk is sliced and eaten baked or powdered. It also yields a starch from which dumplings are made. These are eaten together with sugar and sweet potato. An intoxicating drink is also made from it. Japan, cultivated. BURKILL, SHURTLEFF 1976, TANAKA, UPHOF; A79M, C9M, C78{PL}, D43{PL}, H4{PL}, K47G, N84, 053M, 093, P5, P5{PL}, R33M

#### CYCLANTHACEAE

*Carludovica palmata* - *Panama hat plant*, *Hat palm* {S}. Young leaves and shoot tips, called *nacunas*, are eaten in salads. They are said to have the flavor of asparagus. The inner portions of the lower leafstalks and the berries are edible. Rhizomes are used as a salad and potherb in various parts of Latin America. The young inflorescences are also consumed. Tropical America. DUKE, KUNKEL; A79M, C9M, F69{PL}, F85, N40M, N84, 053M, 093, P5

#### CYPERACEAE

*Cyperus esculentus* - *Chufa*, *Earth almond*, *Tiger nut*, *Nut-sedge* {PL}. The tuberous roots are eaten raw, boiled, roasted, candied, cooked and added to soups, or used in confectionery, cookies, puddings, ice cream, sherbets, *ras el hanout*, etc. They have an agreeable, slightly sweet, nut-like flavor reminiscent of water chestnuts. Ancient Egyptians cooked them in barley juice to add a sweet taste, then ate them as dessert nuts. In Valencia, Spain, a refreshing beverage called *horchata de chufa* is prepared by mixing the ground tubers with water, cinnamon, sugar, vanilla, and ice. In Ghana, *atawbe milk* is made from the ground tubers, water, wheat flour, and sugar. Roasted tubers are a coffee substitute. Chufa oil is considered to be a superior table oil that compares favorably with olive oil. The base of the plant can be used in salads. Pantropic, cultivated. ANGIER [Re], CLARKE, DOMINGO, FERNALD,

GIBBONS 1966b [Re], HARRINGTON, H., HERKLOTS, ROSENGARTEN, VILMORIN [Cu], WOLFERT 1973 [Cu]; D47M, E50, F73D, F80, G1M, G47J{ED}, H24, K71, L13P{ED}, M34M, Nil, N84

*Cyperus haspan* - *Dwarf papyrus* {PL}. Salt is prepared from the ash of the plant. Made on a small scale by some tribes in Eastern Africa. Pantropic UPHOF, WATT; A54, G85, H30, 190M, K34, K85M, M73, M73M, N3M

*Cyperus longus* - *Galingale* {PL}. Tubers are used as a spice in soups, pies, and sweets. Galingale was one of the favorite spices of the medieval kitchen. It was an ingredient of *pokerounce*, a sort of medieval cinnamon toast. Europe. MABEY [Re]; C74, H30, M73M, N3M, N84

*Cyperus rotundus* - *Coco grass*, *Nut-grass* {PD}. The nut-like tubers are eaten raw, boiled, or roasted. When freshly dug, the flavor is very strong, resembling Vicks VapoRub. If tubers are allowed to dry, they become milder. Also a major ingredient of *Amrit Kalash*. Tropics, Subtropics, naturalized in North America. CRIBB, FERNALD, MEDSGER, MORTON 1977; H14, N84{PL}

*Eleocharis dulcis* - *Chinese water chestnut*, *Matai* {PL}. The sweet, crisp corms are eaten raw, cooked, stir-fried, or dried for later use. Widely used in Chinese dishes, especially chop suey. A flour or starch made from the dried, powdered corms, is used to thicken sauces, and to give a crispy coating to foods that are deep-fried. The plant is used for making salt in Zimbabwe. Tropical Asia, cultivated. ALTSCHUL, CHANG, W. [Re], CREASY 1982, GESSERT, HARRINGTON, G. [Cu, Cul], HEDRICK 1919, HERKLOTS, ROSENGARTEN, SCHNEIDER 1986 [Cul, Re], VON WELANETZ; A54, C27G{PD}, E13G{PR}, G85, H30, 174, 190M, K34, K85M, L14G{PD}, M15, M39, M73, N3M, N40{PR}, etc.

*Eleocharis tuberosa* - \**Eleocharis dulcis*

*Scirpus acutus* - \**Scirpus lacustris*

*Scirpus californicus* - *Totora*, *California bulrush* {PL}. The rhizomes and the peeled, lower twelve inches of the stem are baked and eaten, or dried for later use. North and South America. HEISER 1978; C74, F73, K15{S}, K85M

*Scirpus lacustris* - *Great bulrush*, *Me* {S}. Young shoots are eaten raw or cooked. The pollen can be collected and mixed with meal for making bread, mush, or pancakes. Seeds are ground into a meal and used in the same manner as the pollen. The rootstocks are eaten raw or cooked, and can be made into syrup and flour. Buds at the ends of the rhizomes are crisp, sweet, and excellent eaten raw. Widespread. GIBBONS 1979, HARRINGTON, H., KIRK; D47M, E66M, F88M, G26{PL}, G47M, H30{PL}, J39M, K15, M34M, N3M{PL}, N11{PL}, N84, Q24

*Scirpus lacustris van creber* - *Scirpus validus*

*Scirpus paludosus* - *Alkali bulrush*, *Nutgrass* {S}. Rhizomes were consumed raw or made into a flour for bread. Also the pollen was mixed with bread by several Indian tribes. North America. FERNALD, UPHOF; M34M, Nil

*Scirpus validus* - *Tall bulrush*, *Great American bulrush* {PL}. Young shoots and roots are eaten cooked or preserved in rice bran. The tender base of the stem is eaten raw in salads. Pollen is used in soups and breads. The bruised young roots, boiled in water, furnish a sweet syrup. Seeds are edible. North America. FERNALD, MEDSGER, TANAKA; B9M, B32, C74, D47M{S}, F73, G26, H30, J39M, J39M{S}, J41M, J42, M16

#### CYRILLACEAE

*Cliftonia monophylla* - *Ti-ti*, *Buckwheat bush* {PL}. The flowers yield a red, strong-flavored honey mostly suitable for baking purposes. Southern North America. PELLETT, UPHOF; D95, H4, H14M, K63G{S}, N37M, N84{S}

*Cyrilla racemiflora* - *White ti-ti*, *Leatherwood* {PL}. Flowers are the source of a commercial honey. It is somewhat dark in color, and has a mild flavor. Southern North America. PELLETT, UPHOF; A50, D95, H4, H14M, K63G{S}, M77M, N37M, N84

## DAVIDSONIACEAE

*Davidsonia pruriens* - *Davidson's plum*, *Ooray* {S}. The plum-like fruit, bluish-black when ripe, has soft, juicy, purple flesh with relatively small seeds. Although very acid, when stewed with sugar or made into jam or jelly, it is very enjoyable with a distinctive sharp flavor. Also used for salad dressings, sauces and vinegar. Considered one of the best native fruits of Australia. Australia. CHERIKOFF [Re], CRIBB, MACMILLAN, ROBINS [Cul, Re]; N79{PL}, N79{PR}, 032M{ED}, 094, P38

## DILLENIAEAE

*Dillenia indica* - *Elephant apple*, *Chalta* {S}. Fruits are aromatic, juicy, acid, and are usually used in curries, preserves, drinks, or fermented into vinegar. The fleshy calyx has an agreeable acid taste and is eaten raw or cooked, put in curries, or made into jellies, drinks, and sherbets. Southern Asia. HEDRICK 1919, MACMILLAN, TANAKA; A79M, E29{PL}, F85, N84, 053M, 093, P5, P38, Q12, Q18, Q45M, Q46, R50{PL}, R88

*Dillenia philippensis* - *Katmon* {S}. Fruits are smooth, green, somewhat flattened and sour in flavor. They are used in jellies, preserves, refreshing drinks, curries, eaten with salt or used to flavor other foods. Philippines. BROWN, W., TANAKA, UPHOF; F85, N84

## DIOSCOREACEAE

*Dioscorea alata* - *White yam*, *Air potato*, *Greater Asiatic yam* {PL}. The tuber is eaten boiled, roasted, baked, mashed, fried, made into chips, french fries, flours, *fufu*, or used as a thickener in soups. Bulbils, or aerial tubers, are cooked and eaten in the same manner as the tubers. Pacific Islands, cultivated. HAWKES [Re], HERKLOTS [Cu], MARTIN 1976b [Cu, Nu], OCHSE, SCHNEIDER 1986 [Cul, Re], TANAKA, WILSON, E.G. [Re]; E13G{PR}, L14G{PD}, P38

## CULTIVARS

**Florida:** Compact tubers, produced singly or in pairs; surface nearly free of roots; quality and flavor very good. Early sprouting, early maturity. High yields. Susceptible to leaf-spot disease and nematodes; intermediate resistance to anthracnose. Originated in Puerto Rico by Franklin W. Martin. U7P

**Forastero:** Somewhat irregular tubers, produced singly or in multiples; surface smooth and almost free of roots. Superior cooking and processing qualities. Irregular sprouting, vigorous growth. Excellent yields. Susceptible to leaf-spot disease. Originated in Puerto Rico by Franklin W. Martin. U7P

**Gemelos:** Compact, cylindrical, perfectly shaped tubers; produced in multiples; surface smooth, nearly free of roots. Quality very high. Early sprouting, usually gives excellent yields. Originated in Mayaguez, Puerto Rico by Franklin W. Martin. U7P

*Dioscorea batatas* - *Dioscorea opposita*

*Dioscorea bulbifera* - *Air potato*, *Potato yam* {PL}. Underground tubers are sometimes eaten. Bulbils are more commonly consumed having an agreeable taste. They are eaten boiled, baked, mashed, fried, etc. Produces large numbers of bulbils over long periods of time, making it especially suited to the home garden. Inflorescences are apparently eaten. Tropics, cultivated. HEDRICK 1919, MARTIN 1974 [Cu, Nu], ROOT 1980a, TANAKA; A79M, F85{S}, G73, H4, N84, P38

*Dioscorea cayenensis* - *Yellow yam*, *Guinea yam*, *Attoto yam* {PL}. The tubers have a rough outer skin, the flesh is pale yellow and when cooked is palatable, mealy and dry. Eaten boiled, mashed, roasted, fried, baked, put in soups and stews, made into fritters, etc. A tea is made from the leaves. Tropics, cultivated. ALTSCHUL,

BENGHIAT [Cul, Re], HERKLOTS, TANAKA, WALSH [Re]; U7P, W59M, X51, X56, Z72

*Dioscorea esculenta* - *Lesser Asiatic yam*, *Goa yam*, *Fancy yam* {PL}. Tubers are eaten after being cooked or roasted. The taste is sweet and pleasant, with somewhat the flavor of sweet potatoes or chestnuts. They can be used in soups, stews, mashed and fried as cakes, boiled, baked, etc. Tropics, cultivated. OCHSE, TANAKA, UPHOF; X51, X62, Z72

## CULTIVARS

**Doli:** Good-sized tuber cluster, produces both normal tubers and one oversize tuber. Tubers larger than normal, white-fleshed. Yields only fair. U7P

**Muni:** Good-sized tuber cluster, tends to produce another tuber on the same head. Tubers have good size and shape, white flesh. Good yields. U7P

*Dioscorea japonica* - *Jinenjo*, *Glutinous yam*, *Yama-no-imo* {PL}. The tubers are eaten boiled or baked. Grated, they are called *tororo-imo* and are eaten with vinegar, added to soups, mixed with eggs and served as a topping for noodle and rice dishes, or used as a binding agent for other foods, such as the flour in *soba*. Vine tips are eaten steamed or stir-fried. Bulbils are edible. Eastern Asia. BELLEME 1993 [Re], SHURTLEFF 1975 [Re], SHURTLEFF 1976 [Re], TANAKA, TSUJ, VON WELANETZ; C95, E56{PD}, E66T{PC}, F80, G20M{PR}, H91{ffii}, 160, 174, N7J, N84{S}, P38

*Dioscorea opposita* - *Cinnamon vine*, *Chinese yam*, *Naga-imo*, *Wai shan* {PL}. The tubers resemble *D. japonica* and are used similarly, but have little binding strength. They are eaten boiled, baked, fried, mashed, grated and added to soups, or mixed with vinegar. Often combined in tonic soups with *Lycium barbarum* and *Polygonatum odoratum*. A starch derived from the tubers is called *Guiana arrowroot*. Hardy as far North as Canada. Eastern Asia, cultivated. FELL 1982b, FERNALD, LEE, G., TAN [Re], TANAKA, UPHOF, VILMORIN [Cu]; C43M, E2M{DF}, E7M, E28M, F35M, F37T, F86G, G19P{DF}, H36{DF}, 174, J82, K49M, L21T{DF}, M16, N24M, N84{S}, R49, etc.

*Dioscorea pentaphylla* - *Fiji yam* {PL}. The large tubers are roasted and eaten or added to soups. Male inflorescences and young leaves are occasionally eaten. Tropical Asia, cultivated. HEDRICK, HERKLOTS, OCHSE, WATT; 174

*Dioscorea trifida* - *Cush cash yam*, *Mapuey* {PD}. The flesh of the edible tubers varies from white to purple. They may be baked whole or peeled and cut into pieces for boiling. The cooked flesh is smooth in texture, attractive, and of an unusual rich flavor that is readily appreciated and sufficiently moist in the mouth. Caribbean region, cultivated. HERKLOTS, MARTIN 1978b [Cu, Nu], ORTIZ 1973 [Re]; L14G

*Tamus communis* - *Black bryony*, *Tamoio* {S}. Young shoots are cooked and eaten as a vegetable. In classical times, they were actually preferred over the true asparagus and continued to be popular in areas such as Tuscany for many centuries. In modern Friuli, they are traditionally gathered in the spring and mixed with more than fifty other wild greens in a dish known as *pistic*. In Turkey they are used as stuffing for *boreks*. Eurasia. HEDRICK 1919, LOVELOCK, PAOLETTI, UPHOF, VIARD, WALKER; N84, 053M

## DIPTEROCARPACEAE

*Shorea robusta* - *Sal tree* {S}. Seeds are the source of *sal butter*, used in cooking like ghee and as a substitute for *cocoa butter* in chocolate manufacture. The fruits are occasionally eaten. Southern Asia. BURKILL, TANAKA, UPHOF, WATT; G0{PD}, Q46

*Shorea stenoptera* - *Borneo tallow tree* {PD}. The nuts are the source of a fat, sometimes called *illipe butter*, used as a substitute for cocoa butter in the production of chocolate. Indonesia. TANAKA; GO

## DRACAENACEAE

*Cordyline australis* - *Ti-kouka*, *Cabbage tree*, *Whanake* {S}. Young leaves and shoots are eaten raw or roasted. The roots are sometimes eaten or brewed into an intoxicating drink. New Zealand. COLENSO, FULLER [Re], TANAKA; C9M, E53M, F85, 128{PL}, L91M, M7M{PL}, N84, 053M, P5, P17M, Q32, Q41, R33M, S43M, S92

*Cordyline fruticosa* - 77, *La'i*, *Andong* {S}. The root is high in sugar and when baked it has a flavor not unlike that of molasses candy. This confection can be eaten or used to sweeten puddings and other foods. Roasted roots are fermented in water and then distilled into an alcoholic beverage; *okolehao*. Young leaves are eaten as a potherb. In Hawaii, they were used for wrapping poi, limu, fish, fruits, and *lulau*, a dish of taro and pork cooked in an underground oven. Tropical Asia, Oceania. DEGENER, GIBBONS 1967, HEDRICK 1919, JOSSELYN, OCHSE, ROUTHIER 1993 [Re], WALDRON [Re]; A28{PL}, A79M, F85, H49{PL}, 133, N84, 093, P5, Q32, Q41, R33M

*Cordyline terminalis* -> *Cordyline fruticosa*

*Dracaena angustifolia* - *Semar*, *Sudji* {S}. Very young leaves are cooked and eaten as a side-dish with rice. More often they are pounded and mixed with water to yield a juice that is used for giving green color to an Indian pastry made of glutinous rice. Roasted fruits are eaten in the Andaman and Nicobar Islands. Tropical Asia. BHARGAVA, BURKILL, OCHSE; F85

*Pleomele angustifolia* - *Dracaena angustifolia*

## DROSERACEAE

*Drosera rotundifolia* - *Roundleaf sundew* {S}. The juice is used to curdle milk. The curds and whey that are produced are apparently consumed directly. In Italy, the herb is mixed with brandy, raisins and sugar and fermented into a cordial known as *Rossolis*. Northern temperate region. FERNALD, GUNDA, HEDRICK 1919, SCHOFFIELD; B91P, I37M{PL}, J8, J8{PL}, K26M{PL}, N84, 042, 042{PL}, Q41, S28M, R88

## EBENACEAE

*Diospyros digyna* - *Black sapote*, *Chocolate pudding fruit* {PL}. The fruit pulp is soft, rich, dark chocolate brown in color and somewhat sweet. It is best eaten mashed with a little orange, lemon, or lime juice and then chilled before serving. Also used in preserves, pies, ice cream, cakes, and other desserts, or fermented into a brandy-like beverage. Central America, cultivated. MORTON 1987a, MOWRY, POPENOE, W. 1920 [Cu, Pro], QUINTANA 1986 [Re], RICHARDSON, M. [Pre, Re]; A41G, B60M{PR}, D57, E29, H53M, 112, 183M, M17, N84{S}, 019{S}, P38{S}, Q93  
CULTIVARS {GR}

**Bernecker:** An improved cultivar that is popular in Australia, Florida and Hawaii. Medium to large, nearly spherical fruit; usually with few seeds, only 1 or 2. A prolific producer. Originated in Homestead, Florida by Don Bernecker. E8M, Q93

**Cuevas:** An unusual seedless cultivar. Roundish, green-skinned fruit; sweet, dark brown to black flesh. Handsome, evergreen tree with shiny, dark green leaves, resistant to wind. E8M

**Maher:** Very large fruit, flattened at both ends, average weight 24 ounces; quality good to very good. Usually with few seeds. Prolific, self-fertile tree. Originated in West Palm Beach, Florida in the 1960's or 1970's, in the yard of a Rare Fruit Council member. Q93

**Reineke:** Very large, oblate fruit, often weighing 2 to 2 1/2 pounds; quality good to very good. Requires cross-pollination with another tree for best yields, although the fruits will be seedier. Originated in Florida. Q93

*Diospyros discolor* - *Mabolo*, *Velvet apple*, *Butter fruit* {S}. Fruits are eaten fresh as dessert or in salads, and are fried in butter as a vegetable. They are apple shaped, with a velvety, reddish-brown

skin. The flesh of ripe fruits is white or cream colored, mealy, aromatic, and somewhat sweet. In the Philippines, the unripe fruit is preferred, being crisp like an apple but juicier and sweeter. Tropical Asia. JOHNS [Cul], KENNARD, MORTON 1987a, POPENOE, W. 1920, STURROCK, TANAKA; E29{PL}, F85, M17{PL}, N84

*Diospyros ebenaster* -> *Diospyros digyna*

*Diospyros kaki* - *Japanese persimmon*, *Kaki* {S}. Fruits are eaten fresh, dried or after being frozen on the tree by a frost. Used in pies, puddings, cakes, breads, cookies, ice cream, and many other desserts. Koreans used the dried fruit to make a delicious, spicy, syrupy punch called *sujonggwa*. Non-astringent varieties can be sliced and tossed into a green salad. Leaves are used to improve the flavor of pickled radishes. The peel can be powdered and used as a sweetener. Roasted seeds have served as a coffee substitute. Asia, cultivated. GRAY, P. [Cul], GRIFFITH [Pre, Re], MORTON 1987a, NOH [Cul, Re], POPENOE, W. 1920 [Cu, Pro], SCHNEIDER 1986 [Cul, Re], TANAKA; G66, G73, H4{PL}, K38, K63G, N84, 053M, P5, P17M, P38, Q32. (for cultivars see Persimmon, page 481)

*Diospyros lotus* - *Date plum* {S}. The fruits are the size of a cherry, yellow in color, changing to blue-black when ripe. They are eaten fresh, dried, or over-ripe (bletted), like the medlar. Dried fruits are sweet, with somewhat the flavor of dates. Also used as a rootstock for *D. kaki*. Asia, cultivated. HEDRICK 1919, UPHOF; G66, G73, G73{PL}, H4{PL}, K38, K63G, N71M, N84, 093, R78

*Diospyros mespiliformis* - *Rhodesian ebony*, *Jackal berry* {S}. Pulp of the fruit is very sweet and is eaten raw, made into preserves, dried for future use or fermented into an alcoholic beverage. It is said to have the flavor of guavas. The Hausas use it for making a soft toffee, called *ma di*. Tropical Africa. FCX, F., TANAKA, TREGOLD, UPHOF; F85, M17{PL}, N84

*Diospyros texana* - *Black persimmon*, *Texas persimmon*, *Sapote prieto* {S}. The small fruits are black when ripe, with a soft, very sweet flesh that stains the tongue black. They can be eaten fresh or dried. Southwestern North America. HEDRICK 1919, MEDSGER, RILEY 1976; ^79{PL}, B94, H4{PL}, N84

*Diospyros virginiana* - *American persimmon* {S}. Fruits are eaten raw or dried, in cakes, breads, pies, puddings, tarts, jams and pancakes or fermented into beer, wine and vinegar. Molasses can be made from the pulp. A tea made from the leaves tastes like sassafras and is high in vitamin C. Roasted seeds are used as a coffee substitute. North America, cultivated. FERNALD, GIBBONS 1962, GRIFFITH; A80M{PL}, A82{PL}, B94, C9M, D26, D26{PD}, D95{PL}, G66, H4{PL}, K38, K63G, N0{PL}, N37M{PL}, N84, 053M, etc. (for cultivars see Persimmon, page 481)

*Diospyros whyteana* - *Bladder nut* {S}. Fruits are edible. The seeds are used as a coffee substitute. Southern Africa. FOX, F., KUNKEL; F85, N84, 053M, S28M

*Euclea crispa* - *Blue guarri* {S}. The fruits are pleasantly sweet and are eaten or chewed as a nibble. Leaves are also edible. Southern Africa. FOX, E, KUNKEL, TREGOLD; N84

## EHRETIACEAE

*Bourreria ovata* - *Oval-leaf strongback* {PL}. Ripe fruits are edible although not very palatable. In the Bahamas, a tea is made from the bark. Also one of the principal ingredients of Jamaican *roots tonic* or *roots drink*, a delicious blend of various roots and herbs. Southeastern North America. ALTSCHUL, MORTON 1977; D87G

*Cordia abyssinica* - *Cordia myxa*

*Cordia alliodora* - *Laurel negro* {S}. The fruits are used as food by a number of Indian tribes. According to Kunkel, the bark is used as a condiment. Tropical America. KUNKEL, UPHOF; A79M

*Cordia dichotoma* - *Clammy cherry*, *Thanapet*, *Lasora* {S}. The sticky, mucilaginous fruit is eaten or used for making pickles. Unripe fruits are cooked as a vegetable or salted and made into paste or cakes. Flowers, leaves and seeds are also eaten. Southeast Asia. ALTSCHUL, CRTOB, MARTIN 1975, MENNINGER, SINGH, S., TANAKA; F85, N84, 094, Q12, Q18, Q46, R15M

*Cordia myxa* - *Sebestan*, *Sapistan plum*, *Assyrian plum* {S}. Ripe fruits have a sticky, mucilaginous pulp that is mixed with honey to make a sweetmeat called *alewa*, or to sweeten gruels and porridges. Unripe ones are eaten as a vegetable or pickled. The kernel is eaten, tasting somewhat like a filbert. Flowers and leaves are used as vegetables. Tropics, cultivated. DALZIEL, GRIGSON, J. 1986, HEDRICK 1919, MARTIN 1975, MENNINGER, TANAKA; N84, P17M, P38, R50{PL}

*Cordia sebestena* - *Geiger tree* {S}. Ripe fruit is eaten raw, boiled, or pickled. It is somewhat fibrous and not particularly sweet. Tropical America, cultivated. MORTON 1977, TANAKA; C95, F85, N84, 093, P5, P17M

*Ehretia acuminata* - *Koda tree*, *Puna* {S}. Fruits are the size of a pea, red-orange in color, and insipidly sweet. They are eaten raw when ripe. The unripe fruits are pickled. China, Himalayan region. HEDRICK 1919, WATT; N84, P5, Q46

*Ehretia buxifolia* - \**Ehretia microphylla*

*Ehretia microphylla* - *Philippine tea*, *Pala* {S}. Leaves are used as a substitute for tea in parts of the Philippines. The fruit is also edible. Tropical Asia. TANAKA, UPHOF; F85

#### ELAEAGNACEAE

*Elaeagnus angustifolia* - *Russian olive*, *Oleaster* {PL}. Yellow fruits are dry, mealy, and somewhat sweet. They are eaten fresh, or made into jellies, sherbets, wine, etc. Mediterranean region to Southwest Asia, cultivated. HEDRICK 1919, SIMMONS 1972; C9M{S}, C33, D95, E87, F80{S}, G16, H4, J16, K38{S}, K63G{S}, N24M, 053M{S}

*Elaeagnus angustifolia* var. *orientalis* - *Trebizond date*, *Senjed*, *Igde* {PL}. The fruit is similar to the above, but of much better quality, almost melting in one's mouth. It is eaten fresh, dried, or stewed in milk. In Iran and Afghanistan, it is one of seven fruits made into a festive fruit compote called *haft miveh* or *miwa nauroze* served at the traditional New Year (Norouz), on the first day of spring. Sold in local markets of Turkey and surrounding areas. Western Asia. BATMANGLU [Re], OZTURK, REICH, SABERI [Re], SIMMONS 1972, TANAKA.

#### CULTIVARS {GR}

**King Red:** Large, burgundy-red fruits, up to 1 inch long; produced in autumn. Grows to 30 feet tall with ornamental, silvery foliage. Very tolerant of alkaline soils, drought, and extreme heat and cold. Hardy to Zone 4. A new introduction from the New Mexico experiment station, from seeds collected in Afghanistan in 1958. REICH; C54, D95, H78, 174, N24M

*Elaeagnus argentea* - \**Elaeagnus commutata*

*Elaeagnus commutata* - *Silverberry*, *Gin'yo-gumi* {S}. The dry, mealy fruits may be eaten raw or cooked. They are good when used in soup and make an excellent jelly. Alaskan Indians fry them in moose fat. North America. FERNALD, HELLER, KIRK; D95{PL}, E7M, E87{PL}, G66{PL}, 147, K38, K63G, M35M{PL}, N71M, N84, 053M

*Elaeagnus latifolia* - *Bastard oleaster*, *Wild olive* {S}. When ripe the olive-shaped fruit is pale red or cherry colored and is acid or somewhat astringent. Cooked and sweetened with sugar, it makes a very agreeable compote. Also used in cakes and tarts. Tropical Asia. HEDRICK 1919, TANAKA; P38, Q46

*Elaeagnus multiflora* - *Goumi*, *Natsu-gumi*, *Longipe bush*, *Mu-pan-hsia*, *Cherry elaeagnus* {S}. Ripe fruits are reddish-orange, juicy, pleasantly acid and are sometimes eaten out of hand. Usually

made into pies, tarts, jellies, sauces, wine, etc. China, Japan. BRYAN [Cu, Re], SIMMONS 1972 [Cu]; H4{PL}, I74{PL}, I83M{PL}, J61M{PL}, K63G, K67{PL}, M16{PL}, N71M, 093, P49, R78

#### CULTIVARS {GR}

**Sweet Scarlet:** Large, attractive red fruit with a very good flavor. Medium-sized shrub; 6 feet by 6 feet; self-fertile. Will bear fruit 2 to 3 years after planting. Selected at the Kiev Botanic Garden, Ukraine. E87, H49, I49P, I66T

*Elaeagnus orientalis* - \**Elaeagnus angustifolia* var. *orientalis*

*Elaeagnus philippensis* - *Ungaro* {PL}. The fruits are pink to pale red, juicy, tart-sweet, and pleasant to eat out of hand when fully ripe. Also used to make a highly-colored jelly. Philippines. MOWRY, STURROCK; C95, E29, 183M, N84{S}

*Elaeagnus pungens* - *Nawashiro-gumi* {S}. Fruits are edible. Usually manufactured into jam, soft drinks, liqueurs, etc. Japan. TANAKA; C9M, F85, H4 {PL}, K63G, N84, 053M, Q15G

*Elaeagnus umbellata* - *Autumn olive*, *Aki-gumi* {PL}. The ripe fruits are bright red when ripe, juicy, pleasantly acid, and good to eat out of hand. They are also used dried, or made into jams, sauces, preserves, and pies. China, Japan, cultivated. TANAKA; A91, B9M, C11M, F51, F80{S}, G66{S}, H4, 14, I47{S}, J16, J26, K63G{S}, N24M, 053M{S}, Q46{S}, etc.

#### CULTIVARS {GR}

**Brilliant Rose:** Has one of the largest fruits of any improved variety. Good flavor. Attractive shrub, to 15 feet tall; silver foliage; fragrant, yellow flowers; produces great quantities of fruit. F43M

**Sweettart:** Sweet tasting fruit with a wonderful tart undertone. Should be left on the tree until completely ripe before harvesting. Attractive shrub with fragrant flowers. Hardy in Zones 4 to 7. F43M

*Hippophae rhamnoides* - *Sea buckthorn*, *Sea berry*, *Tsarap* {S}. Acid fruits are very high in vitamins C and A. They are eaten with milk and cheese, or made into sauces, marmalade, syrup, and jelly. The juice can be preserved in honey and used as an addition to fruit preserves, as a sweetener for herbal teas, or as a basis for liqueurs. Common in European health food stores. Eurasia. HEDRICK 1919, LAUNERT [Nu], SIMMONS 1972 [Cu], TANTTU; B94, F43M{PL}, G66, G66{PL}, H49{PL}, I66T{PL}, K38, K64{PL}, M35M{PL}, N71M, 053M, Q46, R53M{PL}

#### CULTIVARS {GR}

**Dorana:** Excellent home garden cultivar. Medium-sized fruit that turns deep orange when ripe; especially high in Vitamin C; will remain on the bush for most of the winter if not harvested. Early bearing and very productive plant; compact growth habit. Developed in the former East Germany. B74, 146, I49P

**Fruanaa:** Mild flavored fruits that begin to ripen in early August in Oregon. Should be harvested early as the flavor of the fruit begins to decline after September. Long fruit stems that facilitate hand harvesting. Very upright, strong and open growth habit; generally planted 8 to 10 feet apart. Developed in the former East Germany. D37, 146, I49P, I66T, 174

**Herqo:** Round, yellowish-orange fruits, high in Vitamin C, used for sauces and jelly. The juice is sour but has an orange-passionfruit-like flavor when sweetened. Ripens in mid-August, or midseason. Upright bushes produce plentiful quantities of fruit; should be spaced 4 to 6 feet apart. Commercial cultivar developed at a breeding station in the former East Germany. 146, I49P, I66T, 174, J61M

**Lei kora:** Large, bright orange fruits produced in great abundance. Will generally start bearing when two years old. Begins ripening in September, and fruits remain on the branches well into winter. Compact plants can be spaced 5 to 8 feet apart. Fruit-laden branches can also be used in florist displays. Developed in the former East Germany, by a team headed by Hans-Joachim Albrecht. A91, B74, I49P, I66T, 174, M77, P68M

**Male:** Used as a pollinator for female cultivars. One male will pollinate up to eight females. Should be planted close enough to female plants to allow for wind-blown pollination. A91, B74, D37, H49, I49P, I66T, 174, J61M

**Pollmix:** Male cultivar selected as being the best suited for pollinating Leikora. Grows 4 to 5 feet tall and 5 to 6 feet wide. Selected by the Berlin Nursery of the former East Germany. M77, P68M

*Hippophae salicifolia* - *Willow-leaved sea buckthorn* {S}. The ripe fruits are rather acid when eaten raw but make delicious jellies and syrups. They are very rich in Vitamin C and many other vitamins and minerals. Himalayan region. TANAKA, WATT; D95{PL}, G66, Q40, R49{PL}

*Shepherdia argentea* - *Silver buffalo-berry*, *Nebraska currant* {PL}. The fresh fruits are tart but pleasant and are eaten raw, cooked or dried for winter use. Also used to make jelly, sauce, pies, preserves, soups and drinks. North America. GIBBONS 1979, HARRINGTON, H. [Re], KINDSCHER, TURNER 1979 [Nu, Re]; A91, C33, D65, D95, E67T, F43M, G5M{PD}, H49, I47{S}, 174, J25M{S}, J26, K38{S}, K64, L27M, M35M, N84{S}, etc.

*Shepherdia canadensis* - *Russet buffalo-berry* {S}. The bitter fruits are eaten dried, smoked or pressed into cakes. Also made into jelly and a lemonade-like drink. An Indian confection, *Indian ice cream*, is made by beating the berries in water until a foam is formed, then adding sugar. Small amounts of saponin in the fruits cause the foaming action. North America. FERNALD, HARRINGTON, H., HELLER, TURNER 1979 [Nu, Re], UPHOF; C55{PL}, D95{PL}, E66M, F88M, G66, 147, I74{PL}, J26{PL}, K63G, M35M{PL}, N84

#### ELAEOCARPACEAE

*Aristotelia chilensis* - *Chilean vineberry*, *Maqui* {S}. The small fruits are eaten raw, having the flavor of blueberries. Much esteemed in some areas of Chile. Also used for juice or brewed into a wine, called *tecu* by the native Indians. Chile. HEDRICK 1919, TANAKA, UPHOF, VALENZUELA; N84

*Elaeocarpus bancroftii* - *Johnstone River almond*, *Kuranda nut*, *Kuranda quandong* {S}. The kernel of the very thick and hard nut is eaten raw. Its flavor has been variously described as comparable to that of a coconut, inferior to that of the commercial almond, as delicate as a filbert, or just plain delicious. Australia. CRIBB, MENNINGER; F85

*Elaeocarpus grandis* - *Blue quandong*, *Silver quandong* {S}. Thin layer of fruit pulp is eaten, either out of hand, or by squashing the flesh and mixing it with water to make a paste which is then eaten raw. Australia, Fiji. ALTSCHUL, CRIBB; F85, N79M, 094, P5, P38, Q32, R33M

*Elaeocarpus serratus* - *Ceylon olive*, *Wild olive*, *Veralu* {S}. Fleshy, subacid fruits can be eaten raw. They are also used in drinks and curries, or they are pickled in the manner of olives. Southern Asia. MACMILLAN, TANAKA, UPHOF; F85, P38

*Muntingia calabura* - *Strawberry tree*, *Panama berry*, *Jamaica cherry*, *Capulm* {PL}. The fruits, about half an inch in diameter, have a sweet, juicy flesh that is very good to eat out of hand. They are also used in jams, tarts, pies, or added to cold cereal like blueberries. There are both red and yellow fruited forms. Fruits have a high vitamin C content. An infusion of the leaves is used as a tea. Tropics, cultivated. HEDRICK 1919, KENNARD, MORTON 1987a, STURROCK [Nu]; F85{S}, G2M, 112, N84{S}, Q93, R50

#### EMPETRACEAE

*Empetrum atropurpureum* - *Purple crowberry* {S}. Fruits are watery, with a mildly medicinal flavor that is improved by freezing. They are usually eaten cooked with the addition of sugar and an acid fruit, such as the cranberry. In puddings they make a good substitute for currants. Also fermented into an alcoholic drink. Eastern North America. FERNALD, GIBBONS 1979; Z25M

*Empetrum hermaphroditum* - *Empetrum nigrum* ssp. *hermaphroditum*

*Empetrum nigrum* - *Crowberry*, *Curlewberry*, *Moss berry* {S}. Watery fruits are used in drinks, puddings, pies, jellies, ice cream, or made into wine. The Eskimos dry or freeze them for winter use. They thaw the frozen berries and mash them together with seal oil or whale blubber to produce a kind of pudding. In Iceland they are made into a beverage with sour milk. The twigs are brewed into a tea. Northern temperate region. HELLER, SIMMONS 1972 [Cu], TURNER 1979 [Re], UPHOF; A15M{PB}> D95{PL}, N84, 053M, Q24, R53M, R53M{PL}

*Empetrum nigrum* ssp. *hermaphroditum* - *Mountain crowberry* {PL}. Fruits are edible, being similar to *E. nigrum*, except the flowers are bisexual. Therefore, only one tree is needed for fruit production. Northern temperate region. SIMMONS 1972; K79

*Empetrum rubrum* - *South American crowberry* {S}. Fruits are eaten in Antarctic regions. Supposed to have tonic properties. Chile, Patagonia, Falkland Islands. UPHOF; N74

#### EPACRIDACEAE

*Styphelia triflora* - *Pink five corners* {S}. The fruits have a sweetish flesh around a large seed. They are edible. Australia. CRIBB, UPHOF; N79M

*Styphelia viridis* - *Five corners* {S}. The tasty, sweetish pulp of the fruit is eaten out of hand. CHERIKOFF; Australia. R47

#### EPHEDRACEAE

*Ephedra distachya* - *Sea grape* {PL}. The reddish fruits are eaten when ripe. They have a succulent or mucilaginous texture, and are somewhat sweet in flavor or slightly acid and pungent. Eurasia. HEDRICK 1919; N84{S}, R49

*Ephedra nevadensis* - *Mormon tea*, *Squaw tea*, *Nevada jointfir* {S}. A pleasant tea is prepared by steeping the green or dried twigs in boiling water until they turn an amber or pink color. The seeds are roasted and ground into flour to make a bitter bread or mush. Western North America. CLARKE, GIBBONS 1979; A61{PL}, C43M{PL}, D95{PL}, E14T{DF}, E61{PL}, E66M, F68T, F63M, F80, I47, J25M, J25M{PL}, J82, K15, K18M{DF}, N84, etc.

*Ephedra viridis* - *Green ephedra*, *Mormon tea* {PL}. The twigs are broken into small pieces and brewed into a tea. In some parts of Utah, Nevada and Arizona, they add sugar, lemon juice or strawberry jam. Roasting the twigs before brewing the tea is said to improve its flavor. Seeds are roasted and eaten or ground into a meal or flour. Western North America. HARRINGTON, H., KIRK; A2{S}, A61, C43M, C43M{S}, D95, E66M{S}, E67T, I47{S}, J76, J82{S}, K63G{S}, L90J

#### EQUISETACEAE

*Equisetum arvense* - *Horsetail*, *Sugina* {PL}. The young spore-bearing stems, known as *tsukushi* in Japan, are boiled and eaten as a potherb, salted, dressed with miso, added to scrambled eggs, baked and served with soy sauce, or made into tsukudani. They have a distinctive flavor when prepared with soy sauce, somewhat reminiscent of seafood. Sometimes available in Japanese markets. The Kiowa Indians used the base of the plant for food. Northern temperate region. HARRINGTON, H., TANAKA, UPHOF, YASHIRODA; C43M, E48, F37T, F93G, K22, L94M

#### ERICACEAE

*Andromeda glaucophylla* - *Bog rosemary* {PL}. The leaves are used to brew a delicious, aromatic tea. Boiling or steeping is said to extract a harmful toxin, andromedotoxin. A safer method would be to place the leaves in a jar of water and set it in direct sunlight to make "sun tea". North America. FERNALD; A65, B9M, C76, D95, L26, M92

*Andromeda polifolia* - *Andromeda glaucophylla*

*Arbutus menziesii* - *Pacific madrone*, *Madrona* {S}. The attractive fruits may be eaten raw, boiled or steamed. After boiling they can be dried and stored for future use. Source of a rare, medium-colored honey with a rich, candy-like flavor. Western North America. HEDRICK 1919, KIRK, PELLETT; A2, B74{PL}, B94, C9M, D96, E15, F88M, G60{PL}, G66, H47{PD}, I98M, I98M{PL}, K63G, N84

*Arbutus unedo* - *Strawberry tree*, *Killarney strawberry* {S}. The sweet, somewhat mealy fruits are eaten raw, preserved, used in sherbets, or made into syrup, wine, *aguardente*, liqueurs, or a cider-like beverage. In Portugal there is a large-fruited form grown from seeds which is sold in the markets. Source of the famous *miele di corbezzolo* of Sardinia, a rare chestnut-colored honey that is highly esteemed for its pungent, spicy flavor featuring overtones of peppery mint or menthol. Mediterranean region. ANDERSON, J., BIANCHINI, HEDRICK 1919, ISRAEL, KUMMER, SIMMONS 1972 [Cu], UPHOF; A79M, B94, C9M, G66, J61M{PL}, K63G, L91M, N84, 053M, P5, Q32

## CULTIVARS {GR}

**Melita:** Large fruits, 1 to 1 1/4 inches in diameter; sweet, juicy and delicious when picked fully ripened on the tree; slightly gritty. Slender, upright shrub with little branching. Ripens in the fall; continues to ripen for about a month after Werner finishes. Originated in Walnut Creek, California. ISRAEL; T49M{SC}

**Werner:** Large fruits, 1 to 1 1/2 inches in diameter, of fine flavor. Rounded to upright shrub, reliably produces good crops of fruit. Ripens in October and November in Southern California, 2 to 3 weeks earlier than Melita. Originated in Santa Cruz, California. ISRAEL; T49M{SC}

*Arctostaphylos Columbiana* - *Columbia manzanita* {S}. Fruits are eaten fresh, cooked, or made into jelly or a cider-like beverage. It is best to harvest the fruit when slightly underripe, as fully mature pulp becomes mealy. Northwestern North America. ALDERMAN 1975; A2, B94, F88M

*Arctostaphylos glauca* - *Great-berried manzanita* {S}. Fresh fruits are eaten raw or made into jelly and a beverage that resembles cider in flavor. Dried ones are ground into flour. Southwestern North America. CLARKE [Re], YANOVSKY; B94, F85, G60{PL}, I98M{PL}

*Arctostaphylos patula* - *Greenleaf manzanita* {S}. The ripe fruits are pleasantly acid, the taste being similar to that of green apples. They are used for making jelly and cider. Western North America. MEDSGER; B94, C43V, D95{PL}, D96, F85, G0{DF}, G60{PL}, G66, G73, I47, K38, K63G, L3J, N84, 053M, etc.

*Arctostaphylos stanfordiana* - *Stanford's manzanita*, *Myacoma manzanita* {PL}. The yellowish-brown fruits, when dry, are said to be more flavorful than those of other manzanitas. California. B94{S}, G60, I98M

*Arctostaphylos uva-ursi* - *Bearberry*, *Kinnikinnik* {PL}. Fruits are bland and mealy and are usually eaten cooked, preserved, or made into jellies, jams, marmalades, sauces and pastes. The dried leaves are used as tea in some parts of Russia, called *Ku'ai tea* or *Caucasian tea*. Northern temperate region. FERNALD, FREITUS [Re], GIBBONS 1966b, HARRINGTON, H., UPHOF; A50, C33, D95, E15{S}, G60, I47{S}, J25M{S}, J26, K63G{S}, K75M, N84{S}, 053M{S}, R47{S}

## CULTIVARS {GR}

**Massachusetts:** An improved type with scarlet globose berries. Fragrant pinkish-white, urn-shaped flowers in April and May. Glossy, leathery medium to dark green leaves. Prostrate, rapidly spreading habit; height 6 to 12 inches. Disease resistant. B9M, C9, D95, E87, F53M, K75M, J61M

*Azalea nudiflora* - *Pinxterflower*, *Honeysuckle azalea* {PL}. An irregular growth, called *May apple*, that forms on the twigs is crisp, juicy, and refreshing. It is eaten as a thirst quencher, sliced and

mixed into tossed salads, or pickled in spiced vinegar. North America. GIBBONS 1979, MEDSGER; B9M, C76, D46, E87, K63G{S}, L55, M8, N84{S}

*Azalea periclymenoides* - *Azalea nudiflora*

*Calluna vulgaris* - *Scotch heather*, *Ling heather* {S}. The dried flower heads make a good tea, and it is said that Robert Burns drank a *Moorland tea* of heather mixed with dried leaves of bilberry, blackberry, speedwell, thyme, and wild strawberry. The ancient Piets once brewed a kind of *mead* or ale from the flowers. They can be substituted for hops in flavoring beer. Also the source of an excellent, dark amber honey. Heather honey is one of the ingredients of *Drambuie* and *Irish Mist* liqueurs. *Atholl Brose* is a mixture of oatmeal, heather honey, and Scotch whisky. Mutton from the Welsh hills has a special flavor derived from the heather eaten by sheep. Northern temperate region. CAMPBELL-PLATT, HEDRICK 1919, LEYEL 1987a, MABEY, MACNICOL [Re], MCNEILL [Re], MICHAEL [Pre, Re], RAY, C., UPHOF; A99{PE}, B9M{PL}, C17{PD}, D46{PL}, D92M, F22{PL}, F80, G66, K22{PL}, K38, K54{PD}, N54{PQ}, N71M, 053M, 093, Q24, S55, etc.

*Chamaedaphne calyciata* - *Leather-leaf*, *Bog-rosemary* {S}. An aromatic tea-like beverage can be brewed from the leaves. Boiling or steeping is said to extract a harmful toxin, andromedotoxin. An alternative would be to place the leaves in a jar of water and set it in direct sunlight to make "sun tea". Northern temperate region. FERNALD; D95{PL}, M92{PL}, N84

*Chiogenes hispidula* - *Creeping snowberry*, *Birchberry*, *Moxie-plum* {S}. The white fruits are refreshing, pleasantly acid, with a delicate flavor of wintergreen. They are eaten raw with cream and sugar, or made into delicious preserves. A tea made from the leaves has a mild flavor of wintergreen. North America. FERNALD, MEDSGER, SIMMONS 1972 [Cu]; F85

*Epigaea repens* - *Trailing arbutus*, *Mayflower* {PL}. The fragrant flowers are spicy and slightly acid and may be eaten raw as a nibble or added to salads. Eastern North America. FERNALD, GIBBONS 1979, PETERSON, L.; A61, BO, D75M, E33M, K22, K85, L59P, M92, N7T, N84{S}

*Erica cinerea* - *Bell heather* {PL}. Source of a distinctive, strong-flavored honey with a brownish color somewhat reminiscent of port wine. Europe. CRANE 1975; D46, F22, K79, N84{S}

*Gaultheria antipoda* - *Snowberry*, *Koropuku* {S}. The small white fruits are eaten, being of good flavor. New Zealand. COLENSO, UPHOF; N84, 093, S43M

*Gaultheria hispida* - *Snowberry*, *Waxberry* {S}. The white or pale pink fruits are edible but somewhat bitter. They can be eaten raw or cooked. Tasmania. CRIBB, ROBINS; N84, P17M, R33M

*Gaultheria hispidula* - \* *Chiogenes hispidula**Gaultheria humifusa* *Gaultheria myrsinites*

*Gaultheria miqueliana* - *Miquel berry*, *Shiratama-no-ki* {S}. Fruits are white or pink, and are eaten preserved in sugar. Eastern Asia. SIMMONS 1972, TANAKA; C76{PL}, D95{PL}, M77{PL}, N84, Q24

*Gaultheria myrsinites* - *Western wintergreen* {S}. The small red fruits are eaten raw, cooked, or preserved, or used in jams and pies. Young, tender leaves are especially suited for use as greens. Both the fruits and leaves have the flavor of wintergreen. Fresh or dried leaves are used as tea. Western North America. HARRINGTON, H., KIRK; E15, N84

*Gaultheria ovatifolia* - *Mountain checkerberry*, *Oregon wintergreen* {S}. Fruits are red, very spicy, and are eaten raw or cooked. Western North America. GESSERT, KIRK, SIMMONS 1972; 147



*Gaultheria procumbens* - *Wintergreen*, *Checkerberry*, *Tea-berry* {PL}. The spicy fruits are eaten raw, used in pies, or made into jam, jelly, and syrup. Leaves are made into a very agreeable tea, called *mountain tea*. Stronger tea, candy, and wine are made from the fermented bright-red leaves. Source of oil of wintergreen, used to flavor birch beer, candy, and chewing gum. Very young leaves make a pleasant nibble. Eastern North America. GIBBONS 1966b [Pre, Re], MARCIN, MORTON 1976, UPHOF; A20M{DF}, C9, D75M, D92M, E33M, E63M, F16, F65{DF}, K75M, K85, L36M{DF}, N7T, N19M, N84{S}

*Gaultheria shallon* - *Salal* {S}. Sweet, juicy fruits are eaten raw, cooked, dried, preserved, or used in pies, jellies, jams, syrups, pancakes, drinks, or made into wine. Northwest Indians used them to sweeten other fruits, or ate them with oil, fish eggs or salmon. Dried fruits can be used like raisins in cookies and fruit cakes. Western North America. CLARKE [Re], CREASY 1982 [Cu], TURNER 1979 [Re]; A2, B74{PL}, D95{PL}, E15, G5M{PD}, G59M, 147, J61M{PL}, K38, K63G, N84, Q24, R47

*Gaylussacia baccata* - *Black huckleberry* {PL}. The deliciously spicy, sweet fruits are eaten raw, dried, preserved, cooked with sugar, used in pies, jams, puddings, tarts and preserves, or made into wine. Eastern North America. FERNALD, GIBBONS 1979, HENDRICKSON [Re]; D95, D97{ED}, M16

*Gaylussacia dumosa* - *Dwarf huckleberry* {PL}. Fruits are black, juicy, deliciously spicy and are eaten raw, used as a pie filling, or added to pancakes and muffins. Eastern North America. CROWHURST 1972, FERNALD; D97{PD}, H4

*Gaylussacia frondosa* - *Dangleberry*, *Blue tangle* {S}. The dark-blue berries are juicy and sweet, and can be eaten raw or used in puddings, fruit salads, jellies, and fruit sauces. Eastern North America. CROWHURST 1972 [Re], FERNALD, HEDRICK 1919, MEDSGER; U7D

*Ledum glandulosum* - *Glandular Labrador tea* {PL}. An aromatic tea can be brewed from the fresh or dried leaves. Dried leaves are sometimes mixed with other non-aromatic teas, such as goldthread or comfrey. The fresh leaves can also be chewed. Western North America. GIBBONS 1979; B92, D95

*Ledum groenlandicum* - *Labrador tea* {PL}. The spicy leaves make a very palatable and refreshing tea. When lemon is added they can be used as an iced tea. The leaves were once added to beer to make it heady. Eastern North America. ANGIER, HEDRICK 1919, MARCIN, MEDSGER; D95, 131{S}, M92

*Ledum palustre* - *Crystal tea ledum*, *Wild rosemary*, *Bog-tea* {S}. Aromatic leaves are used as a substitute for tea. Considered by some to make a better tea than *L. groenlandicum*. Northern regions. FERNALD, HELLER; N84, R53M{PL}

*Macleania popenoei* - *Joyapa* {S}. The small round fruits are soft, juicy and sweet to the taste. Esteemed in parts of Ecuador, where they are usually collected in the wild and eaten out of hand. Occasionally sold in local markets. Andean region. POPENOE, W. 1924, UPHOF; L55J, N84

*Oxycoccus erythrocarpus* - \* *Vaccinium erythrocarpum*

*Oxycoccus macrocarpus* - + *Vaccinium macrocarpon*

*Oxycoccus palustris* - \* *Vaccinium oxycoccus*

*Oxydendrum arboreum* - *Sourwood*, *Sorrel tree* {PL}. Source of a very light, heavy-bodied honey with an exceptionally fine flavor and aroma. Regarded by many as the finest honey produced in America. The acid leaves are sometimes chewed to allay thirst. Eastern North America. CRANE 1975, FERNALD, PELLETT; A50, A82, B70{PD}, C9, D27M{PD}, D97{PD}, E33M, E87, F80{S}, G23, G66{S}, H49, 14, K38{S}, K63G{S}, L33, M69M, M77M, NO, N7T

*Rhododendron arboreum* - *Tree rhododendron*, *Burdns* {S}. Tender leaves are eaten as a cooked vegetable. The flowers have a sweet, sour taste, and are said to make a good subacid jelly. A juice is extracted from them which is used commercially for the preparation of soft drinks. Also used for coloring drinks and syrups. Large quantities may cause intoxication. Himalayan region. CHAUHAN, M., HEDRICK 1919, MACNICOL [Ife], SRIVASBAVA, TANAKA, WATT; E87{PL}, K38, N1M{PL}, N84, 053M, P49, Q40, Q46, R78

*Rhododendron ferrugineum* - *Alpine rose* {S}. Flowers are the source of very light and mild honey that is high in enzymes. Europe. CRANE 1975; M56M{PD}, N1M{PL}, N84, 053M, P49, R78, R88

*Rhododendron hirsutum* - *Alpine rose* {S}. Flowers are the source of very light and mild honey that has a high enzyme content. Europe. CRANE 1975; M56M{PD}, N1M{PL}, N84, 053M, R78

*Rhododendron mucronulatum* - *Kara-genkai-tsutsuji*, *Chindallae*, *Manchurian azalea* {PL}. The flowers are eaten raw, made into dumplings and wine, or used for decorating Korean rice cakes. Eastern Asia. PEMBERTON, TANAKA; A50, B30, C9, C76, D46, E47, E47{S}, G66{S}, H8, K38{S}, K63G{S}, K77, M92, N1M, 053M{S}, etc.

*Vaccinium alaskaense* - *Alaska blueberry* {PL}. The berries are eaten fresh or dried. In parts of Alaska, they are the preferred berries for pie. Dried berries were soaked in water and eaten with animal grease during the winter months. Also canned, frozen or used for making jams and jellies. Northwestern North America. NORTON; C34

*Vaccinium angustifolium* - *Lowbush blueberry*, *Wild blueberry* {PL}. The fruits are eaten raw, cooked, dried, in jellies, puddings, pies, cakes, soups, etc. They are smaller than *V. corymbosum* or *V. ashei*, but are very sweet, with a slight honey flavor. Ripens about one month sooner than the highbush blueberry. Grown commercially in cold, northern areas like Maine and largely used for canning. Yields an amber honey of good flavor. Eastern North America, cultivated. FERNALD, HENDRICKSON [Cu, Pro], MEDSGER, PELLETT, SIMMONS 1972; A38M{DF}, A84M, A91, B9M, B26, B32, B68, C76, D60, D95, F16, H8, 174, L25M{PR}, L25M{PD}, L68{P£}, M92, etc.

#### CULTIVARS {GR}

**Augusta:** Large, attractive, oval fruit; quality good for fresh eating or freezing; ripens in midseason. Matures uniformly for a single harvest, thus adapted to mechanical harvesting. Productive plant that roots readily; self-incompatible. Originated in Oiono, Maine. Introduced in 1975. BROOKS 1997; G50

**Blomidon:** Large, uniform, ovate fruit with fair flavor. Ripens uniformly, with 95% mature by August 10th. Upright-spreading plant, vigorous and productive. Originated in Kentville, Nova Scotia. Introduced in 1982. The first cultivar developed from controlled breeding. Named after Cape Blomidon, a local landmark in Nova Scotia. BROOKS 1997; G50

**Brunswick:** Selected clone with a delicious true wild blueberry flavor. Pea-sized, sky blue fruit. Forms a vigorous, dense ground cover, 6 to 8 inches high; waxy, deep-green foliage. Attractive, orange to crimson fall color. Somewhat erratic production. Grows well in both maritime and colder climates. Originated in New Brunswick in 1965. REICH; C34, D60, E87, G50, 149M, J61M, M81M

**Chianecto:** Medium-small fruits, 345 per cup; thick skins; excellent wild berry flavor; ripens late. Can be held fresh for more than 10 days in refrigerated storage. Very easy to pick, the berries forming clusters near the outer ends of the stems. Can be stripped off in handfuls. Resistant to leaf diseases such as leaf spot and mildew. Selected from the wild in Nova Scotia. REICH; B26, G50, J82

**Cumberland:** Medium-blue fruits, about 317 per cup; excellent wild berry flavor, fresh or frozen. Ripens in 2 major pickings—the

first early in the season, the second, a smaller picking, about 10 days later. Yields well consistently, despite a tendency to winter stem tip damage; requires cross-pollination. Selected in Nova Scotia in 1964. REICH; B26, J82

**ME-3:** Dark-blue fruits, about 304 per cup. Has the sweetest flavor of any clone currently available. Most fruit ripens at once, in mid-season or late midseason. Picking is easiest if berries are left on the plants until very ripe. Vigorous, upright growing plant, a consistent and heavy producer. B26

**NB-3:** Attractive, light-blue fruits, about 292 per cup. Flavor somewhat bland until late in the season when an excellent wild blueberry flavor develops. Produces a light mid-season crop, and a final harvest very late in the season. Ripe fruit releases very easily from the plant. Good fresh storage potential. Productive plant; blooms slightly later than other clones. B26

**Putte:** A true lowbush type. Plants mature at 8 to 14 inches tall and yield large, sweet, blue-black berries in dense clusters. Has survived -40° F. in central Sweden. Developed at the Swedish University of Agricultural Science, Balsg&rd, Sweden. Patented. L27M

*Vaccinium angustifolium* var. *laevifolium* - *Vaccinium lamarckii*

*Vaccinium arboreum* - *Farkleberry*, *Tree huckleberry*, *Sparkleberry* {PL}. Fruits are dry and insipid. They are occasionally eaten. Reported to be an excellent rootstock for rabbiteye blueberries. North America. BLOUNT, TANAKA; D95, H4, H14M, N37M

*Vaccinium arctostaphylos* - *Caucasian whortleberry*, *Chemika kavkazk* {S}. The edible fruits are small, purplish, and round to pear-shaped. Leaves are used as a substitute for tea. Eastern Mediterranean region. DURAND 1979, REHDER, TANAKA; U7D

*Vaccinium ashei* - *Rabbiteye blueberry* {S}. Fruits are eaten raw, cooked, dried, or used in muffins, jams, nut breads, pies, pancakes, etc. The plants are low-chill, heat and drought resistant, and are recommended for southern and Gulf Coast states. Southeastern North America. HENDRICKSON; H4{PL}, P38. (for cultivars see Blueberry, page 306)

*Vaccinium atrococcum* - *Black highbush blueberry* {S}. The large, blue-black fruits are sweet, juicy, and very flavorful. They are eaten out of hand, with cream and sugar, or used in jellies, tarts, and wines. North America. CROWHURST 1972, SIMMONS 1972; T41M

*Vaccinium Caesariense* - *New Jersey blueberry* {S}. When ripe, the dark-blue fruits are eaten raw or used in jams, jellies, pies, dumplings, etc. North America. CROWHURST 1972 [Re], TANAKA; U7D

*Vaccinium calycinum* - *Ohelo kaulaau*, *High-bush ohelo* {S}. Small quantities of the bitter fruits are added to the true ohelo berry before cooking to impart a special flavor to them. Hawaii. DEGENER; F85

*Vaccinium canadense* - *Vaccinium myrtilloides*

*Vaccinium cereum* - *Ohelo berry* {S}. Fruits are pale yellow to dark red in color and are eaten raw, or cooked in the form of pies and sauces. Pacific Islands. DEGENER; F16{PL}, F85

*Vaccinium corymbosum* - *Highbush blueberry* {S}. The large, sweet fruits are widely grown and marketed. They may be eaten fresh, dried, preserved in water or syrup, used in compotes, pastries, pies, muffins, pancakes, cereals, jellies, jams, fritters, puddings, etc. Dried fruits are used like raisins or currants in many recipes or added to soups and stews. Source of a mild-flavored honey of good quality. North America. ANGIER, CRANE 1975, GIBBONS 1962 [Re], HENDRICKSON [Cu, Proj], UPHOF; A38M{DF}, B9M{PL}, B68/PL, C29{DF}, C29{PD}, G47D{DF}, F42M{PD}, G58{PD}, H73{DF}, I66M{PD}, K38, K63G,

M92{PL}, N84, 093, etc. (for cultivars see Blueberry, page 306)

*Vaccinium corymbosum* var. *pallidum* - *Blue Ridge blueberry* {S}. The sweet fruits are eaten raw. Said to be superior to all other blueberries. Berries are borne in dense clusters at the end of the previous year's wood, making them easy to pick. Eastern North America. BRITTON 1913, HENDRICKSON; U7D

*Vaccinium crassifolium* - *Creeping blueberry* {PL}. The fruits are eaten. Southeastern North America. TANAKA; D46, D95

CULTIVARS {GR}

**Welfs Delight:** Fruit edible; black to purplish-black; has a slight aromatic flavor; ripens in late July to September. Plant grows only 5 to 8 inches tall, has a trailing effect as it forms a nearly solid evergreen carpet. Evergreen leaves are reminiscent of Japanese holly. Recommended as an ornamental, low maintenance ground cover. C76, D46, D60, D79M, D95, E87, F48, I49M, N37M

*Vaccinium darrowi* - *Harrow blueberry* {PL}. Fruits are eaten. Also used in breeding low-chill Southern highbush blueberries, along with *V. ashei* and *V. corymbosum*. Eastern North America. ECK 1988, TANAKA, ZEVEN; H14M, N37M

CULTIVARS {GR}

**Jonblue:** Small, blue-black fruit; very sweet, having a distinct blueberry flavor. Plant grows only 2 to 3 feet tall, will spread 4 to 5 feet, making a very large spreading bush. Foliage bluish, attractive, evergreen in the South. Flowers pink, ornamental. Recommended for dry, sandy, upland soil. Northernmost hardiness unknown. N37M

*Vaccinium deliciosum* - *Alpine blueberry*, *Rainier bilberry* {PL}. When fully ripe, the fruits are sugary sweet with a delightful aroma and a full, rich flavor. They are best eaten out of hand. Rare in cultivation. Western North America. ABRAMS, EIGHME; J61M

*Vaccinium elliotii* - *Mayberry*, *Elliott's blueberry* {PL}. The delicious, bluish-black fruits are eaten. Eastern North America. TANAKA; A80M, H14M, N37M

*Vaccinium erythrocarpum* - *Southern cranberry*, *Mountain cranberry*, *Dingleberry* {S}. The transparent, scarlet berries are excellent in flavor, second only to the lingonberry. They are eaten raw or used in jellies. Recommended for improvement by cultivation. Eastern North America. HEDRICK 1919, HENDRICKSON, SIMMONS 1972, UPHOF; N84

*Vaccinium floribundum* - *Mortiho*, *Colombian blueberry* {PL}. The fruits are round, glaucous blue, juicy, subacid, and pleasant to the taste. They are eaten raw, made into preserves, and used in a special dish with molasses, spices and other chopped fruits on All Souls' D<sup>A</sup>. Sold in the local markets of Ecuador and Colombia. Andean South America. FRIED, NATIONAL RESEARCH COUNCIL 1989, POPENOE, W. 1924, UPHOF; 174

*Vaccinium globulare* - *Blue huckleberry* {S}. The berries are eaten raw, cooked, dried or preserved, having an excellent, sweet flavor. Considered to have a more concentrated flavor than *V. membranaceum*, the other commercially important species of the Rocky Mountains and Pacific Coast. Also used in pies, jams, jellies, syrups, pancakes, muffins, wines, vinegars, etc. Gathering the wild fruits is a multi-million dollar industry in Montana. Western North America. BOWEN [Re], HART, VON REIS; U7D

*Vaccinium lamarckii* - *Early sweet blueberry* {PL}. The fruits are eaten. Considered to be the best of the lowbush type blueberries. Eastern North America. TANAKA; M16

*Vaccinium macrocarpon* - *Cranberry* {PL}. The fruits are too acid to be eaten raw. However, they are widely used in sauces, juice cocktails, jellies, syrups, pies, muffins, puddings, ice cream, sherbet, cookies, tarts, etc. The Indians sweetened cranberry sauce with maple syrup, and also used the berries for *penmican*. A teaspoon of salt, added to the cooking berries, is said to take the place of half the sugar ordinarily used in recipes. Sweetened dried cranberries, sometimes called *craisins*, are becoming a popular item in natural

food and gourmet shops. Source of a medium-amber honey with good body and a mild flavor. Leaves are used as a substitute for tea. The pulp of the fruit is the source of a pigment used commercially as a food colorant. Northern temperate region. ANGIER, CRANE 1975, ECK 1990, FERNALD, GIBBONS 1962 [Re], LEUNG, MEDSGER, SIMMONS 1972 [Cu], TURNER 1979 [Re]; A38M{DF}, C3M{PD}, C29{DF}, C29{PD}, C34, C67{PD}\D69, E97, F87, G47D{DF}, G58{PD}, H58, H73{DF}, K38{S}, L27M, L50M{DF}, M16, M77, M92, etc.

CULTIVARS {GR>

**A.J.:** Searles x Early Black. Small to medium-sized fruit, cup count 70 to 95; reddish black in color with a moderate bloom; ripens in midseason; colors well in storage. Tends toward early blossoming. Originated in New Jersey. F16

**Beckwith:** McFarlin x Early Black. Large, round to oblong deep red fruit, about 55 to 60 per cup; firm and with excellent flavor. Bears fruit high on vigorous uprights; ripens late and keeps well in storage. Resistant to fruit rot disease but susceptible to false blossom disease. Introduced in 1951 by the USDA. ECK 1990; C93, D60, F16

**Ben Lear:** Medium to large, pyriform fruit, pointed at the stem end; deep red in color; ripens early; susceptible to storage rot. Medium-textured vine with tall uprights; produces good crops of berries. Planted commercially in New Jersey and British Columbia. Originated in Berlin, Wisconsin before 1901. ECK 1990; A84M, C93, D37, F16, H49

**Bennett Jumbo:** Medium-sized, oblong fruit, cup count 76; deep red in color; ripens late in the season; very susceptible to end rot fungus. Colors and keeps well in cold storage. Vigorous, tall upright plants; blooms rather late, escaping most spring frosts. Selected by A.C. Bennett near Grand Rapids, Wisconsin, circa 1890. ECK 1990; F16

**Bergman:** Early Black x Searles. Large to medium-sized, pyriform fruit, 65 to 80 per cup; ripens in midseason. Good for processing. More productive and less susceptible to fruit rot than Early Black or Howes. Major commercial cultivar, particularly adapted to Massachusetts. Selected from a cross made at Whitesbog, New Jersey in 1930. ECK 1990; C93

**Cropper:** Round to oval, rather small fruit, 95 to 105 per cup; medium red in color; ripens in midseason and keeps fairly well; good for processing. Moderately vigorous vines produce good crops of berries. Adapted to the Pacific Coast. Selected from the wild near Tabernacle, New Jersey, in 1930. ECK 1990; F16

**Crowiev:** McFarlin x Prolific. Medium large, round-oblate fruit, flattened on both sides. Has a high pigment content and low astringency, making it desirable for processing. Moderately vigorous vine with short uprights, produces consistently large crops early in the season. Introduced by Washington State University in 1970. ECK 1990; C93

**Early Black:** Small to medium fruit, when ripe almost black, about 90 to 130 per cup; flesh firm, good for keeping, shipping, and the table; ripens very early and all at once, colors well in storage when picked green. Vines comparatively slender, producing many more uprights than runners, well adapted to different soils. The standard cultivar in the Eastern U.S. Originated about 1825 with Captain Cyrus Cahoon, a Cape Cod cranberry-grower. DANA, ECK 1990; C93, N84, P68M

**Franklin:** Early Black x Howes. Large to medium-sized, round berries, 57 to 90 per cup; red to dark red color; ripens early and has good to excellent keeping qualities. Moderately vigorous vines with medium length uprights; resistant to the blunt-nosed leafhopper. Original cross made at Whitesbog, New Jersey. ECK 1990; C93, N84, S30

**LeMunvon:** Very good flavor. A prolific grower. One of the top producers in New Jersey and Wisconsin. Also does well in other

areas. Selected around 1960 by Norman LeMunyon, from native New Jersey vines. F16, F43M, J61M

**McFarlin:** Berries medium to large, about 65 to 95 per cup, red becoming dark red when ripe; flesh tender, extra fine in flavor; ripens in midseason, variable in keeping and shipping quality. Vines coarse, rather large; resistant to frost and false blossom disease. One of the few cranberries grown in both the East and West. Originated with T.H. McFarlin, South Carver, Mass., about 1874. DANA, ECK 1990; F16

**IVU. 33:** Howes x Searles. Medium-sized berry, free of bloom, glossy when ripe; ripens very late. Does not color well in storage. Tall, upright vines. Originated in New Jersey. F16

**Olson's Honkers:** Very productive plant with extremely large berries. Originated in Washington state. F16, F43M

**Pilgrim:** Prolific x McFarlin. Fruit large; skin purplish-red with yellow undercoat; ripens late, keeping quality good. Bush a prolific bearer, greater than Early Black or Howes; resistant to feeding by the leafhopper that spreads false blossom virus. Originated in Whitesbog, New Jersey by the USDA. Introduced in 1961. BROOKS 1972; B74, C93, 149M, 149P, S30

**Shaw's Success:** Very small, spindle-shaped, blackish-red fruit about 110 to 139 per cup; keeps very well in storage. Fine textured vines that produce short uprights and good crops. Very resistant to false blossom disease. Discovered by A.M. Shaw in 1890. First planted in South Carver, Massachusetts. ECK 1990; D60

**Stevens:** McFarlin x Potter. Exceptionally large, round to oval berries, averaging 50 to 55 per cup; deep red in color; ripens in midseason between Early Black and Howes. Keeps exceptionally well in storage. Vigorous, productive vines, suitable for cranberry soils that are low in organic matter. The leading cultivar in the Northwest. ECK 1990; A84M, B74, C93, D11M, D37, D95, F16, F70, H49, J61M

**Thunder Lake:** Large, oblong fruits; glossy dark red to black in color; very good flavor; ripens in September and October. Low, spreading plants, 3 to 4 feet wide and 12 inches high; dark green foliage, reddish-bronze on new growth; fuchsia-pink flowers. Recommended for home yards and hanging baskets. Selected in Wisconsin. B74, D60, H65

**Wilcox:** Howes x Searles. Medium to large fruit, about 73 to 98 per cup; skin deep red; quality excellent. Ripens very early, keeps well. Precocious and productive, quickly covering a bog when newly planted and coming into bearing early. Somewhat resistant to false blossom disease. Originated in Beltsville, Maryland by the USDA. Released in 1950. BROOKS 1972, ECK 1990; C93

*Vaccinium membranaceum* - *Mountain huckleberry*, *Big whortleberry* {S}. The edible fruits are black or maroon in color, borne singly or in pairs, and are among the largest and best flavored of all wild blueberries. They can be eaten raw, dried, preserved, etc. The plant is extremely drought resistant. Collected commercially in Idaho, Montana and other areas of the West. North America. BOWEN [Re], CLARKE, HELLER, HENDRICKSON; A2, C11T{PR}, C34{PL}, D95{PL}, E15, F88M, G66, 147, J26{PL}, K75M{PL}, N84, 053M

*Vaccinium myrsinites* - *Florida evergreen blueberry* {PL}. Fruits are blue or blackish, and are eaten raw or in compotes and pies. Southern North America. MORTON 1977, UPHOF; H14M, N37M

*Vaccinium myrtilloides* - *Canada blueberry*, *Sour-top blueberry* {S}. The fruits, blue with a heavy bloom, are more acid than is usual for a blueberry and have an agreeable piquancy. They are eaten fresh or used in pies, cakes, preserves, etc. Leaves are used for tea. North America. FERNALD, KUNKEL, SIMMONS 1972; C34{PL}, G66, K38, N84

*Vaccinium myrtillus* - *Whortleberry, Bilberry, European blueberry* {S}. Fruits are eaten raw, with milk or cream, or used in pancakes, tarts, jellies, preserves, compotes, confectionery, as a side dish for game or meat, etc. In Italy, they are sprinkled with sugar and lemon juice and eaten with ricotta cheese. They are also brewed into wine or used to color other wines. The leaves are used as a substitute for tea. Eurasia. BIANCHINI, GRAY, P. [Cu], MABEY, MICHAEL [Re], SIMMONS 1972 [Cu], TANAKA; F86G{DF}, J82, K63G, N84, 053M, P49, P68M{PL}, Q24, R47, R53M, R53M{PL}

*Vaccinium ovalifolium* - *Black huckleberry, Kuro-usugo* {S}. Fruits are light-blue, sweet, borne singly rather than in clusters, and are eaten raw, dried, or cooked. Western North America, Eastern Asia. HELLER, TANAKA, TURNER 1979; C34{PL}, D95, E15, F88M, J61M{PL}, N84

*Vaccinium ovatum* - *California blueberry, Evergreen huckleberry* {PL}. When ripe, the berries are black and somewhat sweet. They are eaten fresh, cooked, or dried. Because of their strong flavor they are better for cooking in pies and other dishes than for eating out of hand. Western North America. CLARKE, HENDRICKSON; A2{S}, B74, C34, D60, E15{S}, E87, F88M{S}, G59M{S}, G60, 147{S}, I49M, 174, J61M, N84{S}, 053M{S}, etc.

*Vaccinium oxycoccus* - *Small cranberry* {PL}. The acid fruits are used for jellies, sauces, refreshing drinks, pies, and preserves. While smaller than *V. macrocarpon*, the flavor is said to be superior. Northern temperate region. FERNALD, HEDRICK 1919, MEDSGER, SIMMONS 1972; B74, C34, D60, D95, E87, J61M, K22, N84{S}

*Vaccinium pallidum* - *Vaccinium corymbosum* var. *pallidum*

*Vaccinium palustre* *Vaccinium oxycoccus*

*Vaccinium parvifolium* - *Red whortleberry, Red huckleberry* {S}. Bright red, sour fruits are eaten raw, dried for later use, or used in tarts, jams, jellies, and pies. They make an attractive lead jelly, and a light jam that is excellent on waffles or Fiench toast. Western North America. CLARKE, EIGHME, HEDRICK 1919, HELLER; A2, B74{PL}, D95, E15, F88M, G66,147, J61M{PL}, N84, 053M

*Vaccinium pennsylvanicum* - *Vaccinium angustifolium*

*Vaccinium praestans* - *Kamchatka bilberry, Cherry blueberry, Iwa-tsutsuji* {PL}. The large, red fruits are eaten. They are said to have a delicious flavor. Northeast Asia. DURAND 1979, HEDRICK 1919; S69

*Vaccinium reticulatum* - *Vaccinium cereum*

*Vaccinium scoparium* - *Gmuseberry, Whortleberry* {PL}. Fruits are eaten raw with cream and sugar, cooked into a sauce, made into pies, jams, and jellies, or added to muffins, breads, and pancakes. Dried fruits are used to flavor other foods or to thicken soups. Fresh or dried leaves can be used to make a kind of tea. Western North America. HARRINGTON, H. [Re]; D95,147{S}

*Vaccinium sempervirens* - *Rayner's blueberry* {PL}. The fruits are edible. Southeastern North America. N37M

#### CULTIVARS {GR}

**Bloodstone:** Fruit edible; black to purplish-black; has a slight aromatic flavor; ripens in late July to September. Evergreen plant, 5 to 8 inches high, indefinitely broad; has a trailing effect as it spreads. Makes a very good, low maintenance ground cover. Not recommended for areas with excessive soil moisture, high temperatures, and high humidity. C34, D79M, N37M

*Vaccinium stamineum* - *Deerberry, Squaw huckleberry* {PL}. The fruit is eaten raw, although the quality varies greatly from shrub to shrub. When cooked and served cold they are considered delicious, suggesting a combination of gooseberry and cranberry sauce, with the slight bitter taste of grapefruit marmalade. Jelly made from the fruit has a novel greenish-amber color. Eastern North America.

CROWHURST 1972, FERNALD, GIBBONS 1979, MEDSGER; D95, H14M, N37M

*Vaccinium uliginosum* - *Bog bilberry, Alpine blueberry* {S}. The black, juicy fruits are eaten raw, preserved, made into jam, or fermented into an alcoholic beverage. In France, they are said to be used for coloring wine. Tanaina Indians use them for making *nivagi* or *Indian ice cream*—a favorite, traditional dish that is a mixture of berries, whitefish or other fish or meat, lard and sugar. Nivagi is eaten either frozen or unfrozen. Northern temperate region. HEDRICK 1919, HELLER, KARI, TANAKA; N84, 053M

*Vaccinium vacillans* - *Late low blueberry* {PL}. The berries are very sweet and may be eaten raw or used in pies, puddings, and muffins. Considered to be one of the very best blueberries. Eastern North America. CROWHURST 1972, FERNALD, MEDSGER; E33M

*Vaccinium vitis-idaea* - *Cowberry, Lingonberry, Mountain cranberry* {PL}. The acid fruits are regarded by many as the best of the cranberries. They are made into sweet cranberry-like sauces and served with Swedish pancakes, omelettes, and puddings. In Finland, they are used to make a popular sweet fruit soup called *mehukeitto*. They also make excellent tarts, jellies, and preserves. In Scandinavian countries, the berries are placed in barrels filled with cold water, and sold on world markets. Leaves are used as a substitute for tea. Northern temperate region. FERNALD, HEDRICK 1919, MEDSGER, SIMMONS 1972 [Cu], TURNER 1979 [Re], VON WELANETZ; A15M{PD}, B9M, B26, D95, I41G{ED}, K75M, K79, M92, Q24{S}, R53M, R53M{S}

#### CULTIVARS {GR}

**Erntedank:** Relatively new cultivar from Germai. Notable for producing abundant quantities of fruit in both spring and summer. Grows to about one foot tall. Evergreen foliage makes a nice background for the bright red fruit. A84M, D95, E63, E87

**Erntekrone:** Large dark red fruit of very good quality. Recent introduction from Germany where it is much appreciated. Hardy to Zone 5, withstanding temperatures of -20 to -10° F. A84M, D95

**Ernteseaen:** Medium to large, bright red fruits. Pleasant, tart flavor with some sweetness. Vigorous, spreading plant, 12 to 15 inches tall. Produces well when mature. Resistant to most diseases including phytophthora root rot. Originated in Uchte, Germai. Introduced in 1981. C93, F16, F43M

**European Red:** Medium-sized red fruits of excellent flavor. Vigorous, consistently productive plant; grows to 16 inches tall and spreads rapidly; brilliant green foliage. Taller and a more rapid spreader than Koralle. Selected from the wild in Scandinavia for flavor and ornamental qualities. C34, D60,149M, J61M

**Koralle:** Widely planted commercial cultivar. Similar to large-fruited forms but fruits are larger than normal, a darker red, and hold on the plant all winter if not picked and eaten. Much in demand by those who want fruit production for various lingonberry products. Upright, bushy plant, 12 to 14 inches tall. Originated in Holland, in 1969. A84M, B74, C34, C61, C93, D37, D60, D95, E63, E87, F16,149M, 174, J61M, S69

**Masovia:** Large-fruited seedling selection that originated at the Warsaw Agricultural University. Bushy plants that yield heavy crops of fruit. ANONYMOUS 1990; A84M, D95, E63

**Red Pearl:** Medium to large fruits, 5 to 12 per cluster. Typical sweet-acid flavor. Ripens 1 to 2 weeks earlier than Splendor. Very vigorous, spreading plant, 12 to 18 inches tall. Yields 1 to 1 1/2 pounds of fruit per plant. Particularly resistant to phytophthora root rot. Originated in Boskoop, Holland. Introduced in 1981. B74, C93, F16, F43M, 174, P68M

**Regal:** Large, firm fruits with good flavor and quality. Vigorous plant, 8 to 15 inches tall at maturity. Adapts well to transplanting. Resistant to phytophthora. Developed at the University of Wisconsin

by Eldon Stang from seed collected in Finland. Selected for its superior size and precocious bearing. C93, FI 6, L27M

**Sanna:** Large, bright red fruit. Distinct flavor, with a good balance of sweetness and acidity. Spreading plant, 6 to 8 inches tall at maturity. Grows slowly but becomes productive when mature. Resistant to disease, including phytophthora root rot. Developed at the Swedish University of Agricultural Science, Balsgard, Sweden. C93, F16,174

**Scarlet:** Mainly used as a pollinator for other cultivars to increase production. Grows 12 to 15 inches tall at maturity, spreading 15 to 18 inches. Produces heavy crops of bright scarlet-red fruits. A84M, C61, E63,174

**Splendor:** A sibling selection of Regal. Selected for its vigor and production. Medium to large, bright red fruit, firm and of good quality. Grows 8 to 15 inches tall, spreading to 18 inches. Adapts well to transplanting. Resistant to phytophthora. Developed at the University of Wisconsin by Eldon Stang from seed collected in Finland. C93, F16, H49, L27M

**Sussi:** The first lingonberry to be bred for size and quantity of fruit per plant. Large, bright red fruit with a good balance of acidity and sweetness. Grows 12 to 18 inches tall, spreading to 18 inches. Slow growing but productive. Developed at the Swedish University of Agricultural Science, Balsgard, Sweden. C93, FI6, H49, 174, L27M

#### ERYTHROXYLACEAE

*Erythroxylum coca* - *Coca* {S}. The leaves are chewed by the natives of the Andean region for their stimulating properties. Coca extract, along with kola, cinnamon, ginger and other spices, is used as a flavoring for cola soft drinks, as well as candy, dairy products and alcoholic beverages. South America, cultivated. BROOK, BURDOCK, HEDRICK 1919, LEUNG, UPHOF; V84M, W59M

#### EUCOMMIACEAE

*Eucommia ulmoides* - *Du Thong, Tou chong, Hardy rubber tree* {PL}. The bark is used in Chinese tonic soups, often with pork and chicken. Also added to wines, liqueurs and elixirs. One of the most popular herbs used by the Cantonese. Eastern Asia. BENSKY, FLAWS 1994, TAN [Re]; A74, C9M{S}, D56M{S}, E14T{DF}, E87, F37T{DF}, G19P{DF}, G66{S}, 160, 174, K37M, K38{S}, L21T{DF}, M92, NO, 093{S}, P5{S}, etc.

#### EUCRYPHIACEAE

*Eucryphia lucida* - *Leatherwood* {S}. Source of an excellent light amber honey with a strong, distinctive flavor somewhat reminiscent of almond. Regarded by many connoisseurs as one of the finest of all honeys. Rated highly for quality, flavor and texture. The hard granulated honey, which has a somewhat milder flavor, is occasionally packed in small paper-wrapped cubes. Tasmania. CRANE 1975, CRANE 1984; A67M{PD}, C94M{PD}, D95{PL}, G5M{PD}, H15T{PD}, N84, P17M, R33M

#### EUPHORBIACEAE

*Aleurites moluccana* - *Candle nut, Kukui, Kemiri* {S}. Roasted seeds are eaten in small quantities, as larger amounts can be laxative. In Hawaii, they are made into a condiment called *inimona*, by pounding them into a paste that is mixed with salt and chilis. *Sambal kemiri* is a similar Indonesian preparation that also includes fish sauce. Also used to flavor and thicken Indonesian and Malayan curries. An edible oil is extracted from the roasted seeds and the presscake that remains is fermented into *dageh moonchang*. The powdered seeds are used as an adjuvant in the manufacture of palm sugar. Southeast Asia, cultivated. DEGENER, GIBBONS 1967, OCHSE, SHURTLEFF 1979, SOLOMON; A7{DF}, A45{DF}, A45{PD}, A79M, C34G{DF}, F85, L16M{DF}, N84, P5, P38, Q46, R33M, R78M

*Baccaurea dulcis* - *Chupa, Rambai, Kapundung* {S}. The small, round, yellow fruits are eaten fresh. They have pleasant, melting white flesh that is normally sweet, sometimes acid. Sold in local markets. Southeast Asia. HEDRICK 1919, MORTON 1987a, RIFAI; R78M

#### *Baccaurea griffithii* - \**Baccaurea macrocarpa*

*Baccaurea macrocarpa* - *Tampoi* {S}. The golden-yellow fruits are eaten. They have soft, juicy, off-white flesh and a sweet, pleasant flavor. Suitable for eating fresh, preserving, or fermenting into vinegar. Southeast Asia. TINGGAL; N84

*Baccaurea motleyana* - *Rambai, Rambeh* {S}. The small, oval, brownish-yellow fruits are sweet to acid and are eaten fresh, stewed or preserved. Vinegar and an alcohol beverage are prepared from the juice. Has good potential for increased cultivation. Malaysia, cultivated. MACMILLAN, MORION 1987a, RIFAI, TANAKA, TINGGAL; N84, 019

*Bridelia cathartica* - *Munohya-menda* {S}. The small, round, dark-red to almost black fruits are eaten raw. In Rhodesia, the Tonga chew the leaves, then drink water, the leaves causing the water to acquire a sweet taste. Southern Africa. FOX, E, VON REIS; F85

*Chrozophora plicata* - *Giradol* {S}. Petals, fruits, and sap are the source of a red and blue dye, *tourmesol*, used for coloring liqueurs, wine, pastries, and Dutch cheeses. Northern Africa. UPHOF; F85

*Cicca acida* - *Otaheite gooseberry, Star gooseberry* {S}. Fruits are usually too sour to eat raw. When cooked they become bright red and make excellent jams, preserves, and pies. They are also pickled, made into vinegar, or used as a tamarind substitute to give a sour flavor to other foods. They may be of value as a natural red coloring agent in preserves made from mixed fruits. The young leaves are cooked as greens in India and Indonesia. Tropics, cultivated. ALTSCHEUL, KENNARD, MORTON 1987a, OCHSE, OWEN [Re], TANAKA; A79M, D56M, E29{PL}, F85, G73, M17{PL}, N84

*Cnidoscolus chayamansa* - *Chaya, Tree spinach* {PL}. Young, tender leaves and stem tips are cut into small pieces and cooked as a potherb. They are also used in soups, stews, and *atoles*, or mixed with onion and egg to make a delightful *tortilla*. In the Yucatan, they are used as wrappers for tamales or are added to the masa used in the tamale filling. Contains hydrocyanic acid and should not be eaten raw. When properly cooked the leaves are high in protein, calcium, iron, and vitamins A and C. Central America. COE, GERLACH [Re], MARTIN 1978c [Cu, Nu], NATIONAL RESEARCH COUNCIL 1975a, WILLIAMS, L.; A79M, D33, E29, H29, N84

*Emblic officinalis* - *Emblic, Myrobalan, Amla, Amalaki, Aonla* {S}. Acid fruits have a very high vitamin C content. They are eaten raw with salt, sugar, or chilis. Also used in jellies, preserves, pickles, tarts, sweetmeats, chutneys, *murabba*, or as a sour flavoring. Dried fruit chips are seasoned with caraway seeds, salt, and yogurt and eaten after fasting. One of the principal ingredients of various Ayurvedic tonic preparations including *Chyavanprash*, *Triphala*, and *Amrit Kalash*. Unripe seeds and leaves are edible. Also used in the manufacture of *black salt*. Tropical Asia, cultivated. FRAWLEY, MARTIN 1975, PARMAR, C., MENNINGER, MORTON 1960 [Cu, Nu], MORTON 1987a, REEJHSINGHANI 1975 [Re], SINGH, S, SIVARAJAN TIERRA, WATT; A79M, F37T{PL}, F85, G73, H14{PD}, I74{PL}, J82, M15M{PD}, N7D{DF}, N7D{ED}, N84, P38, Q12, Q18, Q46

#### CULTIVARS {GR}

**Banarasi:** Large, flattened-oblong fruit with 6 paired segments; smooth, yellow skin, thin and translucent; soft, nearly fiberless, semi-transparent flesh, medium juicy, moderately astringent. Makes preserves of very high quality. Good keeping qualities. Upright growing tree, somewhat of a shy bearer. An important cultivar in parts of Uttar Pradesh. BOSE 1990, MORTON 1987a, SINGH, S.; R50

*Euphorbia helioscopia* - *Tddai-gusa* {S}. Young stems are edible when cooked or oil wasted. Young leaves are used as a tea substitute. Northern temperate region. TANAKA; F85, N71M, N84

*Leichhardtia australis* - *Doubah, Native pear, Bush banana* {PL}. The fruits were roasted and eaten by the Aborigines. They are very rich in thiamine. Young, immature fruits are said to have the flavor of peas, squash and zucchini. Seeds are eaten raw or cooked, having the flavor of fresh peas. The flowers can be eaten whole, and are brimming with sweet, flavorful nectar. Leaves and roots are also edible. Australia. CHERIKOFF, CRTOB, O'CONNELL, ROBINS [Cui, Re]; N79

*Macaranga grandifolia* - *Samae* {S}. Leaves, bark, and fruit are added to sugar cane juice that is fermented into *basí*, a traditional alcoholic beverage of the Ilocanos on Luzon. Philippines. STEINKRAUS; F85

*Macaranga tanarius* - *Samae* {S}. The dried leaves, bark and fruit are used like those of *M. grandifolia* in the preparation of *basí*. Tropical Asia. STEINKRAUS, UPHOF; F85, P38

*Manihot esculenta* - *Cassava, Yuca, Manioc, Mandioca* {PL}. Young leaves are boiled like spinach or added to stews, such as the Amazonian *manigoba*. In Asia, they are used for wrapping various steamed, grilled and baked foods. Roots are eaten boiled, fried, baked, made into meal, sweetmeats, *bannies* and other breads, *farina*, syrup, pastries, *fufu*, *dumbcy*, chips, and *arrowroot*. The refined starch from the tubers, known as *tapioca pearls*, is used in soups, puddings, and dumplings. In powdered form it is called *tapioca flour* or *goma de tapioca*, and is employed as a thickening agent for soups, sauces and crepes. Juices from the root are boiled to make *cassareep*, a condiment and an essential ingredient for the Amerindian stew called *peppercot*, or fermented into *chicha*, *kaschiri* and other alcoholic beverages, and also vinegar. In Brazil, the juice is known as *ucupi* and is often bottled with Pimenta de Cheiro. Other fermented products are *gari*, *tape*, *ontjom*, *uji* and *tempeh*. Tropical South America, cultivated. BENGHIAT [Cul, Re], HAWKES [Re], HEDRICK 1919, IDONE [Re], MARTIN 1975, MAY, R. [Nu, Re], OCHSE, ORTIZ 1973 [Re], PASSMORE, ROUTHIER 1989 [Cul, Re], SCHERY, SCHNEIDER 1986 [Cul, Re], STEINKRAUS, TANAKA, UPHOF, WILSON, E.G. [Re]; A79M{S}, B60M{PR}, D4{PD}, D33, D43G{PD}, E13G{PR}, E29, F85{S}, G29{PD}, H4, 128, J66M{PD}, L14G{PD}, L55J{S}, L90G{PD}, N40{PR}, N84{S}, 053M{S}, P38, etc.

*Manihot glaziovii* - *Manigoba, Mandioca brava, Ceara rubber* {S}. Tubers are sometimes eaten. Otherwise they are a source of starch. The oily seeds are also eaten. Brazil. TANAKA; F85, N84

*Marsdenia australis* - \**Leichhardtia australis*

*Phyllanthus acidus* - *Cicca acida*

*Phyllanthus emblica* - \**Emblica officinalis*

*Plukenetia volubilis* - *Wild peanut, licazo* {S}. The leaves are consumed as a vegetable by the natives. Seeds are roasted and eaten, having an excellent flavor. Tropical America. ALTSCHEUL, UPHOF; N84, R78M

*Ricinodendron africanum* - *Ricinodendron heudelotii*

*Ricinodendron heudelotii* - *Manketti nut, Essang nut* {S}. The dried kernels are ground and used in stews or eaten as a relish. They also yield an edible oil, sometimes called *essang oil*. Tropical Africa. DALZIEL, DANFORTH, MENNINGER, UPHOF; Y40

*Ricinodendron rautanenii* - *Mongongo nut, Manketti nut* {S}. Pulp of the fruit is eaten raw or cooked, and is also dried and ground for use in porridge. When eaten fresh it resembles a date, though not as sweet. After boiling, it turns maroon and tastes like apple sauce. The nutritious and tasty kernels are eaten raw or roasted. Roasted kernels taste like roasted cashew or Brazil nuts but after prolonged roasting have the flavor of "fine old cheese". Also the source of

*manketti nut oil*, used for cooking. Tropical Africa. FOX, F., TREGOLD, UPHOF; S28M

*Ricinus communis* - *Castor bean* {S}. Seeds are the source of *castor oil*, used by the food industry for adding butter and nut flavors to various foods including baked goods, candy, non-alcoholic beverages, and frozen dairy desserts. In India, castor oil is commonly used for coating grains and legumes such as *oily toor dal*. In Nigeria the fermented seeds, known as *ogili* or *ogiri*, are added to soups and stews. Cultivated. BURDOCK, CAMPBELL-PLATT, DEVI, LEUNG; A25, E7M, F37T{PL}, K38, F68T, F80, H49, J5M, J20, J82, J97M, K71, L55J, Q12, Q46

*Sapium sebiferum* - *Chinese tallow tree, Petroleum tree* {S}. Outer covering of the seed produces a waxy fat sometimes used as a substitute for lard or cacao butter. In Hangzhou, China it is used in the unique frying processes employed for *Longjing* or *Dragon Well* tea, a small amount being rubbed on the inside of the wok firing pan. The wax is absorbed by the leaves and small droplets can be seen on the surface of brewed tea. The flowers yield a light amber, well-flavored honey that is high in enzymes and low in sucrose. Eastern Asia. CORTI, TANAKA; A80M{PL}, C27G{PD}, C60D{PD}, F85, G66, H4{PL}, K38, L8{PD}, N54{PD}, 053M, P5, P17M, Q12, Q32, Q46, etc.

*Sauropus androgynus* - *Rau n'got, Sweet leaf bush, Katook, Chekkurmanis, Pak wan* {S}. The tender tips, young leaves, flowers, and immature fruits are steamed and eaten as a potherb or put into soup. Young leaves and tips are sometimes eaten in salads, having a strong, characteristic odor. One of the most nutritious of all leafy vegetables, with a protein content of six to ten percent. Leaves are used to give a green color to pastry, preserves, fermented glutinous rice, and the alcoholic beverage *brem ball*. Ripe fruits can be made into sweetmeats. Southern Asia. HACKETT, JACQUAT, MARTIN 1975, OCHSE, OOMEN, STEINKRAUS; E8M{PL}, F85, H29{PL}, I12{PL}, N84, 019, P38

*Schinziophyton rautanenii* - \**Ricinodendron rautanenii*

*Tetracarpidium conophorum* - *Owusa nut* {S}. Leaves, young shoots and fruits are eaten with rice in Sierra Leone. The tasty seeds are eaten boiled or roasted, and are often served with com on the cob. They also yield an edible oil, called *n'ghat oil*. West Tropical Africa. DALZIEL, DANFORTH, MENNINGER, TANAKA; Y40

#### EUPOMATIACEAE

*Eupomatia laurina* - *Native guava, Bolwarra* {S}. The soft, yellow-green fruits are eaten out of hand. They have soft, clear pulp which is sweet, very aromatic and pleasant to eat. The flavor is somewhat reminiscent of kiwi or guava, with overtones of nutmeg. Juice from the fruits may be added to ice cream or yogurt. Australia. CHERIKOFF, CRIBB; N79{PL}, P5, P38

#### EURYALACEAE

*Euryale ferox* - *Gorgon, Foxnut, Khee sat* {S}. The soft, pulpy, glutinous fruit is highly esteemed in China as a cooling tonic food. Fresh or dried seeds are pickled, added to curries, ground and made into cakes, popped, or cooked with longans in sweet tonic soups. They are also a source of starch. Very young stalks and rhizomes are edible. Has been cultivated in India and China for thousands of years. The dried seeds are available in Chinatown markets. China to Southeast Asia. HEDRICK 1919, LEYEL 1987a, MENNINGER, MOLLISON, TAN [Re], TANAKA, UPHOF; H36{DF}, J7M, L21T{DF}, M15{PL}, 054

#### FABACEAE

*Abrus pulchellus* - *Malay licorice* {S}. Roots are used as a substitute for licorice in Malaysia. Old World Tropics. UPHOF; F85

*Aeschynomene indica* - *Kusa-nemu* {S}. Leaves are eaten fresh, parboiled and added to soups, cooked as a potherb, stir-fried, etc.

The whole plant is dried in the shade, finely chopped, roasted and used as a tea substitute. Old World Tropics. TANAKA; F85

*Amorpha canescens* - *Leadplant, Wild tea* {S}. An infusion of the dried leaves makes a yellow, pleasant tasting tea. Western North America. KINDSCHER, YANOVSKY; E7M, G47M, H61M, I47, J39M, J40, J40{PL}, J41M, J41M{PL}, J42, J42{PL}, J43, K62, L41

*Amorpha fruticosa* - *Indigo bush, False indigo, Itachi-hagi* {S}. The fruit is crushed and used as a condiment. Western North America, Japan. TANAKA; B94, D92M, I11M{PL}, I98M, I98M{PL}, J25M, J39M, K89{PL}, M69M{PL}, O53M

*Amphicarpaea bracteata* - *Amphicarpaea monoica*

*Amphicarpaea monoica* - *Hog peanut, Ground peanut* {S}. The subterranean, peanut-like seeds are sweet and delicious eaten raw, having more the flavor of shelled garden beans than peanuts. They can be boiled and served with butter or cream, or used in soups and stews. Seeds produced by the above ground pods can be boiled and eaten. Formerly cultivated for its seeds in the southern United States. North America. CROWHURST 1972, FERNALD, GIBBONS 1979, KINDSCHER, MEDSGER; F85, M16{PL}, N84

*Apios americana* - *Groundnut, Potato bean, Indian potato* {PL}. The sweet, starchy tubers are eaten raw, boiled, fried, roasted, or otherwise prepared like potatoes. They can be added to soups, stews, and casseroles, or mashed and used in breads. Menomini Indians made a preserve by boiling the tubers in maple syrup. Groundnuts contain seventeen percent crude protein, more than three times that of potatoes. The seeds are sometimes used like peas or beans. North America. ANGIER, BLACKMON 1986b [Cu, Re], FERNALD, KINDSCHER, MEDSGER, NATIONAL RESEARCH COUNCIL 1979, VILMORIN; B61M{S}, C74, C95{S}, D47M, D95, H4, I60, I74, M16, N84{S}

#### CULTIVARS

#784: Reddish-brown tubers, about 2 inches in diameter. A very dependable grower and producer. Yields numerous tubers. Developed at Louisiana State University. E91T

**Aquarius:** Reportedly has one of the largest tubers of any of the improved types found thus far. Not as productive as some. E91T

**Corona:** Produces tubers which are slightly smaller than those of Aquarius, however they are produced in greater abundance. E91T

**Draco:** Produces tubers which are relatively small compared to most others, however they are notably flavorful and are produced in great abundance. E91T

**Gemini:** A very productive plant yielding tubers which are slightly larger than those of #784. E91T

**Lyra:** Very large tubers comparable to those of Aquarius. However, the skin is nice and smooth. E91T

**Orion:** Large tubers, comparable to those of Gemini. However, it has a growth habit that produces tubers closer to the crown. E91T

**Serpens:** Improved type selected in North Carolina. Tubers are slightly larger than the commonly found native species. Older mother tubers have occasionally reached nearly a foot in length. E91T

**Sirius:** Tubers 2 to 3 inches in diameter; skin somewhat light-colored. Tubers are located closer to the crown than most. E91T

**Virgo:** Improved type selected in Vermont. Produces numerous tubers, however they are much smaller than those of typical improved forms. E91T

*Apios tuberosa* - *Apios americana*

*Arachis hypogaea* - *Peanut, Groundnut* {S}. Seeds are eaten raw, boiled, steamed, roasted, salted, in confectionery, made into peanut butter, ground into meal and flour for breads, etc. Source of peanut

oil, used in salads, margarine, and preferred over all others for stir-fry cooking. Used for the universally popular groundnut soup in Africa. In Asia and Africa, peanuts are used as a substrate for *miso*, *onjom*, *dageh*, *tempeh*, *rob Jul* and other fermented foods. Once used as an adulterant of coffee, called *Austrian coffee*. Young shoots, leaves, and unripe pods are eaten as potherbs. Sprouted seeds are consumed. Peanuts are fed to pigs destined to become *Virginia* and *Smithfield* hams, and are said to contribute a distinctive flavor. South America, cultivated. BISSELL, DIRAR1993, HALPIN [Cu, Cul], HERKLOTS, OCHSE, ROSENGARTEN [Re], ROUTHIER 1989 [Cu, Re], SHURTLEFF 1979, SMITH, C., STEINKRAUS, TANAKA, UPHOF, WILSON, E.G. [Re]; D4, E7M, G73, L55J, N84, O53M. (for cultivars see Peanut, page 462, see also Sprouting Seeds, page 524)

*Aspalathus contaminatus* - *Aspalathus linearis*

*Aspalathus linearis* - *Rooibos tea, Red tea* {DF}. Source of a low tannin, caffeine-free tea with a very agreeable aroma and a pleasant, non-astringent taste. Can be drunk hot or cold (sweetened or not), diluted with milk, flavored with cinnamon or other spices, or used as an excellent base for soups, sauces, punch and baked goods. Has a high protein and vitamin C content. A portion will yield twice as much full-flavored brew as the same amount of ordinary tea. An extract is used in schnapps and a liqueur known as *buchenbosch*. Usually marketed as *Kaffree tea* in the United States. South Africa. BOWN, CHENEY [Cu], FCK, F., MORTON 1983 [Nu, Pre]; C95M, E14T, F37T, GO, G73, K18M, N7D, N54, N84{S}, S28M{S}

*Astragalus boeticus* - *Swedish coffee* {S}. Cultivated in certain parts of Europe for its seeds, which are roasted, ground, and used as a substitute for coffee. Mediterranean region. HEDRICK 1919, ZEVEN; T66M, U63

*Astragalus caryocarpus* - *Astragalus crassicaarpus*

*Astragalus crassicaarpus* - *Groundplum milk-vetch, Buffalo pea* {PL}. The thick, fleshy, unripe pods, which resemble green plums, are eaten raw or cooked. When cooked, they are usually prepared and served whole in the same manner as the edible-podded sugar pea or Chinese snow pea. Sometimes the pods are cooked and spiced for pickles. North America. KINDSCHER, MEDSGER; B29{S}, J39M, J39M{S}, J41M, N84

*Astragalus gummifer* - *Tragacanth* {DF}. One of the principal sources of *gum tragacanth*, much appreciated as an emulsifying and thickening agent in salad dressings, syrup, sauces, ice cream, beverages, gelatins and puddings, confectionery, etc. Has been in use since ancient times. Eurasia. KUNKEL, LEUNG, UPHOF; A49D, E14T, F37T, GO, K18M, N7D, N19M

*Astragalus membranaceus* - *Huang qi, Pak kei* {S}. The pale yellow roots are eaten in tonic soups, often with chicken and meats or combined with *Codonopsis pilosula* and *Angelica sinensis*. Also used in teas, wines, and dilute rice porridge dishes called *congee*, *jook* or *shifan*. One of the most popular tonics in Chinese herbalism. China, cultivated. FLAWS 1995 [Re], LEUNG, TAN [Re], TIERRA; A2, B21P{DF}, D26G, D40G, E14T{DF}, F68T, F80, G6, G19P{DF}, H94M{PL}, I49M{PL}, I74, I81T{PR}, J5M{PL}, J82, K18M{DF}, K49T, ZJ4{DF}, R47, etc.

*Cajanus cajan* - *Pigeon pea* {S}. Very young seeds are cooked and eaten like green peas, especially in rice dishes. Dried seeds are used in soups and curries, or fermented into *dhokla* and *tempeh kacang iris*. Unripe pods are also eaten in curries. The leaves and young shoots, having a protein content of about nine percent, are cooked as a potherb. In Indonesia, the germinated seeds are eaten when about one inch long. Split dried pigeon peas are available as *toovar*, *toor*, *oily toor* or *arhar dal* in Indian markets. Known as *gandules* in Latin America, the canned fresh peas can be found in the specialty sections of some supermarkets. Southern Asia, cultivated. CHANTILES [Re], DEVI [Re], DUKE, HAWKES [Re], HERKLOTS, JAFFREY, MARTIN 1975, OCHSE, ORTIZ 1973 [Re], SHURTLEFF 1979, STEINKRAUS, VON WELANETZ; A52M{ED},

A79M, A90M{DF}, D33, E21D{PL}, F74{DE}, F85, H73{DF}, J11M{DF}, N84, PIG, P38, Q12, Q46, R47, etc.

#### CULTIVARS

**2-B:** Bushy plant that only grows to 3 feet tall, or about half the size of other types. Originally from Puerto Rico. T69

**Black:** Black-seeded cultivar from Peru that has performed well in Florida and in other areas where it has been distributed by ECHO. T69

**Short Dav:** Early maturing strain that is day length independent and does well under short day conditions. T69

#### *Cajanus indicus* - *Cajanus cajan*

*Canavalia ensiformis* - *Jack bean*, *Chickasaw lima* {S}. The immature pods, before the seeds inside them have swelled, are eaten raw, preserved in salt, or boiled and served like snap-beans. Ripe seeds are used as a substitute for coffee. Unripe seeds can be eaten boiled, roasted with salt, or peeled and used like fava beans. In Indonesia, the seeds are fermented into *tempeh kara bedog*. The young leaves are prepared like spinach. Fresh unripe seeds are considered poisonous. West Indies, cultivated. HAWKES [Re], HERKLOTS, NATIONAL RESEARCH COUNCIL 1979 [Nu, Pre], SHURTLEFF 1979, TANAKA, UPHOF; A79M, F85, K63G, N84, Q12, Q46, S70

*Canavalia gladiata* - *Sword bean* {S}. Unripe pods are boiled and served as a green vegetable like string beans. The full-grown but still green seeds are cooked and eaten. Dry, fully mature seeds are edible after extensive boiling and peeling of the seed coat. They can also be detoxified by fermentation to *tempeh*. In Japan, the young pods are sliced and pickled in soy sauce with radishes, eggplants, and lotus, and the seeds are boiled and mashed with sugar. The sour-tasting leaves are blanched and eaten with vermicelli and peanut curry or added to *tom yam* soup. Tropical Asia, cultivated. HERKLOTS [Cu], JACQUAT, NATIONAL RESEARCH COUNCIL 1979 [Nu, Pre], TANAKA; N84, S70, S93M

*Canavalia maritima* - *Mackenzie bean* {S}. In Malaysia, the flowers are eaten as a flavoring. The young pods are eaten when young. Young seeds are said to make a good *pease porridge*. Paleotropicals. BURKILL; F75{PL}, F80, F85, G73, 181M, N79M, N84, 093, P5, P17M, P38, R15M, S92

#### *Canavalia rosea* *Canavalia maritima*

*Caragana arborescens* - *Siberian pea tree* {PL}. Young, green pods are eaten as a vegetable in some parts of Siberia. The mature seeds, containing up to thirty six percent protein, can be used in recipes calling for dried beans or peas. Bland in flavor, they are best cooked in spicy dishes like chili. Siberia, cultivated. HEDRICK 1919, PETERSON, T., UPHOF; C33, E47{S}, F80{S}, I47{S}, I49G, J26, M35M, M69M, 053M{S}, R47{S}

*Cicer arietinum* - *Chick pea*, *Garbanzo* {S}. Fresh or dried seeds are consumed in soups, stews, sweetmeats, rice dishes, *falafel*, *hummus*, etc. The fresh green seeds have an appealing lemon-like flavor. Also fermented into *dhokla*, *miso* and *tempeh*. Parched or roasted seeds are eaten as a snack, or they can be ground and used as a coffee substitute. Roasted roots are also a coffee substitute. Widely utilized in India, where it is called *Bengal gram*, and when split, *chana dal*. Chick-pea flour or *besan* is used in batters, sauces, soups, sweetmeats, fritters, pizza, pancakes, and dumplings. Crisp, chick-pea flour noodles, called *sev*, are a popular snack food in India. A strong, acid dew forms on the plant overnight which is gathered and made into vinegar or cooling drinks. Young leaves, shoots and pods are used as potherbs. Sprouted seeds are eaten. Eurasia, cultivated. DUKE [Nu], GRAY, R, HEDRICK 1919, HERKLOTS, JAFFREY [Re], SHURTLEFF 1979, STEINKRAUS, UPHOF, VILMORIN [Cu], VON WELANETZ; B75, B31{PD}, E13G{PR}, F85, F88{PD}, G71, H19M{PD}, L50M{PD}, L99{PD}, M46, N84, R47. (see also Sprouting Seeds, page 524)

#### CULTIVARS

**Black Seeded:** {DF} Small black seeds, one or two per pod. Deeper, fuller flavor and more distinct texture than common cream-colored types. Excellent in salads or with rice side dishes. Plants produce numerous pods. Should be planted close together to form a lush canopy of blue-green foliage. Likes hot weather and is drought tolerant. A7, A90M, F86T, H99J{SP}, L24M{SP}

**Kabuli Black:** 95 days. Very hardy and vigorous cultivar originating in Kabul, Afghanistan and released by Washington State University. Medium-sized, solid black seed; two seeds per pod; rich, full flavor. Somewhat tolerant of cold soils. Drought resistant. Has grown to maturity easily in the Bitterroot Mountains of Montana. A2, D68, E24, E56{DF}, F73D, J97M, K49T, L3J, L11, L77D, N84

**Kala Chana:** Small, brown-seeded type from India. Used whole in Northern Indian cuisine. When husked and split as *dal*, it is eaten throughout India, especially in Eastern areas. Also hulled and roasted to produce chickpea flour (*besan*). Does wdl in dry, short-season regions and home gardens. DEVI; F80

**Mayo Winter:** Plump, beige seeds. Dry farmed on a Sonora, Mexico ejido (communal form). Adapted to the low, hot desert where it is planted with the winter rains. An introduced staple. 116, N84

**Mvles:** Small-seeded "desi" type of Indian origin, better suited to home gardens than the large commercial types. Developed and recommended for use in the interior Northwest and other short-season, dry areas. Not appropriate for coastal fog belts. Resistant to ascochyta. A2

**Red Chana:** 105-110 days. Small-seeded "desi" type from India. Commonly eaten as a dry toasted snack available from street vendors and food stalls. Also eaten like green shell peas. Pleasant, earthy flavor. Yields well. L3J

**Tarahumara:** Small, dark-brown seeds, smaller than Mayo Winter. Prolific, very drought and insect resistant plant. Fall crop from the bottom of Copper Canyon, Mexico where it is dry farmed. Adapted to growing at different elevations, from sea level to 10,000 feet. L3J

*Clitoria tematea* - *Butterfly pea*, *Kordofan pea* {S}. Flowers are used to give a blue tinge to rice cakes and boiled rice. The young pods are consumed like string beans. Leaves are also used to dye food or are eaten as a potherb. Tropics, cultivated. ABBIW, BURKILL, HEDRICK 1919, MARTIN 1975, TANAKA, ZEVEN; A79M, E53M, F80, J27{PL}, 053M, 093, P5, P17M, Q12, Q18, Q32

*Cordeauxia edulis* - *Yeheb*, *Ye-eb*, *Jeheb* {S}. The nutritious seeds, the size of a small macadamia nut or large filbert, have a smooth consistency and a delicious, chestnut-like flavor. They can be eaten raw or cooked. An infusion of the leaves is used as a substitute for tea. An endangered species adapted to hot, dry regions of uncertain rainfall. Begins to bear prolificacy when only 3 to 4 feet high. Somalia. MACMILLAN, NATIONAL RESEARCH COUNCIL 1979 [Nu], UPHOF; T66M

*Crotalaria longirostrata* - *Chipilm*, *Chepil* {S}. The young shoots are steamed and served whole, the leaves and flowers having been stripped off and eaten separately for their pronounced snap-bean-like flavor. The leaves can be ground with garlic and brushed on bread or added sparingly to white sauce. When added to tamales that are made with butter instead of oil, the flavor combination is said to be unforgettable. Central America, cultivated. QUINTANA 1994, THEODOROPOULOS, UPHOF, WILLIAMS, L.; F80, F85, N84

#### *Cyamopsis psoraloides* - *Cyamopsis tetragonolobus*

*Cyamopsis tetragonolobus* - *Guar*, *Cluster bean* {S}. The unripe pods, called *guarfali*, are eaten in curries, fried in oil, salted, or dried for later use. The protein-rich seeds are also eaten. Source of



guar gum, used by food manufacturers as a stabilizer and thickener in ice creams, bakery goods, gluten-free foods, and salad dressings. Sprouted seeds are occasionally eaten. Young pods are available at Indian markets in New York and other large cities. Tropical Asia. HAGMAN, HERKLOTS, MACMILLAN, NATIONAL RESEARCH COUNCIL 1975a, REEJHSINGHANI 1973 [Re], TANAKA; A25G{DF}, A79M, B31{DF}, D4{DF}, E14T{DF}, F37T{PL}, F74{DF}, G73, K18M{DF}, L77D, M15M{DF}, N84, Q46

## CULTIVARS

**Deshi Small:** An improved form with short, blocky pods. Low seed to pod ratio. Sown from April to May and from July to August in India. Adapted to hot, dry conditions. R0

**Long Podded:** 60 days. Climbing, branching type plant, grows to 3 feet. Adaptable to a wide range of climatic conditions. Matures early. Q45M, R50

**Pusa Navbahar:** 40 days. Single-stemmed, high yielding plant, bears at every node. Smooth, glossy green pods, 6 inches long. Can be grown during both spring and rainy seasons. Q45M, R0, R50, S36

**Surati Makhani Lona:** An improved type from India with long, smooth pods. Low seed to pod ratio. Sown from July to August in India. R0

*Cyclopia genistoides* - *Cape tea, Honey bush tea* {DF}. An infusion of the leaves is used as a substitute for tea. The most common of the *Cyclopia* species used for this purpose. Cultivated locally and in other areas. South Africa. CHENEY, HEDRICK 1919; GO

*Cytisus scoparius* - \**Sarothamnus scoparius*

*Dalea candida* - \**Petalostemon candidum*

*Dalea* sp. - *Toronjil* {S}. The highly aromatic herb is used to prepare a tea resembling lemon grass or lemon verbena, but with a more subtle and complex flavor. Annual plant with short racemes of small blue-purple flowers and lacy, delicate pinnate foliage. Lew, sprawling trailer when grown in poor, compacted soil, as by paths. Grows to four feet in good soil. Oaxaca, Mexico. THEODOR-OPOULOS; F80, N84

*Daviesia latifolia* - *Hop bitter-pea* {S}. Leaves have been used as a substitute for hops. Australia. CRIBB; N79M, N84, R15M

*Desmanthus brachylobus* - *Illinois bundleflower* {S}. The protein rich seeds are edible but without much flavor. Being evaluated by the Land Institute of Salina, Kansas as an edible legume for growing with perennial grains in a non-tillage permaculture system. North America. F73D, F80, G47M, 111, I81M, J25M, J39M, J39M{PL}, K62, L31, L41, L90J{PL}, M25, N84

*Desmanthus iltinoensis* - \**Desmanthus brachylobus*

*Diphysa robinoides* - *Cuachipil, Guachipilin* {S}. The yellow flowers become mucilaginous when steamed, and are often added to beans or are eaten with tortillas. Central America. THEODOR-OPOULOS; F85

*Dipteryx odorata* - *Tonka bean* {DF}. The dried seeds have a strong, penetrating coumarin-like aroma and flavor. An extract of them has been employed as a vanilla substitute in flavoring candy, baked goods, ice cream, liqueurs, cocoa, tobacco, snuff, etc. Still used in some products in various countries, including Mexican vanilla. Prohibited from commercial use in the United States. Tropical America, cultivated. BROUK, BURDOCK, MENNINGER, MORTON 1976; A49D, E14T, F32D, F37T, F73D, GO, G84, J82, K2, K18M, M15M, M15T, N7D, N19M

*Dotichos biflorus* - \**Macrotyloma uniflorum*

*Dolichos lablab* - \**Lablab purpureus*

*Dolichos lablab* var. *lignosus* - \**Dotichos lignosus*

*Dolichos lignosus* - *Australian pea, Ballar* {S}. The tender seeds are eaten fried, or cooked and salted like green peas. Pods are eaten at all stages of development. The dried seeds are consumed as a split pulse. Southern Asia. TANAKA; 053M, R47, S92

*Ervum monanthos* - \**Vida monantha*

*Erythrina americana* - *Flor de colorin, Tzompantele* {S}. In Mexico, the petals and young inflorescences are fried and eaten, especially in tamales at Easter time. Tender leaves are used for greens. Central America. ALCORN, KUNKEL; F73D, F80, F85, G73, I81M, I83M{PL}, N84

*Erythrina berteroaana* - *Coral-bean, Pito* {S}. Flowers and immature inflorescences are eaten as a vegetable with meat, in stews, and in egg dishes. Tender shoots and leaves are eaten raw, or more commonly, cooked in stews with other foods. Tropical America. MARTIN 1975, TANAKA, WILLIAMS, L.; A12G, A79M, I12{PL}, L55J, N84, R32

*Erythrina edulis* - *Basul, Balu, Chachafruto* {PL}. The extremely large, succulent seeds have a pleasant, slightly sweet flavor and are usually boiled and eaten like lima beans with corn, cassava, bread or potatoes. They are sometimes mashed with cheese and are also fried. Contains about twenty percent protein. Northern South America. NATIONAL RESEARCH COUNCIL 1989, PEREZ-ARBELAEZ; 174, L55J{S}, N84{S}, P38

*Erythrina fusca* - *Chang kering, Thong long* {S}. Young leaves are eaten raw or cooked. In Thailand, they are eaten raw in papaya salad or with *plan naem*—a rice and fish dish eaten with Thai sour sausage and various vegetables, such as lettuce and cilantro. Tropical Asia. JACQUAT, UPHOF; A79M, G73, N84

*Erythrina herbacea* - *Eastern coral-bean, Cherokee bean* {PL}. The flowers make an acceptable vegetable when boiled. Young leaves are occasionally cooked and eaten. Southeastern North America. MORTON 1977; B61M, B61M{S}, C36, F85{S}, H4, H14M, M7M, N37M, N84{S}, P5{S}

*Erythrina indica* - \**Erythrina variegata*

*Erythrina rubrinervia* - *Galitto, Pito* {S}. Flowers and flower buds are eaten like string beans in El Salvador and Guatemala. Young leaves are used in soup. Central America. ALTSCHUL, UPHOF; F85

*Erythrina variegata* - *East Indian coral tree* {S}. Young leaves are steamed and eaten or added to soups, stews and curries. In Vietnam, they are used for wrapping a popular food known as *nem*—\* kind of hashed meat. At one time used in the cooking of human skulls in Papua New Guinea. Tropical Asia. HEDRICK 1919, MAY, R., OCHSE, VAN DUONG; C95, N84

*Faba vulgaris* - *Fava bean, Broad bean* {S}. The unripe seeds, when small and tender, can be eaten raw as an hors d'oeuvre with *feta* and *marzotica* cheeses. Older ones are steamed, sauteed, pureed, or eaten with pasta or rice. Dried seeds are boiled, ground into flour, pureed, pickled in salt, added to soups, or made into *tofu*, *miso*, and nut milk. Small brown ones are used for *foul medammes*, a stewed dish of lavas, *hamine* eggs, olive oil, lemon juice, garlic and spices, that is a nearly universal breakfast food in Egypt. In China and Indonesia, they are fermented into *soy sauce* and *tempeh kacang babi*, respectively. The fermented beans are a main ingredient of *Szechuan chili paste*. Dried and peeled seeds, called *habas peladas* are popular in Mexican cooking, especially purged and folded into thick *tortillas*. In Egypt, they are widely used for making *Egyptian falafel* or *taamia*. Sprouted seeds, called *silk bean sprouts* in China and *foul nabet* in Egypt, are cooked and eaten. Young pods are cooked as a vegetable or added to soups and stews. Popped seeds are salted and eaten as a snack, or roasted like peanuts. Leaves are eaten as a potherb. Cultivated. COST 1988 [Cu], COTTERELL [Re], EVANS [Cu, Re], GRAY, P. [Cu, Re], HALPIN [Cu, Cu], HARRINGTON, G., HERKLOTS, KHALIL [Re], KRAFT [Re], LARKCOM 1991, MARTIN 1975, SALLOUM [Re], SCHNEIDER

1986 [Pre, Re], STEINKRAUS, TANAKA, VILMORIN [Cu]; A25, J25M, K71, L24G{SP}, L50M{PD}, M46, N40{PR}, N40{PD}, S55. (for cultivars see Fava Bean, page 363)

*Flemingia vestita* - *Soh-phlong* {S}. The soft, fleshy, tuberous root is eaten raw, being somewhat sweet and juicy and having an agreeable, nut-like flavor. Rich in iron and phosphorous, and contains more than three times the protein of cassava. Also employed as a source of starch. Cultivated as a minor food crop in the Khasi and Jaintia hills of Assam. India. NATIONAL RESEARCH COUNCIL 1979, SINGH, H., TANAKA, WATT; Y81

*Galega officinalis* - *Goafs rue* {S}. Young leaves are eaten like spinach. The herb is used as a substitute for rennet in making cheese. Eurasia. GRIEVE, HEDRICK 1919; C43M{PL}, D92M, K22{PL}, L66{PL}, L90J{PL}, N71M, N84, 053M, R47

*Genista tinctoria* - *Dyer's greenwood*, *Dyer's broom* {S}. The flower buds are pickled and used in sauces as a substitute for capers. Seeds have been suggested as a possible substitute for coffee. Eurasia. GRIEVE, HEDRICK 1919; C43M{PL}, D92M, D95{PL}, E61{PL}, F80, J82, J82{PL}, K22{PL}, K38, N71M, 053M, P49

*Geoffroea decorticans* - \**GourUea decorticans*

*Gliricidia sepium* - *Madre de cacao* {S}. The flowers are cooked as potherbs or folded into an egg batter and fried. Tropical America. WILLIAMS, L.; A12G, A79M, E21D{PL}, F80, F85, G66, N84, 093, P5, P17M, Q12, Q18, Q32, Q46, R32

*Glycine max* - *Soybean*, *Soyabean* {PD}. Unripe seeds are boiled or steamed and eaten like green lima beans or peas. The protein-rich dried seeds are boiled, baked or pressure-cooked, and used in soups, stews and casseroles. Also the source of an oil used in salads and cooking. Toasted seeds are eaten as a peanut-like snack called *soy nuts*. Strongly roasted ones are ground into an excellent coffee substitute. Soy flour is used in making noodles, pasta, confectionery, and *hoisin* sauce. *Kinako*, a tan or beige flour made from whole roasted soybeans that has a nutty flavor and fragrance, is used in many of Japan's most popular confections. *Textured vegetable protein* or *TVP*, widely used as a meat substitute, is made from defatted soy flour that is cooked under pressure, extruded and dried. Soybean sprouts may be eaten raw, or added to omelettes, soups, souffles and stir-fried dishes. In Indonesia, the young leaves are eaten, raw or steamed, and served with rice. Soybeans are the principal source of *lecithin*, used as a food supplement, and as an emulsifier in vegetable oil sprays, nutmilks, smoothies, and commercial fat and egg substitutes such as *Wonderslim*. Made into numerous fermented and unfermented products, including *soy milk*, *tofu*, *koridofu* (snow-dried tofu), *okara*, *yuba*, *shoyu* (soy sauce), *tamari*, *kecap*, *miso*, *temp eh*, *natto*, *hama-natto*, and *sufu*. Bean curd skins are used as food wrappers. Fermented soybean cakes, known as *meju*, are used as starter cultures for Korean soy sauce (*kanjang*) and soybean paste (*toenjang*). Eastern Asia, cultivated. BATES [Nu, Re], BELLEME [Re], CHANG, W. [Cul, Re], COLE, C. 1990 [Re], COLE, C. 1993 [Re], HALPIN [Cu, Cul], HARRINGTON, G., HERBST, S., HERKLOTS [Cu], NOH [Cul, Re], OHSE, PASSMORE, PIPER [Cu, Re], SHURTLEFF 1975 [Re], SHURTLEFF 1976, SHURTLEFF 1979, STEINKRAUS, TANAKA, WOLF [Pre, Re], WOODRUFF; A52M, C27G, F17, F88, F97M, G20M, G47B, H14I, H72, I8M, M34M{S}, N7D, N49M. (for cultivars see Soybean, page 522, see also Sprouting Seeds, page 524)

*Glycine tnbacina* - *Vanilla glycine* {S}. The taproot is reported to have the flavor of licorice, and to have been chewed by the Aborigines. Australia. CRIBB; N84, R15M

*Glycyrrhiza echinata* - *Wild licorice* {S}. Roots are a source of Russian and German licorice. Southern Eurasia. HEDRICK 1919; A26, C43M{PL}, D56M, D92M, F80, J61M{PL}, J82, M82{PL}, N40M, N61, N84, 053M, Q24

*Glycyrrhiza glabra* - *Licorice*, *Italian licorice*, *Spanish licorice* {PL}. The sweet roots are used for chewing. Also the source of licorice powder and extract, widely employed in candy, baked

goods, ice cream, soft drinks, etc. Licorice sticks and *brewer's licorice* are added to beer for increased head retention, and to give thickness, flavor and blackness to porter and stout. The leaves, called *nakhalsa*, are used as a substitute for tea in Mongolia. A tea made from the powdered rootstock is consumed directly, or added to other herbal teas to sweeten them naturally. Grain coffees can be flavored with the extract. The roots contain glycyrrhizin, which is fifty times sweeter than sucrose. Mediterranean region, cultivated. DAGHER, GRIEVE [Cu], HEDRICK 1919, MARCIN, MORTON 1976, RITTER [Re], TANAKA; C43M, F37T, F64{PD}, F68T{S}, G40{PD}, G66{S}, G96,149M, J82, K85, L90J, M82, N17{PD}, R47{S}

#### CULTIVARS

**Pontefract:** A hardier and tougher cultivar than Poznan, but has less flavor. Introduced into Great Britain by Dominican monks. Slow growing. Grows to about 3 feet tall. N84, R53M, R53M{S}

**Poznan:** A vigorous improved cultivar of Polish origin with a high sugar content. Also a free flowering type. Grows to about 4 feet tall. Should be grown in a cold frame in more northerly climates. N84, R53M

*Glycyrrhiza glandulifera* -> *Glycyrrhiza glabra*

*Glycyrrhiza lepidota* - *American licorice* {S}. The long, sweet, fleshy roots are chewed, added to other foods for flavoring, or dried and brewed into tea. American Indians roasted them in embers, and they were then said to taste like sweet potatoes. The young, tender shoots can be eaten raw. Roots contain six percent glycyrrhizin. North America. FERNALD, HART, KINDSCHER, KIRK, MEDSGER, UPHOF; E67T{PL}, J39M, J39M{PL}, L3J, N84

*Glycyrrhiza uralensis* - *Chinese licorice*, *Gan cao* {S}. Roots are used as a sweetener for foods and tobacco. They have a glycyrrhizin content of up to 24%. Widely cultivated in China. Eastern Asia. LEUNG, TANAKA; A2, D40G, D56M, D92M, E14T{DF}, F68T, F86G, G6, G19P{DF}, G73{DF}, 174, J76{PL}, J82, L21T{DF}, L90J{PL}, L94M, M65, R47, etc.

*GourUea chilensis* - \**GourUea decorticans*

*Gourliea decorticans* - *Chanal*, *Chahar* {S}. The fleshy, subacid fruits are usually eaten when sweet and over-ripe, as a "honey" or *arropo*. They are also used in the preparation of an alcoholic beverage called *aloja de chahar*. Leaves are cooked and eaten. An important food in the Chaco region of Chile. Temperate South America. CARDENAS, HEDRICK 1919, TANAKA, UPHOF, VALENZUELA; JO, N84

*Hardenbergia violacea* - *Purple coral-pea*, *False sarsaparilla* {S}. A slightly sweet, pleasant-flavored beverage can be prepared by boiling the leaves in water. At one time the roots were also reportedly used for this purpose. Australia. CRIBB; F80, G96{PL}, I28{PL}, L91M, M7M{PL}, N79M, N84, 033, P5, Q32, R15M, R33M, S92

*Hedysarum alpinum* - \**Hedysarum boreale*

*Hedysarum boreale* - *Licorice-root*, *Sweet root* {S}. The young, tender roots are eaten, having a somewhat sweet, carrot or licorice-like flavor. They can be sliced and eaten raw, boiled, baked, fried or added to soups. North America. FERNALD, GIBBONS 1979, HELLER, KARI, MEDSGER, UPHOF; E66M, E67T{PL}, H95, 147, K49Q

*Hedysarum mackenzii* - *Licorice-root*, *Sweetbroom* {S}. The long, flexible roots have a sweet, licorice-like flavor and are much eaten in the spring but become woody and lose their juiciness and crispness as the season advances. Western North America. FERNALD, HEDRICK 1919, KIRK, UPHOF; K49Q

*Hedysarum occidentale* - *Sweetvetch*, *Licorice root* {S}. The roots have a sweet, licorice-like taste and can be eaten raw or cooked. Western North America. KIRK; E67T{PL}, 147

*Indigofera pseudo-tinctoria* - *Koma-tsunagi* {S}. The leaves and flowers are boiled and eaten. Eastern Asia. TANAKA; C9M, F80, H4{PL}, N84

*Indigofera tinctoria* - *Indigo* {S}. Leaves are the source of a deep blue dye sometimes used to counteract the slightly yellow color of icing sugar. Southern Asia, cultivated. BROUK; C43M, C43M{PL}, D92M, F15M{PL}, F37T{PL}, F85, J82, L94M, N84, 053M, Q12, Q18, S55

*Inocarpus edulis* - *Polynesian chestnut*, *Tahitian chestnut* {S}. Seeds are eaten raw, boiled, roasted or baked, having somewhat the flavor of chestnuts. Although quite palatable, they are reputed to be somewhat indigestible, even when cooked. Grated seeds are used for making flat cakes, breads and puddings. In the Marquesas, a puree of the cooked seeds is flavored with coconut cream. Malaysia, Pacific Islands, cultivated. MASSAL, MENNINGER, ROSENGARTEN, TANAKA, UPHOF; F85

*Kennedyia prostrata* - *Running postman* {S}. The leaves are used as a substitute for tea. Australia. CRIBB; F80, N79M, N84, 033, 053M, 093, P5, Q32, R15M, R33M, R47, S92

*Lablab purpureus* - *Bonavista bean*, *Hyacinth bean* {S}. Young, tender pods and immature seeds are boiled and used as a curry vegetable. The fresh or dried leaves are eaten like spinach. Flowers are eaten raw, steamed, or added to soups and stews. Dried seeds can be cooked and eaten as a vegetable, prepared as *tofu*, or fermented into *tempeh kara kara*, *vada* and *dosa*. Slit seeds are known as *vail dal* in India. The sprouted seeds are comparable to soybean or mung bean sprouts. The large, starchy root is edible. Tropics, cultivated. CAMPBELL-PLATT, FERNALD HAWKES [Re], HEDRICK 1919, HERKLOTS [Cu], MACMILLAN, NATIONAL RESEARCH COUNCIL 1979 [Nu], OCHSE, SHURTLEFF 1979, STEINKRAUS; A79M, B75, E7M, F74{DF}, F80, F85, 191, K22, L90M, L91M, N84, 093, PIG, S70

#### CULTIVARS

**Hiahworth:** The pods are non-shattering, mature at the same time, and grow above the foliage at the top of the stems so that harvesting them is easy. Quick maturing, and yields well in widely different environments. Developed in Queensland, Australia. NATIONAL RESEARCH COUNCIL 1979; P17M, P83M

**Purple:** 75 days. Ornamental plant with purple pods and purple flowers. Seeds are black. Pods retain their purple color if sauteed quickly. S70

**Red:** Attractive, shiny scarlet pods. Do not become tough too quickly; even larger pods can be eaten raw. Produces well during long day conditions as well as short. May be suitable for growing in northern states. D33

**Red Fortune:** Striking magenta, lima bean-like pods on attractive, magenta vines; 6 to 10 inch long flower spikes produce large fragrant, sweet-tasting, violet and white blossoms. 177

**Surti Paodi:** The pods are harvested when young and tender and eaten like French beans. Grown extensively in gardens in the Bombay area of India. Available at Indian markets, either fresh or canned. WATT; RO

**Valor:** Long, tender white pods produced in abundance. Matures in 1 1/2 to 2 months. R50

**Walpaodee:** Produces flat, light green pods in clusters. R50

*Lathyrus davidii* - *Itachi-sasage* {S}. The young plants, including stems, pods, and inflorescences, are parboiled and then eaten as a potherb, fried, roasted, or used as ingredients of soups and other cooked dishes. Leaves and stems may also be cooked and eaten separately. Eastern Asia. TANAKA; X54

*Lathyrus japonicus* ssp. *maritimus* - *Beach pea* {S}. Young seedpods, when less than an inch long, can be stir-fried like Chinese snow pea pods. Immature seeds are eaten raw, boiled and served like green peas, or used in soups. The ripe, dried seeds are powdered and

made into dumplings, or roasted and used as a substitute for coffee. Seeds may be sprouted and used like garden peas. Northern temperate region. BRACKETT [Re], FERNALD, GIBBONS 1964, KIRK, TANAKA, UPHOF; A2, E15, F85, F88M, K38, K49Q, N84, 053M

#### *Lathyrus maritimus* - *Lathyrus japonicus* ssp. *maritimus*

*Lathyrus sativus* - *Chickling vetch*, *Grass-pea*, *Wedge-pea*, *Doukhorbor pea* {S}. The unripe seeds are eaten like green peas. When ripe and dried, they may be used to make pea-soup. The flour from the dried seeds is occasionally mixed with that of wheat or rye, and made into bread. In India, the seeds are parched and boiled, and made into *chapatties*, paste-balls, and curries. Unripe pods and leaves are also boiled and eaten. A disease called lathyrism occasionally occurs in people whose diet consists of thirty to fifty percent chickling vetch. Southern Eurasia, cultivated. BROUK, BURKILL, BURR, HEDRICK 1919, LOVELOCK, TANAKA, VILMORIN, WATT; E7M, J39, N81, N84, 048, 053M

*Lathyrus tuberosus* - *Earth chestnut*, *Tuberous vetch*, *Dutch mice* {S}. In Europe, the plants are sometimes cultivated for their tubers, which have an agreeable, pleasant taste, much resembling that of the sweet chestnut. They can be eaten either boiled or roasted. Eurasia. BURR, FERNALD, HEDRICK 1919, VILMORIN; D47M, E83T, N84, 053M, 048, R49{PL}

*Lens culinaris* - *Lentil* {S}. The seeds are parched and eaten, or boiled and used in soups, stews, casseroles, curries, purees, stuffings, etc. The lentil and rice dish *mujaddara*, still eaten in Middle Eastern areas today, is said to be the *mess of pottage* referred to in the Biblical account of Esau and Jacob. Lentil flour, derived from yellow lentils, can be mixed with cereal flour and used in making breads. In Ethiopia, the roasted, ground seeds are used in the hot spice mixture called *mit'in shiro*. The young pods are eaten fresh or cooked like string beans. Sprouted seeds are widely eaten in salads, vegetable dishes, soups, etc. Southwest Asia, cultivated. BROUK, HEDRICK 1919, MACMILLAN, MESFIN [Re], MOLDENKE, SALLOUM [Re], UPHOF, VILMORIN [Cu]; H51{PD}, L14G{PD}, N84, 053M. (see also Sprouting Seeds, page 524)

#### CULTIVARS {DF}

**Black Beluga:** Tiny, plump, glossy black seeds; 2.5 to 3 mm in diameter; yellow cotyledons. Fast cooking, mild-flavored lentils that hold their shape well. Turn brownish when cooked. Excellent in soups, salads and side dishes. Can also be used for sprouting. Originated in the Middle East. Named for their resemblance to Beluga caviar. A7, A90M, E23T, E56, F86T, H73, J11M, K18M, L24M{SP}, N55

**Brewer:** Large, uniform seeds, 6.0 to 6.5 mm. in diameter; beige with slight brown mottling; yellow cotyledons; 1 or 2 seeds per pod. Semi-upright, heavy bearing plant. Matures 4 to 7 days earlier than Chilean. Standard Chilean type lentil grown in Washington and Idaho. Developed at Washington State University. Introduced in 1984. B49{S}, G47{S}

**Castelluccio:** Tiny, light-brown lentil from the Italian province of Umbria. Mild, earthy flavor and creamy texture. Holds its shape well. Often cooked with sausage or duck. Harvested in late July and early August. Relatively short plants, usually harvested by hand. Considered by many gourmets to be the best lentils in Italy. PLOTKIN; B71G

**Chilean:** Plants are short in height with attractive fern-like leaves. Can be grown in the winter in areas where winter vegetables can be grown. Generally considered a group name for large-seeded lentils with yellow inner seed color. The principal type grown commercially in the Pacific Northwest. A90M

**Crimson:** (Petite Crimson) Small, uniform, light brown seeds with some darkly mottled spots; attractive, bright reddish-orange cotyledons. Petite masoor type popular with gourmet and specialty food markets. Also very good for sprouting. Moderately branched, erect plants; 1 or 2 seeds per pod. Developed by Washington State Uni-

iversity from a germplasm line introduced from Giza, Egypt. A7, A90M, B31, C95{S}, E23T, F86T, F91{SP}, G47{S}\ H73, H99J{SP}, K18M, L13P, L24M{SP}, N40, N55

**Eston:** Small, flat seeds, about 2.5 mm. in diameter; light greenish-beige, sometimes mottled with purple; yellow cotyledons; 2 seeds per pod. Will turn brown when stored at room temperature for 2 years. Considered one of the best lentils for sprouting. Normally outyields Laird. Developed at the University of Saskatchewan from seed stock originating in Turkey. A90M, C14, G50{S}, H73, H99J{SP}, L24G{SP}

**Laird:** Large, thick seeds free of mottling, of good color; yellow cotyledons. Ripens about 2 weeks later than Chilean in the Pacific Northwest, a major disadvantage as the pods may not fill out. Often used as a sprouting seed. Grown extensively in Saskatchewan, Canada. Developed by A.E. Slinkard. A90M, C14{S}, H99J{SP}

**Pardina:** (Spanish Pardina) Very small, greenish-brown lentil with orange cotyledons, about 2.5 mm. in diameter. Excellent for cooking, having a firm texture and deep, nutty flavor. Available at gourmet specialty markets. Preferred in Spain over other types. Becoming more popular in the United States. Grown commercially in the Pyrenees. A7, A90M, B31, E23T, H73, J11M, K18M, L13P, N40, N55

**Red:** (Egyptian, Masoor) Seeds the size and form of those of the common lentil but with a dark skin and of a salmon color inside. Flowers light red. Season of maturity the same as the common lentil. Hulled, split seeds, called *masoor dal*, are used in Indian and Middle Eastern cuisines. Turns yellowish when cooked. BURR, HEDRICK 1919; A7, A52M, A90M, A90M{PD}, B31, B31{PD}, C94M, E31, E56, F74{DF}, F80{S}, I19M, J11M, J11M{ED}, L3J{S}, L50M, L99, M63M, etc. (see also Sprouting Seeds, page 524)

**Red Chief:** 95-105 days. Large, beige seeds with bright red cotyledons, 5.5 to 6.5 mm. in diameter; 1 or 2 seeds per pod. Semi-upright plant; consistently heavy bearing; free from insect and disease problems. Standard red lentil grown in the United States. Developed at Washington State University. Introduced in 1980. C95{S}, G47{S}

**Spanish:** Old landrace mixture of similar but slightly different varieties. Small, globular or roundish seeds. Seedcoat color ranges from mostly brown, through creams to black; some have greenish hues or are mottled with black. Inner seed color is yellow. G47{S}

**Vanaard:** Chilean type with extra-large seeds. Flattened, lens-shaped seeds; greenish-tan without mottling. Yellow inner seed color. Selected by the KUSA Seed Research Foundation as having good performance potential for the home garden. G47{S}

**Verte du Puy:** (Puy Green, Lentille Verte, Petite French) Distinct type with small seeds, only about 1/4 inch in diameter, but very thick; pale-green in color, spotted and marbled with dark green. Holds its shape when cooked. Considered a great delicacy and used primarily as a salad, dressed with vinaigrette, to be part of a tray of *hors d'oeuvres varis*. Grown in the departments of Haute-Loire and Cantal, France. VILMORIN, VON WELANETZ; A7, A90M, B31, C73P, C94M, E23T, E31, E56, E60P{PD}, E60P{SP}, G47{S}, H73, H99J{SP}, J66M, K18M, L3J{S}, L54{SP}, L89C{SP}, N40, etc.

#### *Lens esculenta* -> *Lens culinaris*

Lespedeza bicolor - *Yama-hagi* {S}. Young leaves, stems, and flowers are eaten boiled or fried. The leaves can also be used as a substitute for tea. Seeds are occasionally boiled and eaten with rice. Eastern Asia. KUNKEL, TANAKA; D47M, D95{PL}, F80, G26, H61M, K38, M69M{PL}, M95M, Nil, N84, 053M

*Lotus corniculatus* - *Bird's-foot trifol* {S}. Young pods are occasionally nibbled. The flowers yield a light-colored honey of good quality with a flavor reminiscent of clover honey. Eurasia, naturalized in North America. CRANE 1975, CRANE 1984, KUNKEL; A15Z, A25, C9{PL}, C43V, D26D, D47M, D68,

D92M, E38, F80, G19T, G26,199M, K95M, L41, M34M, M95M, R32, etc.

#### *Lotus tetragonolobus Tetragonolobus purpureus*

*Lupinus albus* - *White lupin, Lupini, Turmos* {S}. The seeds, after soaking for about three days in salted water to free them of their bitter taste and soften them, are cooked and eaten or used in soups. They are sold in some European countries, especially during village festivals. In Egypt they are extensively consumed during spring, especially on *shamm el-nesiem—mtiom* Spring D^, which is concurrent with Easter D^ . The toasted seeds are eaten as a snack, much like peanuts, salted almonds, or roasted pumpkin seeds. De-bittered and salted seeds are served in bars and cafes as an appetizer. In Turkey, the ground seeds are mixed with breadflour. The peduncles are pickled. Roasted seeds are used as a substitute for coffee. Mediterranean region. BIANCHINI, CUSUMANO [Cul], DAGHER, GLADSTONES, GRIEVE, KUNKEL, UPHOF; A7{DF}, F85, G50, J39, L3J, L13P{DF}, N81, N84, 053M, S17

*Lupinus albus* Saccharatus Group - *Sweet lupin, Snowbean* {S}. The seeds are relatively free of bitter tasting alkaloids and can be used without any preparation. Sweet lupin flour is used in the preparation of *lupini pasta*, a recently introduced commercial product. Immature pods can be sliced and eaten like snap beans. In 1928-29, the German breeder R. von Sengbusch was the first to succeed in finding low alkaloid or "sweet" lupin plants out of many thousands being tested. Later breeding produced cultivars that combined sweetness with early maturity and more rapid growth. GLADSTONES, SASS; (see also Sprouting Seeds, page 524)

#### CXJLTIVARS

**Kiev:** (Kievskij) Edible, sweet type developed in the Ukraine. Nutritious seeds are high in digestible protein (40%). Hardy annual to 3 feet tall. Also an excellent nitrogen fixing green manure crop. F73D, L77D, P17M

**Ultra:** 110 days. Low alkaloid seeds, 1,440 per pound; average protein content 34.3%. Short plants; height 30 to 32 inches. Blooms early, 57 days from planting. The cultivar most commonly used for sweet lupin pasta. Originated in Germany by Schultz and Velsen. Introduced in 1950. H7M

*Lupinus angustifolius* - *Blue lupin, Narrow-leaved lupin* {S}. The seeds, of low alkaloid cultivars, are used in the preparation of *tempeh*. Mediterranean region, cultivated. SHURTLEFF 1979, STEINKRAUS; N81, N84, 048, P17M, P49, R47, S55

#### CULTIVARS

**UniwHITE:** Low alkaloid type with a permeable seed coat. White seeds and flowers. Reduced pod-shattering. One of the leading cultivars in western Australia. Developed there by J.S. Gladstones. Introduced in 1967. GLADSTONES; JO

*Lupinus luteus* - *Yellow lupin* {S}. Roasted seeds have been used as a substitute for coffee for centuries. They are also ground into flour. The fresh seeds contain lupinotoxin, a poison, that is removed by a special process. Low alkaloid strains were developed prior to 1930 by von Sengbusch. Mediterranean region, cultivated. GLADSTONES, KUNKEL, MALLOS, TANAKA, UPHOF; D92M, JO, L91M, N81, 048, 053M, S17

*Lupinus mutabilis* - *Tarwi, Andean lupin, Pearl lupin, Chocho* {PL}. The seeds are soaked in water for several days to leach out bitter alkaloids, and are then boiled and eaten. In some countries, they are salted and served as a popular snack. Tarwi seed has a protein content of up to fifty percent, which is among the highest of any legume seed. The seeds also yield a light colored oil suitable for culinary use. Andean South America. FRIED [Re], NATIONAL RESEARCH COUNCIL 1979, NATIONAL RESEARCH COUNCIL 1989; G47G{DF}, 174

*Lupinus perennis* - *Wild lupin* {S}. The seeds are eaten like peas after proper preparation. North America. FERNALD, HEDRICK 1919, MEDSGER; C43V, E7M, F59, G47M, H63{PL}, H80,

J39M, J39M{PL}, J40, J40{PL}, J41M, J41M{PL}, J43, N11M, N23, etc.

*Macrotyloma uniflorum* - *Madras gram, Horse gram, Gahatko dal* {S}. Seeds are parched, and then boiled, fried, or used in curries and soups. Also the source of an edible oil, and flour that is processed into sweetmeats. The fleshy root was roasted and eaten by the Aborigines of Australia. Tropical Africa, Tropical Asia. CRIBB, HEDRICK 1919, MAJUPURIA [Re], SCHERY, TANAKA, WATT; D56M, F80, F85, N40M, N84, 093, Q12, Q46

*Medicago hispida* - *Medicago polymorpha*

*Medicago laciniata* - *Handagug-hadhari* {S}. The herb is used as a condiment for tea, or is mixed with boiled water and sugar to form a beverage. Macaronesia to Southwest Asia. BAILEY, C.; U63, X54

*Medicago lupulina* - *Black medic, Hop clover* {S}. The herb is used as a potherb. Seeds may be parched and eaten, or ground into flour. Eurasia, naturalized in North America. KIRK, TANAKA; D47M, E24, M34M, N71M, N81, N84, 053M, S55

*Medicago orbicularis* - *Medicago polymorpha*

*Medicago polymorpha* - *Chinese clover, Kam fa tsoi, Toothed bur-clover* {S}. Young leaves, stems, and flowers are eaten raw in salads, cooked as a potherb, stir-fried, or used in soups. Also dried or preserved. Very popular in the markets of Shanghai. Widespread. LARKCOM 1991 [Cu, Cul], TANAKA; F85, N84

*Medicago sativa* - *Alfalfa, Lucerne* {S}. Sprouted seeds are widely eaten in salads, sandwiches, omelettes, breads, soups, stews, etc. The vitamin rich leaves may be dried and sprinkled on cereal or added to soups and stews. Fresh or dried leaves and flower-heads are blended with red clover and spearmint or peppermint, and brewed into tea. In China, the young branch tops are lightly cooked and added to meat dishes. The young leaves are added to salads. Seeds can be ground into meal for making mush or bread. Yields a light-colored honey with good body and a mild, spicy flavor of excellent quality. It granulates rapidly and is often blended with other honeys. The herb is a source of chlorophyll used as a food supplement or for whitening the curd in the preparation of *Danablu* cheese. Eurasia, cultivated. CLARKE [Re], CRANE 1975, CROWHURST 1972, HERKLOTS, KULVINSKAS, LARKCOM 1984 [Cu], LEUNG, MARCIN, PELLETT, ROBINSON, R. 1995; A49D{DF}, B49, D17{PD}, D47M, E31{PD}, E38, F85, G93M, J19M{DF}, J82, J99G, N84, 053M, R47, S55, etc. (see also Sprouting Seeds, page 524)

CULTIVARS

**Buffalo:** Recommended for the Central Plains, where long, dry periods are common. Grows early in the spring and recovers quickly after cutting. High yielding. One of the first cultivars bred for resistance to bacterial wilt. Susceptible to pea aphid. Introduced in 1942. HANSON; K62, K71

**CUF 101:** A non-hardy or non-dormant cultivar grown from southern New Mexico to the Central Valley of California. Resistant to pea aphid, spotted alfalfa aphid and blue alfalfa aphid. One of the principal cultivars used for the production of alfalfa seeds for sprouting. Introduced in 1977. HANSON; B90, DIT, P17M

**Dakota:** A dormant cultivar occasionally used for sprouts. Dormant alfalfas are sometimes preferred for growing sprouts because they are considered easier to grow than non-dormant alfalfas, especially for beginning commercial growers. F91 {SP}

**Iroquois:** A very winter hardy North American alfalfa. The most dependable cultivar for the far North. Resistant to bacterial wilt. Seed in spring and late summer, 15 to 20 pounds per acre. Requires good drainage and sweet soil (pH at least 6.5) with adequate potash and phosphorous. Introduced in 1966. HANSON; A15Z, M95M

**Kansas:** (Kansas Common) Extremely hardy; also wilt and drought resistant. Successfully grown in all climates. Makes a good hay and

pasture crop, also excellent for improving the soil. Use 15 to 25 pounds per acre for drilled sowing, 25 to 30 pounds for broadcast sowing. A superior strain during the early periods of alfalfa development. K71

**Moapa 69:** An intermediate-dormant cultivar selected from the widely grown Moapa. Resistant to spotted alfalfa aphid. Widely used in California for producing alfalfa seeds for sprouting. In sprout production it has been shown to have higher yields but a lower protein percentage. HANSON; B90, DIT

**Nitro:** An annual, nonwinter-dormant alfalfa. It is superior to regular perennial alfalfas for nitrogen fixing because it does not enter dormancy and continues to fix nitrogen until it is killed by frost. In tests Nitro provided 124 pounds of nitrogen per acre versus 95 pounds for dormant types. The seeding rate is 8 to 15 pounds per acre. Discovered by University of Minnesota researchers. Introduced in 1986. HANSON; A15Z, E24, G6, I99M, J20, K95M, L77D, L89

**Ranger:** The hardiest, most prolific, and economical type of alfalfa to plant in the northern Great Plains and New England. Semi-dormant type. Sow 15 to 20 pounds per acre in well-drained, thoroughly prepared and limed soil. One of the first cultivars bred for resistance to bacterial wilt. In sprout production, it has lower fresh-weight yields and higher protein percentage. Introduced in 1942. HANSON; A15Z, C4, C43V, E53, E66M

**Vernal:** A hardy, heavy-yielding cultivar with high winter hardiness. Resistant to the deadly bacterial wilt. Will withstand early and frequent cuttings. Good for both hay and pasture. Introduced in 1953. Was the leading cultivar for nearly 25 years. Being replaced by newer cultivars that have higher levels of multiple-pest resistance and increased yield potential. HANSON; A15Z, B13, C4, D26D, E53, E66M, G50, H49, I93M, K71, M95M

*Melilotus alba* - *White sweet-clover* {S}. The fresh, young leaves are eaten in tossed green salads. They can also be cooked and served as a potherb, or added to soups and stews. Flowers are used as a vanilla-like flavoring. The pea-like seeds can be used as a seasoning for bean and split-pea soups. Produces a light-colored, mild honey with a delicate flavor said to be reminiscent of cinnamon or vanilla. Eurasia. CRANE 1975, CROWHURST 1972, KUNKEL; D47M, E53, F85, H80M{PD}, I99M, M34M, N71M, N84, 053M, S55

*Melilotus altissima* - *Sweet-clover* {S}. The herb is used like that of *Trigonella caerulea* for flavoring green cheese in Switzerland. Young shoots are consumed as a vegetable. Eurasia. UPHOF; N84

*Melilotus macrorrhiza* *Melilotus altissima*

*Melilotus officinalis* - *Yellow sweet-clover* {S}. The herb is used in Switzerland for flavoring *Schabzieger* or *Sapsago* cheese. The crushed, dried leaves can be used as a substitute for vanilla in flavoring puddings, cookies, and pastries. Young shoots are eaten like asparagus. Roots are consumed as food among the Kalmuks. Eurasia, cultivated. CROWHURST 1972, GRIEVE, KUNKEL, MACNICOL [Re], ROOT 1980b, UPHOF; B13, C85M, D47M, E53, F85J{PD}, H49, I99M, J97M, K5M, K71, M34M, M95M, N51M{ED}, N71M, N84, 053M, S55, etc.

*Moghania vestita* - *Flemingia vestita*

*Mucuna pruriens* - *Velvet bean, Cowitch, Cowhage, Benguk* {S}. Young pods are cooked and eaten like string beans. The seeds are utilized in *miso* manufacture. In Indonesia, they are fermented into *tempeh benguk*, *tapeh* and *dageh benguk*. The young leaves are steamed or boiled and eaten with rice. Tropical Asia, cultivated. HEDRICK 1919, OCHSE, SHURTLEFF 1979, STEINKRAUS, TANAKA; A26, A79M, C95, D33, F73D, F80, F85, G66, G73, I81M, N84, PIG, Q12

*Myroxylon balsamum* - *Balsam of Tolu* {S}. The trunk is the source of an aromatic, slightly bitter resin and essential oil used for flavoring chewing gum, baked goods, candy, ice cream, and soft

drinks. Tropical South America. MORTON 1976; E14T{PD}, F32D{PD}, G73{DF}, N84, 093, P5

*Myroxylon balsamum* var. *pereirae* - *Balsam of Peru* {PD}. Source of a hot, spicy, bitter resin and essential oil used as a flavoring in chewing gum, baked goods, candy and other foods. In Guatemala, the seeds are added to *aguardiente*, just as a bitter almond may be put into a bottle of *tequila* in Mexico. Central America. MORTON 1976; E14T, F32D, F85{S}, GO, G73{DF}, L34

*Myroxylon pereirae* - \**Myroxylon balsamum van pereirae*

*Olneya tesota* - *Desert ironwood* {S}. The seeds are parched or roasted and eaten for their peanut-like flavor. They may be used in place of navy or pinto beans in chowders and casseroles. They are also ground into flour by the Cahuilla Indians and used in gruels and cakes. Southwestern North America. CLARKE [Re], HEDRICK 1919, KIRK; C98, E66M, F63M, F85, 133, 198M{PL}, J86{PL}

*Onobrychis viciifolia* - *Sainfoin*, *Esparsette* {S}. Important honey plant in Iran and other areas. Yields a pale light amber honey that is very sweet and has a more pronounced flavor than honey produced by other legumes. Believed to be the source of the famous *Gatinais honey* of France. The sprouted seeds are eaten. Eurasia. CRANE 1975; C4, C43V, C95, E7M, E53, E66M, G26, G50, K62, Nil, N71M, N81, N84, 053M, S17, S55, etc. (see also Sprouting Seeds, page 524)

*Ononis arvensis* - *Ononis spinosa*

*Ononis repens* - *Ononis spinosa*

*Ononis spinosa* - *Rest-harrow*, *Wild licorice* {S}. Young, tender shoots are eaten raw in salads, as a potherb, or pickled and used as a sauce with cold meat. In Turkey, they are added to *herbal cheese*. The roots are chewed for their licorice-like flavor. Mediterranean region. GRIEVE, HEDRICK 1919, LEYEL 1987h, MABEY, OZTURK; E61{PL}, J82, K22{PL}, K63G, N71M, N84, Q24, S55

*Pachyrhizus erosus* - *Jicama*, *Yam bean*, *Mexican water chestnut*, *Potato bean*, *Saa got* {S}. The crisp, juicy, sweet tubers are eaten raw, stir-fried, boiled, roasted, braised, or used in soups. They are often sliced thin and sprinkled with salt, chili pepper, and lemon juice. Their crunchy texture is retained even after cooking, which makes them a popular substitute for water chestnuts in Chinese cooking. Also the source of a starch used in custards and puddings. Tropical America, cultivated. CUSUMANO [Cu, Re], HALPIN [Cu, Cu], HERKLOTS, NATIONAL RESEARCH COUNCIL 1979 [Cu], SCHNEIDER 1986 [Pre, Re], TANAKA; A79M, D33, E7M, E13G{PR}, F71M, F80, G47F{PR}, G93M, 133, J73, N40{PR}, 053M, R47

#### CULTIVARS

Mexican Turnip: Somewhat different in shape than the typical flattened globe-shaped type found in supermarkets. Has more of a taller oval shape reminiscent of a sugar beet. Snow white flesh. Excellent flavor and productivity. C92, K10

*Pachyrhizus tuberosus* - *Pachyrhizus erosus*

*Petalostemon candidum* - *White prairie-clover* {S}. A tea-like beverage can be made from the dried leaves. The roots are eaten raw or chewed for their pleasant, sweet flavor. Western North America. KINDSCHER, UPHOF, YANOVSKY; G47M, H70M, H70M{PL}, 111, 131, J39M, J39M{PL}, J41M, J41M{PL}, J42, J42{PL}, J43, L41

*Petalostemon purpureum* - *Purple prairie-clover* {S}. The dried leaves are used as a substitute for tea. Roots were used for chewing by Indians of the Missouri River region. Western North America. UPHOF, YANOVSKY; D82, F80, G47M, 111, J25M, J40{PL}, J41M, J41M{PL}, J42, J42{PL}, J43, K62, L41, N11M

*Phaseolus aconitifolius* - *Vigna aconitifolia*

*Phaseolus acutifolius* - *Tepary bean* {S}. The dried seeds are eaten boiled or baked. When well cooked, teparies are light and

mealy and have a rich bean-like aroma. In northern Mexico, teparies are popular as a base for soups and stews. They are also parched and ground into meal that can be added to boiling water for *instant beans*. The plant can produce large quantities of nutritious seeds in climates too arid for other beans. Southwestern North America. HERKLOTS, KAVENA [Re], MEDSGER, NATIONAL RESEARCH COUNCIL 1979, NIETHAMMER [Nu, Re]; D33, I16{DF}, N84, R47. (for cultivars see Tepary Bean, page 552)

*Phaseolus acutifolius* var. *tenuifolius* - *Wild tepary*, *Willow-leaf tepary* {S}. Seeds are cooked and eaten. The wild tepary is a vine, sometimes up to three meters high, that often climbs up desert shrubs. In comparison, domesticated types are either semi-vining or bushy, self-standing plants that can be grown as a field crop or in small gardens. Southwestern North America. KIRK, NATIONAL RESEARCH COUNCIL 1979; 116, N84

*Phaseolus angularis* - \**Vigna angularis*

*Phaseolus calcaratus* - \**Vigna umbellata*

*Phaseolus caracalla* - \**Vigna caracalla*

*Phaseolus coccineus* - *Runner bean*, *Seven year bean* {S}. The young, tender pods are eaten boiled, steamed, sauteed, baked, etc. They are usually French-cut in lengthwise strips before cooking. Immature seeds are used as shelled beans. Ripe, dried seeds can be used like dried kidney or lima beans. The flowers have a bean-like flavor, and are eaten in salads. Young leaves are used as a potherb. The starchy, tuberous root is sometimes eaten. Central America, cultivated. BRENNAN, BRYAN [Cu, Re], FELL 1982b, HALPIN [Cu, Cu], HERKLOTS, KUNKEL, MARTIN 1975, NATIONAL RESEARCH COUNCIL 1979, VILMORIN [Cu]; FIG. (for cultivars see Runner bean, page 516)

*Phaseolus limensis* - \**Phaseolus lunatus*

*Phaseolus lunatus* - *Lima bean*, *Sieva bean*, *Madagascar bean* {S}. The shelled beans are boiled and used in soups, stews, *succotash*, etc. Dried seeds are eaten in soups and stews or fermented into *tempeh kara*. Occasionally used for Japanese *an* production. The sprouted seeds are used as a vegetable in Chinese dishes. Young pods are steamed and eaten as a side dish with rice, or added to soups and stews. The leaves are also steamed and eaten, though they are often bitter. Tropical America, cultivated. DUKE [Nu], HERKLOTS, LUMPKIN, OCHSE, RODALE [Cu], SHURTLEFF 1979, VILMORIN; E13G{PR}, FIG. (for cultivars see Lima Bean, page 415, see also Sprouting Seeds, page 524)

*Phaseolus metcalfei* - *Metcalfe bean*, *Wild cocolmeca* {S}. The pea-sized seeds are cooled and eaten. Young pods are also used for food. In parts of Mexico, the roots are used as a catalyst in the preparation of *tesguino*, an alcoholic beverage. Southwestern North America. HEDRICK 1919, KIRK, KUNKEL, MEDSGER, STEINKRAUS; 116

*Phaseolus retusus* - *Phaseolus metcalfei*

*Phaseolus vulgaris* - *Kidney bean*, *French bean*, *Common bean* {DF}. Young pods are eaten raw in salads, boiled, steamed, sauteed, marinated, pickled, etc. *Ditty beans*, spicy pickled green beans, are popular in the Southern States. The immature seeds are boiled or steamed and served as a vegetable, or used in *succotash*, stews, etc. Dried seeds are boiled, baked, pureed, used in soups, dips, casseroles, salads and chili or fermented into *tempeh*. Young leaves are used as a potherb. The flowers are sauteed and added to cooked beans and fresh salsas. Sprouted seeds of Red Kidney and Pinto beans are commonly eaten. Cultivated. HERKLOTS, OCHSE, QUINTANA 1994, SHURTLEFF 1979, VILMORIN [Cu], WITHEE [Pre, Re]; F68P{PD}, L17. (for cultivars see Kidney Bean, page 391, see also Sprouting Seeds, page 524)

*Piscidia piscipula* - *Jamaica dogwood* {PL}. An important source of honey in the Yucatan where some of the world's best honeys originate. Florida, West Indies. CRANE 1975; D87G

*Pisum elatius* - *Pisum sativum* ssp. *elatius*

*Pisum sativum* - *Pea* {DF}. Unripe seeds are eaten raw, boiled, steamed, sauteed, etc. Dried seeds are used in soups and stews, pureed, ground into flour, or fermented into *dhokla*, *tempeh* and *dosa*. In Ethiopia, the roasted, ground seeds are used in the mildly hot spice mixture called *nech' shiro* and a hotter mixture known as *mit 'in shiro*. Unroasted pea flour is also widely used in Ethiopian cuisine, in various sauces, pastes and stews such as *bozena*, *doyyo*, and *infirfir*. Roasted seeds are also used as a substitute for coffee. The immature pods of some cultivars are eaten raw or used in stir-fried dishes. *Shanxi vinegar*, a delicious molasses-like vinegar from northern China, is made from peas, sorghum and barley. The flowers are eaten in salads. Young leaves and shoots are used as a potherb. Sprouted seeds are eaten in salads, vegetable dishes, soups, etc. In Burma, they are added to a fried rice dish known as *htamin kyaw*. Cultivated. BARASH, CARCIONE, HERKLOTS, MESFIN [Re], STEINKRAUS, TAIK [Re], UPHOF, VILMORIN [Cu], WEINZWEIG 1996; E13G{PR}, G17M, H51{PD}, N54{PD}. (for cultivars see Pea, page 450, see also Sprouting Seeds, page 524)

*Pisum sativum* ssp. *elatius* - *Wild pea*, *Pea of the oasis*, *Maquis pea*, *Hammez* {S}. Seeds are eaten when dried or are made into flour. Mediterranean region. Often cultivated in the oasis of the Sahara. North Africa, Southwest Asia. UPHOF, ZEVEN; 053M, S55

*Platymiscium pinnatum* - *Quira macawood*, *Cachimbo*, *Cristobal* {S}. Roasting corn meal in the leaves of this tree is reputed to impart an agreeable flavor. Tropical South America. DUKE; F85

*Psophocarpus palustris* - *Niamadi soso* {S}. Young pods and rhizomes are consumed as vegetables in some parts of Africa. The leaves are also edible. Tropical Africa. DALZIEL, MARTIN 1975, UPHOF; Q12

*Psophocarpus tetragonolobus* - *Winged bean*, *Goa bean* {S}. The immature pods can be eaten raw or cooked, having the taste of snap beans. Young leaves and shoots are used as potherbs. Unripe seeds can be used in soups. The protein-rich dried seeds are roasted and eaten like peanuts, used as a coffee substitute, or fermented into *tempeh*. Also the source of an edible oil. The slightly sweet, tuberous roots contain twenty percent protein or more, which is much higher than contained in other roots and tubers such as cassava. They are eaten raw, or cooked like potatoes. Flowers and flower buds can be eaten in salads, steamed, or batter-fried like tempura. The light blue flowers are also used for coloring foods. Crisp hypertrophies, formed by a parasitic mold, are consumed as a delicacy by the Sundanese in Indonesia. They are known as *djaat keked*. Tropical Asia, cultivated. CUSUMANO [Cul, Re], HERKLOTS [Cu], NATIONAL RESEARCH COUNCIL 1975b, OCHSE, SCHNEIDER 1986 [Cul, Re], SHURTLEFF 1979 [Cul, Re], UPHOF; A79M, £60M{PR}, D33, D55, F73D, F85, K63G, L59, N84, PIG, Q12, R47, S70

## CULTIVARS

**Boaor:** Long-podded type, often reaching 8 inches in length. Although larger than other strains, the pods retain their tenderness. Originated in Indonesia. D33

**Chimbu:** Grown for the long pods which stay tender to a large size. They also have an attractive crimson-red color. D33

**Day Neutral:** Most cultivars will not produce blossoms until days are quite short. These special day-neutral cultivars will produce regardless of day length and so can potentially be grown considerably north of their usual limit in southern Florida. The seed should be scarified first for good germination. D33

**Square:** Selected for its potential as a commercial cultivar due to the unique shape of the pod which makes it better suited to packing in containers. D33

**Thai:** 50 days. An improved type from Thailand. Very vigorous vine, easy to grow. Prefers relatively cool weather. C20M

*Psoralea esculenta* - *Prairie turnip*, *Indian breadroot* {S}. The starchy, glutinous root is eaten raw, boiled, baked, fried, roasted, or dried and stored for future use. Dried roots can be ground into flour and used for seasoning other food, thickening soups, and making bread and puddings. The raw root is said to have a sweetish, turnip-like taste. Has been recommended for improvement by breeding and selection. North America. ANGIER [Re], FERNALD, HARRINGTON, H., KINDSCHER, MEDSGER, NATIONAL RESEARCH COUNCIL 1979; J6, J39M, J39M{PL}, N84

*Psoralea glandulosa* - *Jesuit's tea*, *Cilen* {S}. Leaves are used as a substitute for tea. In Valparaiso, Chile a delicious carbonated beverage is made from the boiled leaves. Andean South America. ALTSCHUL, HEDRICK 1919, MACMILLAN; F85, K63G

*Psoralea lutea* -> *Psoralea glandulosa*

*Psoralea pinnata* - *Blue pine weed*, *Taylorina* {S}. Source of a light to extra light amber honey with good body and a distinctive flavor said to be reminiscent of desiccated coconut. The honey is slow to granulate. South Africa, Australia and New Zealand. CRANE 1975; N84, S28M

*Pterocarpus indicus* - *Rosewood*, *Narra*, *Padauk* {S}. The young leaves and fragrant flowers are eaten. Tropical Asia. BURKILL, TANAKA; A79M, E21D{PL}, F85, N84, P17M

*Pterocarpus marsupium* - *Gun-kino tree* {S}. Flowers and seeds are eaten. Also used in the preparation of some European wines. Southern Asia. MENNINGER, TANAKA; E21D{PL}, F85, N84, P5, Q46

*Pterocarpus santalinus* - *Red sandalwood*, *Red sanders* {DF}. The wood is ground to a powder and used as a red food dye in commercial spice blends and sauces. In Medieval England, it was often employed for dyeing jellies, gingerbread, pottages and other foods. Tropics. BURDOCK, WILSON, G; E14T, GO, K18M, L34, N7D

*Pueraria lobata* - *Kuzu*, *Kudzu* {S}. The roots are occasionally steamed or boiled, and served with soy sauce, miso, or salt or they are used to make a sweetish broth that is used in soups. In Korea, the roots yield a tonic juice drink and a starchy soup-like tea. Also the source of an excellent starch used as a crispy coating for deep-fried foods, or for thickening sauces or soups. It is also made into noodles, or like agar or gelatin serves as a jelling agent for salads, confections, and desserts. The tender, young leaves and shoots are eaten raw, boiled, sauteed, fried, or pickled. Fresh picked shoots are said to taste like a cross between a bean and a pea. The flowers are cooked and eaten or made into pickles. Eastern Asia, cultivated. DAHLEN [Pre, Cul], FERNALD, HERKLOTS [Cu], ROSS [Cul, Re], PEMBERTON, SHURTLEFF 1977 [Pre, Re], TANAKA; A25G{PD}, B21P{DF}, E14T{DF}, E56{PD}, E66T{PD}, F68T, I19M{PD}, J82, K18M{DF}, K38, L34{DF}, N84, 093

*Pueraria phaseoloides* - *Tropical kuzu*, *Kuzu-ingen* {S}. The tuberous root can be eaten. Tropical Asia. BURKILL, TANAKA; A79M, F85, P17M, Q12

*Pueraria thumbergiana* - *Pueraria lobata*

*Robinia neomexicana* - *New Mexico locust* {S}. Flowers are eaten raw. Southwestern North America. YANOVSKY; A12M{PL}, B94, D95{PL}, E66M, E67T{PL}, G89M{PL}, J25M, J25M{PL}, K63G, L13, L55J

*Robinia pseudacacia* - *Black locust*, *False acacia* {PL}. The flowers are dipped in egg batter and fried, added to pancake batter, or made into a pleasant drink. Young, tender pods are sometimes boiled and eaten. The slightly acid, oily seeds may be boiled and used like peas or beans. Flowers are the source of *acacia honey*, a light-colored, heavy bodied honey popular in Hungary, Romania and other parts of eastern Europe. Acacia honey often has walnuts added to it. North America, cultivated. BUGIALLI, CRANE 1975, CROWHURST 1972, DE VITA [Re], FERNALD, GIBBONS 1979, MEDSGER; A7{PD}, B71G{PD}, C9M{S}, C60D{PD},

D95, E84, F80{S}, H4, 14, I94{PD}, J16, J26, K32M{PD}, K37P{PD}, K63G{S}, 053M{S}, etc.

*Sarothamnus scoparius* - *Scotch broom* {S}. Flower buds are added to salads, made into wine, or pickled in vinegar and used like capers. The tender green tops have been used like hops to give a bitter flavor to beer. Roasted seeds are used as a substitute for coffee. Eurasia, cultivated. GRIEVE [Cu], HEDRICK 1919, MABEY [Re], MACNICOL [Cul, Re], UPHOF; B61M, C43M, C43M{PL}, D92M, E33M{PL}, E81M, J76, J76{PL}, K38, K63G, M69M{PL}

*Sesbania aegyptiaca* - *Sesbania sesban*

*Sesbania grandiflora* - *Agati, Vegetable hummingbird* {S}. The flowers are eaten raw in salads, boiled, fried, or used in curries, soups, and stews. They are rich in sugar and iron and are said to taste like mushrooms. Before eating, the center part of the flower is removed to reduce bitterness. The long, narrow pods are eaten as a vegetable dish, much like string beans. In Indonesia, the protein-rich seeds are fermented into *tempeh turi*. Young leaves and shoots are eaten in salads, stews, or as a potherb. Tropics, cultivated. HEDRICK 1919, HERKLOTS, MACNICOL [Re], MARTIN 1975, NATIONAL RESEARCH COUNCIL 1979 [Nu], OCHSE, SHURLEFF 1979; A12G, A79M, E21D{PL}, F80, F85, N79M, N84, 033, P5, P17M, Q12, Q32, Q46, R47, R50, etc.

CULTIVARS

**Coccinea:** A form with attractive scarlet flowers. Collected in India. F85

*Sesbania pachycarpa* - *Sesbania sesban*

*Sesbania sesban* - *Egyptian sesban* {S}. The flowers, leaves, and immature fruits are cooked and eaten. In tropical Africa, the seeds are used to make a fermented flavoring paste called *soumbara*. Old World Tropics. DALZIEL, MARTIN 1975, TANAKA; A12G, E21D{PL}, F85, N84, 093, P5, P17M, Q12, Q18, Q46, R50

*Sophora japonica* - *Japanese pagoda tree, Enju, Wai-shue* {S}. Young leaves and flowers are cooked and eaten or used as a substitute for tea. The seeds are the source of a starch. Eastern Asia. ALTSCHUL, TANAKA; A79M, C9M, D95{PL}, E7M, E47, G66, H4{PL}, I77M{PL}, I83M{PL}, K38, L91M, N79M, N84, 053M

*Sphenostylis stenocarpa* - *African yam bean* {S}. The protein-rich seeds are eaten as a vegetable, either alone, in soups, or with yams, maize or rice. In Nigeria, the hard seeds are soaked in water overnight before being ground for use in the local dish *make*. The spindle-shaped tubers are also rich in protein. Their white flesh is eaten raw, or cooked like potato, which it resembles in taste. Leaves are also edible. Tropical Africa. MARTIN 1975, NATIONAL RESEARCH COUNCIL 1979, VAN EPENHUSEN; U37M

*Tephrosia purpurea* - *Purple tephrosia* {S}. Roots are used in Africa for flavoring milk. The seeds are used as a substitute for coffee. Tropics. BURKILL, DALZIEL, UPHOF; F85, N84

*Tetragonolobus purpureus* - *Asparagus pea, Winged pea, Bindow* {S}. The young, tender pods can be eaten raw in salads, sauteed in butter, stir-fried, or added to soups and stews. Their flavor is said to be like asparagus. It is best to harvest the pods before they reach one inch in length, for they quickly become tough. Seeds are eaten like peas. Roasted seeds are used in the preparation of a coffee-like beverage. Mediterranean region, cultivated. FELL 1982b, HARRINGTON, G. [Cu], KUNKEL, LARKCOM 1984, ORGAN [Cu], VILMORIN; A79M, G73, K38, L91M, N84, 053M, Q34, R32, S55

*Trifolium hybridum* - *A Is ike clover* {S}. Dried flower-heads make a delicate and healthful tea when mixed with other teas. The leaves and flower-heads can be eaten boiled, or after soaking for several hours in salty water. Dried flower-heads and seeds can be ground into a nutritious flour. An important source of honey in the United States, the honey being light, mild and of good flavor.

Eurasia, cultivated. CRANE 1975, PELLETT, PETERSON, L.; A25, B13, B49, D68, E24, E38, E53, G71, H54, 193M, 199M, J20, J97M, K62, K71, M34M, M95M, etc.

*Trifolium incarnatum* - *Crimson clover* {S}. The sprouted seeds can be eaten in salads, sandwiches, soups, etc. They are the largest of the clover sprouts and have a crisp texture and robust flavor. Also notable for producing sprouts free of hulls. Dried flower-heads are used as a substitute for tea. Seeds can be ground into flour. Mediterranean region, cultivated. MEYEROWITZ 1994a, PETERSON, L.; B49, C14{SP}, D68, E24, F11, F91{SP}, G93M, H54, H80, I99M, K71, L24{SP}, L54{SP}, L41, L89, M34M, N11M, N84, etc. (see also Sprouting Seeds, page 524)

*Trifolium ornithopodioides* - *English fenugreek* {S}. The dried leaves are coumarin-scented and have been suggested as a substitute for fenugreek. England. MABEY; U63

*Trifolium pratense* - *Red clover* {SP}. Leaves and flower-heads are dried, powdered and sprinkled on boiled rice. Fresh, young leaves and flower-heads can be eaten in salads and sandwiches, boiled, cooked in soy sauce, or added to soups. Sprouted seeds are preferred by some over alfalfa sprouts for their crisper texture and more robust flavor. Red clover is one of the main ingredients of *herbal chews*, substitutes for chewing tobacco. Fresh or dried flowers are brewed into a delicate, sweet tea. Eurasia, cultivated. LEGGATT [Re], MACNICOL [Cul, Re], MARCIN, MEDSGER, MICHAEL [Pre, Re], TANAKA; B49{S}, B90, C41{PD}, C85M{S}, E14T{PD}, E60P, F37T, F97M, G91, H49{S}, H99J, I81T{PR}, I81T{DF}, L24M, L34{DF}, N7D{PD}, R47{S}, etc. (see also Sprouting Seeds, page 524)

CULTIVARS

**Kenland:** Seeds are commonly used for growing high protein clover sprouts used in salads. Fresh or dried blossoms are brewed into tea. Short-lived perennial with strong reseeding ability. High yielding, and also a good fixer of nitrogen. Excellent for attracting bees and beneficial insects. C43V, E53, E66M, F11, G19T, G93M, I99M, J73, M95M

*Trifolium repens* - *White clover* {S}. Leaves are eaten in salads or as a potherb. The dried flower-heads are used as a substitute for tea. They are also ground, along with the seeds, into a powder that is sprinkled on other foods. Flowers are eaten in sandwiches or made into syrup. Also the source of a light, mild honey with uniform granulation. Eurasia, cultivated. CRANE 1975, FERNALD, HEDRICK 1919, MICHAEL [Pre, Re]; B13, B49, C61G{PD}, D27M{PD}, G26, H54, 193M, N84, 053M, R47, S55

CULTIVARS

**New Zealand White:** Similar in habit to White Dutch, but more vigorous, slightly taller, and more heat-tolerant. Often planted in lawns, pathways, and irrigated orchards and vineyards. Fixes nitrogen and attracts beneficial insects. Will spread and thicken when infrequently mowed. Sow 15 to 30 pounds per acre in fall or spring. B49, G19T, G93M, I99M, K95M, P17M

**White Dutch:** Low-growing, creeping, perennial clover with small white flower-heads and small leaves. Used primarily for lawns but also in pasture mixtures, as a green manure, or for h<sup>^</sup>. Also used for undersowing in vegetable beds as a living mulch. Must be watered in the summer. Sow 4 to 10 pounds per acre. A25, B49, C85M, D65, E53, F11, G6, G71, G93M, H49, I99M, J97M, K27M, K95M

*Trigonella arabica* - *Nafal* {S}. In the Sinai and Negev desert areas, the Bedouins use the leaves as a condiment for clarified butter (*samin*). Saharo-Arabian region. BAILEY, C; U63

*Trigonella caerulea* - *Sweet trefoil, Curd herb, Utskho suneli* {S}. The dried, powdered leaves and flowers are used in Switzerland for flavoring and coloring *Schabzieger* or *Sapsago* cheese, which is used in fondues. In some parts of Tyrol it flavors *brownwürze* bread. Also used as a condiment in soups and potato dishes. An important component of the Georgian spice mixture known as *khmeli-suneli*, and *kharcho*, a sour beef soup. A decoction of the herb is used as an



aromatic tea, or for flavoring China tea. Young seedlings are eaten with oil and salt. Mediterranean region to Southwest Asia. GOLDSTEIN [Re], HEDRICK 1919, MACNICOL, MARGVELASHVILI [Re], TANAKA, UPHOF, WALTER, WOLFERT 1994a; F73D, F85J{PD}, J82, N51M{PD}, N84

*Trigonella corniculata* - *Champa met hi*, *Lukaika*, *Piring* {S}. The young leaves and stem tips are eaten as a potherb. Kasuri types are often dried and sold in packages at Indian stores. These can be soaked in water and used as a flavoring in cooked dishes. Mediterranean region to Southwest Asia. DEVI, TANAKA, WATT; U63, X54

#### CULTIVARS

**Kasuri:** (Kasuri Methi) An excellent soft-core cultivar of methi used as a *sag* or a potherb. Several cuttings can be taken from a single crop. Slower growing than common methi or fenugreek, and remains in a rosette condition during most of its vegetative growth period. Produces bright, orange-yellow flowers. Grown in cooler northwestern parts of India from September through the winter months. BOSE 1993; E83T, F74{DF}, S59M, S93M

*Trigonella foenum-graecum* - *Fenugreek*, *Methi* {S}. The aromatic leaves are a popular potherb in India. They can also be used sparingly in salads. In the Near East, the germinated seeds are added to a lamb stew traditionally flavored with honey. The ground seeds are used to give a maple flavor to confectionery, and are one of the principal ingredients of curry powder. Roasted seeds are used as a substitute for coffee. Sprouted seeds can be braised in olive oil with parboiled cardoon stalks. Seeds and leaves may be brewed into a pleasant tea. The essential oil is employed as a flavoring for imitation maple syrup, vanilla compositions, rum, butterscotch, licorice, pickles and cheese seasoning. Mediterranean region to Southwest Asia. ATAL, GRIEVE, HEDRICK 1919, KRAFT, LARKCOM 1984 [Cu], MALLOS [Re], MARCIN, ROOT 1980b [Cui]; C81M, C85M, D92M, E7M, F80, F97M{DF}, G57M, G68, G87,199M, J73, K22, L17{DF}, R47. (see also Sprouting Seeds, page 524)

#### CULTIVARS

**Duma:** Improved type selected for its leaves which are milder in flavor than other strains. They are used in cooking. The seeds, which are smaller than those of common fenugreek, are ground and added to curries. J73, N84

**Kashmiri:** A strain from Kashmir in northern India. In Kashmir, fenugreek is often cooked with minced meat. MATTOO [Re]; Q18

*Ulex europaeus* - *Gorse* {S}. Flower buds are pickled in vinegar and eaten in salads. The leaf-buds are used as a substitute for tea. The flowers are made into a wine which is popular in Great Britain. Europe, North Africa. EAVIES [Re], EVELYN, GRIEVE, MACNICOL [Cul, Re], MICHAEL [Pre, Re]; G66, K38, K63G, L91M, N71M, N84, 053M, P49, Q46, R78

*Vicia cracca* - *Cow vetch* {S}. Young stems and leaves are eaten as a potherb. Leaves are also used as a substitute for tea. The seeds are eaten boiled or roasted. Eurasia. HEDRICK 1919, ZEVEN; F80, N71M, N84, 053M, S55

*Vicia faba* - *Faba vulgaris*

*Vicia grandiflora* var. *kitaibeliana* - *Bigflower vetch* {S}. The leaves of some cultivars can be eaten as a green vegetable. Eastern Asia.

#### CULTIVARS

**Woodford:** Makes a good salad plant. The leaves are as mild as a raw lettuce leaf, without the grassy flavor of raw clover and the bitter taste associated with most edible but non-salad plant leaves. Primarily used as a winter-annual pasture plant for feeding livestock and as a green manure. Developed at the University of Kentucky. LOGSDON 1980; U53T

*Vicia monantha* - *Auvergne lentil*, *Bard vetch*, *One-flowered tare* {S}. The thick, floury, lentil-like seeds are eaten boiled or in soups. Mediterranean region. BAILEY, C, BURR, UPHOF, VILMORIN; W54, Z23M

*Vicia sativa* - *Common vetch*, *Winter tare*, *Lentil of Canada* {S}. Fresh or dried seeds are eaten in soups. Dried seeds are also ground into flour, mixed with that of corn, rye, or wheat, and made into bread. Young leaves and shoots are eaten. Also used as a substitute for tea. Eurasia, cultivated. BURR, HEDRICK 1919, TANAKA; FI 1, F73D, G19T, H61M, M34M, N81, N84, 053M, R32, S17, S55

*Vicia tetrasperma* - *Smooth tare*, *Kasuma-gusa* {S}. Young leaves and shoots are cooked and eaten as a vegetable. Also used as a coffee substitute. Eurasia. TANAKA; N84, 048

*Vigna aconitifolia* - *Moth bean* {S}. In India, the protein-rich seeds are used as a pulse, either whole or split. The split beans, or dal, are boiled, parched, fried in oil or used in the preparation of a salted snack called *bhujia*, which looks like broken macaroni. They are also substituted for Bengal gram in the preparation of *dhokla*, a fermented cake made from rice and dal. Young, tender pods are eaten as a vegetable. Tropical Asia. DEVI [Re], HERKLOTS, KUNKEL, NATIONAL RESEARCH COUNCIL 1979, STEINKRAUS, WATT; B49, F73D, F74{DF}, F80, F85, N84

*Vigna angularis* - *Azuki*, *Adzuki bean*, *Aduki bean*, *Red bean* {S}. The seeds are candied, boiled and served with rice or other cereals, added to soups, stews and salads, and are an ingredient of *hoisin sauce*. They can be popped like corn or used as a coffee substitute. Also made into *sweet bean paste* or *an*, which is used as a filling in *mochi*, steamed buns (*manju*), *taiyaki* waffles, Chinese *moon cakes*, *yokan*, and other Oriental sweets and confections. A festive rice and azuki dish, *sekihan*, is often served at weddings or birthdays. The young, tender pods can be eaten like snap beans. Eastern Asia, cultivated. CUSUMANO [Cul, Re], HARRINGTON, G. [Cu, Cul], HAWKES [Re], KRAFT, LUMPKIN, SACKS, SHURTLIFF 1975, SHURTLIFF 1977 [Re], SUGANO [Re], TANAKA; A52M{DF}, E56{DF}, F80, F97M{DF}, H91{PD}, I19M{DF}, I19M{PD}, J11M{DF}, M46, PIG, R47. (see also Sprouting Seeds, page 524)

#### CULTIVARS

**Buff:** Rare buff-colored strain. Slightly sweet seeds. Easily shelled pods, 4 to 5 inches long. Grows about 2 feet tall. Requires a long, warm growing season of approximately 100 days. F73D

**Express:** 118 days. Small beans, about 2/3 the size of Navy beans. Shiny and dark red, the edible quality is unique. Express was developed by Johnny's Selected Seeds, and is a genuine Japanese type. It is one of the earliest maturing adzuki beans. Vigorous, upright plants. G6, L77D, N84

**Hokkaido:** {DF} Extra fancy, red beans. Organically grown in the rich volcanic soils of Hokkaido Island, Japan. Renowned for their nutritional and medicinal properties. F88, G47B, H91, I19M

**Takara:** Early-maturing adzuki with good yields of small, dark-red beans. Good for sprouting or adding to soups. Grows about 2 feet tall. K46T

*Vigna caracalla* - *Snail vine*, *Corkscrew flower* {S}. In Mexico, the Warihios employ the large root as a riser in making their fermented drink, *batari*. Paleotropics. ALTSCHUL; B41 {PL}, F53M{PL}, F85, G96{PL}, L90M, L91M, N84, 089, 093

*Vigna catjang* - \**Vigna unguiculata* ssp. *cylindrica*

*Vigna cylindrica* - \**Vigna unguiculata* ssp. *cylindrica*

*Vigna mungo* - *Black gram*, *Urad*, *Urd* {S}. Seeds are boiled and eaten, ground into meal for bread, or made into spiced balls. They are the chief constituent of the wafer biscuits known in India as *papar* or *papadam*. Also an essential ingredient of *idli* and *dosa*, acid-leavened fermented cakes made from rice and dal. The split, unhusked beans are known as *chi lke urad*, while split and husked beans are simply called urad dal. Roasted and ground seeds are an ingredient of *sambhar*, a spice mixture that is widely used in the vegetarian Brahmin cooking of southern India. The leaves are edible. Tropical Asia, cultivated. DEVI [Re], JAFFREY [Re],

MACMILLAN, MARTIN 1975, NORMAN, STEINKRAUS, WATT, ZEVEN; A7{PD}, A90M{DF}, C34G{DF}, C95, F73D, F74{DE}, H73{DF}, L77D, N7D{DF}

*Vigna radiata* - *Mung bean*, *Golden gram* {S}. The seeds, either whole or as dal, are boiled and eaten, added to soups and stews or fermented into *idli*, *ontjom hitam* and *tempeh kacang hijau*. A famous Korean pancake called *pindaetok* is made from mung beans. *Kicharee* or *kichadi* is a basic Ayurvedic food of mung beans, rice and spices valued for its ease of digestion and assimilation. Peeled and split beans, called *yellow mung beans*, are often used in preparing starchy dishes and sweets, such as Chinese *moon cakes*. Sprouted seeds are widely eaten in salads, stir-fried dishes, soups, etc. *Silver sprouts*, sprouts with roots and seeds removed, often garnish special dishes such as braised shark's fin. The ground seeds are used in place of, or to adulterate adzuki-bean meal. Mung bean flour is used in Korea to make *chongpo muk* or jellied *mung bean curd*. Immature seeds are boiled, pureed, and served as a dip. Young pods are eaten like Chinese snow peas. Young leaves are steamed and eaten. The seeds are the source of a starch, *hunkwe*, used in the manufacture of *cellophane noodles* or *fun see*, and *Tientsin fen pi*—transparent, brittle round sheets soaked in boiling water and eaten as a cross between cellophane noodles and rice noodles. Tropics, cultivated. RALLENINE [Re], CUSUMANO [Cul, Re], HARRINGTON, G. [Cu, Cul], HERKLOTS, MILLON [Re], MORNINGSTAR, OCHSE, PASSMORE, ROUTHIER 1989 [Cul, Re], SO [Re], SHURTLEFF 1979, STEINKRAUS, TANAKA, TIERRA; A75, B49, C27G{PD}, C85M, L77D, PIG, R47. (see also Sprouting Seeds, page 524)

#### CULTIVARS

**Berken:** (Berken's Jumbo) Small, round, olive-green beans; pods 3 inches long, with up to 12 seeds per pod. Somewhat twining plant, averages 24 inches tall. Produces sprouts in 3 to 5 days, dry shell beans in 90 days. May be sprouted indoors or grown outdoors for a seed crop. Standard, widely adapted cultivar. D11M, F70, G71

**Min Guana No. 1:** 87 days. One thousand-kernel weight, 58 to 65 grams. Protein content 23.5%; rich in minerals and B vitamins. Tolerant to poor soil and drought; not tolerant to waterlogging. Used for medicinal purposes, food and beverages or sprouts. 054

**TexSorout:** Large, shiny green seeds; shatter-resistant pods, 12 or more seeds per pod. Upright bush produces an abundance of pods. Seeds germinate rapidly to produce sprouts superior in both sprout size and sprout yield. Moderate resistance to powdery mildew, pod borer, aphids, and drought stress. Generally earlier maturing and higher yielding than Berken or Lincoln cultivars. Used as a dry bean or for sprouts. L89G

**Ying Ge:** 90 days. Medium late cultivar, most suitable for producing sprouts. One thousand-kernel weight, 47.5 to 50 grams. Protein content 23.96%; rich in vitamins and minerals. Plant height about 2 feet; tolerant to drought and poor soil. 054

**Zhona Lu No. 1:** 67 days. Medium early cultivar with dark green seeds. Concentrated pod set high on the plant; matures evenly; pods do not split. Resistant to lodging, leaf blight and powdery mildew. 054

*Vigna sesquipedalis* - *Vigna unguiculata* ssp. *sesquipedalis*

*Vigna sinensis* *Vigna unguiculata*

*Vigna umbellata* - *Rice bean*, *Red bean*, *Masyang ko dal* {S}. The young leaves and pods are steamed and eaten as a side-dish with rice. Dried seeds are boiled and served with rice, or used in soups and stews. Sprouted seeds are eaten. Tropical Asia, cultivated. HERKLOTS, MAJUPURIA [Re], NATIONAL RESEARCH COUNCIL 1979, OCHSE; F73D, F85, N84

*Vigna unguiculata* - *Cowpea*, *Southern pea*, *Protopea*, *Lobia* {S}. Immature seeds are steamed, boiled, sauteed, stir-fried, etc. The dried seeds are used in soups, stews, *hoppin\* John*, purees, ground into flour, or fermented into *dosa* and *tempeh kacang merah*. Split seeds are known as *chowla dal*. Cowpea fritters, known as *akara*,

*akkra* or *calas*, are popular in West Africa and the Caribbean. Roasted seeds are used as a substitute for coffee. In tropical Africa, large-leaved forms are cooked and eaten like spinach. They are used in Indonesia for the preparation of *oorab*, a dish consisting of steamed young leaves mixed with grated coconut and chili paste. Young pods can be eaten like French beans. Sprouted seeds are eaten, and are sold as *Chinese Red Bean* or *red pea* in the United States. Tropics, cultivated. BRENNAN [Re], DEVI [Re], FELL 1982b, HALPIN [Cu, Cul], HERKLOTS [Cu], HESS, OCHSE, ORTIZ 1973 [Re], SHURTLEFF 1979, TAIKAKA, VAN EPENHUSEN, WILSON, E.G. [Re]; D27M{PD}, E13G{PR}, F85, K95M, N84, PIG. S17. (for cultivars see Cowpea, page 350, see also Sprouting Seeds, page 524)

*Vigna unguiculata* ssp. *cylindrica* - *Catjang* {S}. Young pods are eaten as a vegetable. Seeds are also consumed. Tropics, cultivated. TANAKA, WATT; F85, M25, N84, Q46

*Vigna unguiculata* ssp. *sesquipedalis* - *Asparagus bean*, *Yard long bean*, *Dow gauk*, *Snake bean* {S}. The immature pods, which may grow to twenty four inches, are eaten raw, steamed, stir-fried, or sauteed. They are best if harvested when young and tender. The raw pods are sweet, crisp, and have a delicious mushroom-like flavor. Young leaves and stems can be boiled or steamed, and served like spinach. Seeds are eaten boiled with rice, or mashed. The sprouted seeds are also consumed. Cultivated. FELL 1982b, HALPIN, HARRINGTON, G. [Cu, Cul], HERKLOTS, KRAFT [Re], ORTIZ 1973 [Re], ROUTHIER 1989 [Cul, Re], TANAKA; A79M, B73M, C82, D33, E13G{PR}, G33, G71, N40{PR}, R47

#### CULTIVARS

**Black-Seeded:** 70 days. Long, round, thick deep-green pod; 12 to 15 inches long, 1/4 inch in diameter. Seeds are blackish when mature. Good garden or market cultivar. C20M, F73D, J73, L7M, L59, N84, PIG, Q34

**Black Striped-Seeded:** 60 days. A newly developed cultivar, producing high quality, crisp, flavorful beans. High yielding plant. Developed in Taiwan. D55, F73D, L79G, N84

**Charlotte:** 70 days. An earlier maturing type which produces longer pods, 16 to 24 inches, while still remaining tender; deep green color. Heat and drought tolerant; climbs well. Small, black seeds. Good quality for home or market use. M32

**Dwarf:** Light green pods, 8 1/2 to 10 1/4 inches long; should be picked daily; early maturing at 11 weeks. Prolific plant, likes lots of heat and water if drainage is sufficient; tolerates shade. Unusual in that it will not climb. PIG

**Extra long Black-Seeded:** Pods are longer and more slender than the red-seeded type; will grow 2 to 2 1/4 feet long under optimum conditions, but are usually harvested at 15 to 18 inches when the pods are more tender. Deep green color; fine quality for snap bean use. Seeds are small and black. C20M, S63M

**Extra Long Red-Seeded:** A leading market cultivar that will grow pods two feet long under optimum conditions, but is usually harvested at 12 to 16 inches when the pods are more tender. Heat and drought tolerant. Seed brownish-red. G93M, S63M

**Green Pod Kaohsiung:** Long, slender, round dark green pods; 17 1/4 to 18 inches long; thick, meaty, crisp but tender, sweet and delicious, of fine quality for snap bean use. Rampant, very prolific vine; tolerant of heat and wet weather. Famous yardlong bean named after its place of origin—Kaohsiung, Taiwan. Black-seeded. D55, F73D, N84, Q39

**Liana:** 80 days. Very slender pods, about 1/4 inch in diameter; may reach 30 inches in length; tender, sweet and succulent, especially when harvested young. Excellent raw, steamed or stir-fried. Vigorous vines, 8 to 10 feet long; should be trellised for best results. C20M, L89, M46

**Orient Wonder:** (Oriental Wonder) 70 days. Specially selected Japanese strain. Rich green pods, loqg and slender, 15 to 18 inches

in length; tender and fleshy, of excellent eating quality. Seeds are slow to develop so pods stay smooth. Sets better in cool or drier weather than similar cultivars. A16, B49, C20M, C85M, G27M, I18M, K16M

**Purple:** 80-90 days. Pods are purple, 18 inches long, medium-thick. Vines are vigorous, productive, ornamental in foliage and fruit. When ready for harvest, the pods are easy to pick as their bright purple color stands out among the green foliage. They are unique in retaining their pigmentation even after being cooked. F73D, K49M, L11

**Purple Mart:** Slender, purple pods, 15 to 19 inches long; weight 0.7 to 1 ounce; tender and tasty. Vigorous plants; tolerant of heat and wet conditions. Q39

**Red-Seeded:** 75 days. Light-green pods, slightly smaller in diameter than Black-Seeded; tender and flavorful. Seeds maroon-brown with darker brown streaks. Good garden cultivar. Very popular in Southern Asia and Japan. A75, D55, F73D, L7M, L59, N84

**Sabah Snake:** 80 days. Longest of the snake beans, growing up to 33 inches long, about 10 inches longer than other very long types. Light green pods, wrinkled like the skin of a snake. Unusual white seeds. A favorite heirloom in Malaysia. J73

**White-Seeded:** Relatively new strain of asparagus bean that is becoming very popular in Taiwan. Long pods with light green skin. Very crisp and sweet. Grows vigorously in warm climates. C20M, D55, F73D, N84

*Vigna vexillata* - *Wild mung* {S}. The tubers have a soft, easily peeled skin and creamy, edible, tasty flesh. They can be eaten raw, boiled, or roasted, like sweet potato or cassava. Particularly rich in protein, tubers analyzed in India having shown a fifteen per cent protein content. Old World Tropics. FCK, F., NATIONAL RESEARCH COUNCIL 1979; I74{PL}, N84

*Voandzeia subterranea* - *Bambara groundnut*, *Congo goober* {S}. Seeds are eaten fresh, boiled, roasted and ground to a meal, and popped like maize. The meal is mixed with oil and condiments, fried, and made into cakes or balls known as *bakuru* in Nigeria. Young pods are eaten in stews. Roasted seeds are a coffee substitute. The leaves are also edible. Consumed during the Christmas holidays in the Dominican Republic. Tropical Africa, cultivated. C ARIAS, DALZIEL, FOX, E, HERKLOTS [Cu], MACMILLAN, MARTIN 1975, MENNINGER, NATIONAL RESEARCH COUNCIL 1979 [Nu], OCHSE, TREGOLD; F85, N84

*Wisteria floribunda* - *Japanese wisteria*, *Riji* {S}. Young leaves and flowers are boiled and eaten. Japan. TANAKA; D95{PL}, F80, H4{PL}, I49M{PL}, K38, K63G, 093, P5, P17M, P49, Q32, R47

*Wisteria frutescens* - *American wisteria* {S}. The fresh flowers are eaten in tossed green salads. They are said to be excellent when dipped in batter and fried in oil as fritters. North America. FERNALD, PETERSON, L.; A93M{PL}, D95{PL}, E7M, H4{PL}, K38, K63G, L55{PL}, N37M{PL}, N84, P5

*Wisteria sinensis* - *Chinese wisteria* {PL}. The raw flowers are full of nectar and very sweet. They can be folded into egg-batter and made into fritters, used for preserves, or brewed into wine. Flower buds are eaten as a vegetable after blanching in salted water. China, cultivated. MACNICOL [Re], TANAKA, VIARD; C9, C9M{S}, C36, D95, F51, G23, H4, I83M, K38{S}, L91M{S}, 053M{S}, P17M{S}

#### FAGACEAE

*Castanea alnifolia* - *Downy chinquapin*, *Trailing chinquapin* {PL}. The edible nuts are small, but larger than *C. pumila*, and of excellent quality. Burs have few prickles. Grows into a clumping bush by means of underground stems. Southeastern North America. MEDSGER, SMITH, A.; H14M

*Castanea crenata* - *Japanese chestnut*, *Kuri* {PL}. Nuts are eaten raw, cooked like potatoes, roasted, boiled with rice, seasoned with sugar, etc. Individual trees are variable in regards to size of nut, resistance to blight, and astringency of the kernel. Boiling in salted water removes the astringency. Some cultivars have the largest nuts of any species. Japan. JAYNES, SMITH, A., TANAKA; I49M, K63G{S}. (for cultivars see Chestnut, page 332)

*Castanea dentata* - *American chestnut* {PL}. Nuts are small, but the sweetest of any species. They are eaten raw, roasted, pureed, added to stuffings or breads, etc. The Indians used the roasted nuts as a coffee substitute, and also made a chocolate substitute from the kernels. Eastern North America. FERNALD, MEDSGER; A91, B94{S}, C11M, D45, E84, G66, J61M, K63G{S}, K89

#### CULTIVARS {GR}

**Kelly:** Has exhibited the most blight resistance, and is the most consistent bearer of any tested at Niagara-on-the-Lake, Ontario. Small to medium nut with very good flavor. Vigorous, upright, healthy tree. Originated in Pennsylvania. E91M, K63G{S}

**Watertown #3:** Small nut with very good flavor; very good kernel filling. Hardy and productive Watertown, New York selection from the wild. E91M

**Wexford:** From Wexford County in northern Michigan where blight is not a problem. Useful for isolated blight free areas in the Midwest. I60{PL}

*Castanea mollissima* - *Chinese chestnut* {PL}. Nuts are eaten raw, roasted, boiled, pureed, etc. The skin, or pellicle, of the kernel is easily peeled. Unlike other nuts, chestnuts are high in carbohydrates and low in fats and oils. Trees are resistant, though not immune, to the chestnut blight. China. CREASY 1982, DAHLEN [Pre, Re], JAYNES, MENNINGER; D76, F43M, F51, G66{S}, H4, J16, K63G{S}, L99G{DF}, NO, N84{S}. (for cultivars see Chestnut, page 332)

#### *Castanea nana* - *Castanea alnifolia*

*Castanea pumila* - *Chinquapin*, *Allegheny chinkapin* {PL}. Nuts are small, about half the size of *C. dentata*, and have a very sweet and nutty flavor. They are eaten raw or masted. Trees are usually dwarf and are prolific producers of nuts. Sometimes sold in southern markets. North America. JAYNES, MEDSGER; B32, D37, H4, H14M, I53M, K63G{S}, K67

*Castanea sativa* - *Italian chestnut*, *Spanish chestnut* {S}. Nuts are eaten raw, roasted, boiled, pureed, or dried. Also used in desserts, stuffings, pates, *polenta*, confectionery (*marrons glacés*), brandy, etc. Made into a flour, *farine de châtaigne*, that is used in breads, cakes (*castagnaccio*), puddings, or for thickening soups. Also a coffee substitute. *Banon*, *Dreux a la Feuille*, and *Couhe Verac* cheeses are often wrapped in chestnut leaves. The flowers yield a dark amber, often reddish honey with a strong, rich, slightly bitter flavor that is much appreciated in parts of France: In Italy, it is traditionally used in baking. Chestnut wood is used for aging wine and *balsamic vinegar*. Sugar is extracted from the nuts. Cultivated. BIANCHINI, CAMPBELL-PLATT, CRANE 1975, FERNALD, HEDRICK 1919, KASPER, MASUI, ROBINSON, J. 1994, ROSENGARTEN [Re], TANAKA, UPHOF; C94M{PD}, E84{PL}, H19M{DF}, H19M{PD}, H73{PD}, I94{PD}, J66M{DF}, K37P{PD}, K63G, L99{DF}, L99{PD}, N71M, P5, P49, Q46, R78, etc. (for cultivars see Chestnut, page 332)

*Castanea* x sp. (*C. crenata* x *C. mollissima*) - *Korean chestnut* {PL}. Artificial hybrid. Japanese chestnut x Chinese chestnut. Nuts are edible. By nature of their origin the trees are quite hardy. JAYNES.

#### CULTIVARS

**Meader New Hampshire #4:** Blight resistant Korean seedlings that survive in New Hampshire. Trees grow to 30 feet tall and produce 1/2 bushel of clean good quality nuts each. Shows greater blight resistance than some American hybrids. Selected by Professor E.M. Meader. A91

*Castanea x sp. (C. crenata x C. sativa) - {PL}*. Artificial hybrid. Japanese chestnut x Italian chestnut. The nuts are eaten.

CULTIVARS {GR}

**Bisalta #3:** Very large nuts, one of the largest of all chestnuts. Covered with a thick pellicle. Not as easily peeled as Colossal, but very sweet. An early and heavy bearer. B74

*Castanea x sp. (C. mollissima x C. dentata) - American hybrid chestnut {PL}*. Artificial hybrid. Chinese chestnut x American chestnut. Nuts are eaten. The hybrids combine the sweet nut quality of *C. dentata*, with the larger nut size and blight resistance of *C. mollissima*. JAYNES; D76, H65, K63G{S}, K67. (for cultivars see Chestnut, page 332)

*Castanea x sp. (C. mollissima x C. sativa) - {PL}*. Artificial hybrid. Chinese chestnut x Italian chestnut. Nuts are eaten.

CULTIVARS

**Simpson:** Broad, spreading tree, hardier and much more vigorous as a seedling than Chinese chestnut. Larger nut size than Chinese chestnut. Originated in New York. B99, E62, E62{DF}, E62{SC}, E91M{GR}

*Castanopsis chrysophylla Chrysolepis chrysophylla*

*Castanopsis cuspidata - Japanese chinquapin, Tsubura-jii {PL}*. The cotyledon of the nut is eaten either boiled or roasted. China to Japan. KUNKEL, TANAKA; H4

*Castanopsis sempervirens - \*Chrysolepis sempervirens*

*Chrysolepis chrysophylla - Golden chinquapin, Giant chinquapin {S}*. Nuts are less than half an inch long and have a hard shell. The kernel is very sweet and is much appreciated. Attractive evergreen foliage makes it a good ornamental. Western North America. MEDSGER, SMITH, A.; B94, D95{PL}, F85

*Chrysolepis sempervirens - Bush chinquapin, Sierra chinquapin {S}*. The nuts, which resemble filberts, are sweet and can be eaten raw or roasted. Evergreen shrub is a good candidate for edible landscaping. Grows better at lower elevations than *C. chrysophylla*. Western North America. CLARKE, KIRK, MEDSGER, SMITH, A.; A2, B94, C43V, D96

*Fagus americana - Fagus grandifolia*

*Fagus grandifolia - American beech {PL}*. Nuts are small but very sweet and nutritious. They are eaten raw, roasted, or made into flour. Also the source of an edible oil. Young expanding leaves may be cooked as a potherb. Germinating seeds are tender, crisp, sweet, and nutty, and are very good raw or cooked. Roasted seeds are a substitute for coffee. North America. ANGIER [Re], FERNALD, GIBBONS 1979, MEDSGER, ROSENGARTEN; A82, B9M, B96, D95, H4, H49, K28, K38{S}, K63G{S}, K89, M69M, M77, N37M, N84{S}, etc.

*Fagus sylvatica - European beech {S}*. Nuts are eaten raw, or roasted and salted. An oil extracted from the nuts is said to be equal in delicacy to olive oil. It is used in salads, for frying, or made into *beechnut butter*. Beechwood is one of the best woods for smoking foods, such as *Bamberger Rauchbier*—a dark, smoky bottom-fermented beer from Germany, *Idiazabal*—a sheep's milk cheese from the Basque region of Spain, *Piquillo peppers*, and *Westphalian* and *Prague* hams. Beechwood chips are used in aging beer. Young leaves are eaten in salads or used to make a potent liqueur, *beech leaf noyau*. Eurasia, cultivated. BROUK, CAMPBELL-PRATT, FERNALD, FORGET, MABEY [Re], MICHAEL [Re], ROBINSON, R. 1995, SCHERY; B8P{PD}, B9M{PL}, B74{PL}, C9M, D95{PL}, F67T{PD}, G40{P£}, G47J{PD}, G66{?L}, H49{PL}, J3{PJ2}, K32M{PQ}, K38, K63G, K89{PL}, N54{PD}, N71M, N84, 053M, etc.

*Lithocarpus densiflora - Tamark oak {S}*. Evergreen tree of California and Oregon. California Indians ate the acorns, leaching them in hot water to remove the tannins, and then drying and grinding them for baking. Western North America. KROCHMAL; B94,

C9M, D95{PL}, G60{PL}, G59M, G66, 198M{PL}, N84

*Quercus acutissima - Sawtooth oak, Kunugi, Sangsurinamu {PL}*. The acorns are processed into a brownish, opaque gelatin-like food called *dotori muk* or *acorn curd* which is seasoned with chilis, green onions, and soy sauce and eaten as a cooling summer food. Available in Korean markets as cakes or slabs, ready to eat. Eastern Asia. MILLON [Re], PEMBERTON; A80M, B32, £52, C38, D95, F43M, G66{S}, H4, H14M, H45M, K37M, K38{S}, K60, K63G{S}, M69M, P5{S}, etc.

CULTIVARS {GR}

**Carruthers:** (Gobbler) Produces acorns that are somewhat smaller than regular Sawtooth oak strains, but yields are twice as large. Begins bearing when 5 to 8 years of age. Space 20 feet apart for best acorn production. Winter hardy from northern Florida to -10° F. Disease and insect resistant. G21M, H4, 14

*Quercus aegilops - \*Quercus macrolepis*

*Quercus agrifolia - Coast live oak, California live oak {S}*. Acorns were leached in water until the astringency was removed, and then ground into meal for use in breads and soup. The wood is preferred over others for smoking steaks, chicken and other foods in Santa Maria style barbecues, a style unique to the Santa Maria, California area. CLARKE; B74{PL}, B94, C9M, D95{PL}, F85, G59M, G60{PL}, G66, H71, I83M{PL}, J81M{PD}, K63G, L47{PL}, N84

*Quercus alba - White oak {PL}*. Acorns are eaten after leaching. It is said that those with red or pink splotches on the shell are the sweetest. They can be baked slowly in a low oven, mixing in butter and salt, until the acorns no longer taste raw. When cooled they make a tasty, salted nut, something like a cross between sunflower seeds and popcorn. Source of American white oak wine barrels used for aging wine, the oak wood contributing a vanilla-like flavor to the wines. Also yields oak chips, used as a replacement for true barrel aging or to supplement the oak flavor imparted by used barrels. White oak wood and chips are also used as smoke flavorings, especially for brisket. Lightly moistened wood releases tannins which impart flavors reminiscent of a good red wine. Also used for cooking planks, which impart a distinctive woody flavor to foods cooked on them. North America. JAMISON, LOGSDON 1981, MEDSGER, MESSINA, ROBINSON, J. 1994, TURNER 1979; A20M{PD}, A80M, A84{PD}, A91, A99{PD}, £52, B74, C11M, C25P{PD}, D45, F51, H4, H49, 14, 160, J3{PD}, J21H{m}, K63G{S}, K54{PD}, L15G{PD}, M69M, M85{ED}, N17{ED}, etc.

*Quercus bicolor - Swamp white oak {PL}*. Acorns are quite large, and unlike those of other oaks, are attached to long stems. After leaching, they are roasted and ground into a meal, which are molded into cakes or loaves or mixed with other food. North America. MEDSGER; B9M, B53, C11M, D45, D95, F51, G66{S}, G89M, 160, K63G{S}, K89, M69M, N84{S}, P5{S}

*Quercus cerris - Italian oak, European turkey oak {S}*. Acorns are ground into flour and made into bread. A manna-like substance, *gaze*, is collected from the branches, and boiled down to a syrup. The syrup can be used for sweetening food or mixed with flour to form a sweetmeat, *gazenjubeen*. Eurasia. DONKIN, HEDRICK 1919, UPHOF; G66, H4{PL}, H45M{PL}, I60{PL}, K38, K63G, N24M{PL}, N71M, N73{PL}, N84, P5, P49, R78

*Quercus dentata - Dainty oak, Kashiwa {S}*. In Japan, the leaves are wrapped around the festive rice cakes known as *kashiwa mochi*, the cakes absorbing the scent of the leaves. *Kashiwa mochi* is traditionally eaten on May 5th, in celebration of *Boy's Festival* or *Sekku*. Acorns are roasted and used as a coffee substitute. Also the source of a starch. Eastern Asia. COOK, HOMMA, SUGANO, TANAKA; G20M{PD}, G66, H4{PL}, K63G, N84, P49

*Quercus garryana - Oregon white oak {PL}*. The acorns have a high tannin content and should be leached before using. They can then be roasted and ground to a flour for use in cakes, breads, and muffins. Also a good thickener for soups and sauces. Occasionally used as a source of wine barrels for aging wine, and oak chips.

Western North America. ROBINSON, J. 1994, TURNER 1979; A84{PD}, B74, B94{S}, C9M{S}, D95, E15{S}, G66{S}, H45M, J26, K63G{S}, NO

*Quercus graeca* - *Quercus macrolepis*

*Quercus ilex* - *Holm oak*, *Holly oak* {S}. Acorns are mixed with clay and made into a kind of cake or bread, something like a delicate soft chocolate or black nougat. It is eaten with lard, milk, cheese, or honey. Also the source of an edible oil. Mediterranean region to Southwest Asia. KUNKEL, USAI; C9M, G66, H4{PL}, H71, I83M{PL}, K63G, N84, P5, P49, R78

*Quercus ilex* ssp. *ballota* - *Ballota*, *Spanish holm oak* {PD}. The acorns are round, almost as sweet as chestnuts, and are commonly eaten in Mediterranean countries. They are used in breads, soups, muffins, couscous, etc. An edible oil is extracted from them. They are also fed to a special breed of pig, called *cerdo iberico* or *pata negra*, that is the source of the Spanish delicacy known as *Iberian ham* or *jamon iberico*. The acorns give the meat a unique texture and flavor. *Pimenton de La Vera*, a gourmet quality paprika from the Extremadura region of Spain derives its characteristic aroma, flavor and color stability from smoke produced by burning ballota wood. An Arabic porridge, known as *racahout*, is made from acorn flour, cocoa, sugar, rice flour, and *salep*. Southwestern Europe. CAPEL, FAIRCHILD 1930, HEDRICK 1919, HESS, ORTEGA, WOLFFERT 1973; C60D, L13P, N54

*Quercus lobata* - *Valley oak*, *California white oak* {S}. Acorns are ground to a meal or flour and used in breads, muffins, cookies, pancakes, etc. Some types are almost entirely free of tannin. Western North America. CLARKE, MEDSGER; B94, C9M, D95{PL}, D96, G59M, G60{PL}, G66, H71, K63G, L47{PL}, N84, P5

*Quercus macrocarpa* - *Burr oak*, *Mossy-cup oak* {PL}. The acorns of this species are among the most palatable of all. They are used in breads, muffins, griddle cakes, soups, dumplings, etc. In the leaching process, gelatine can be used to remove the bitterness without extracting the sugar. North America. FERNALD, JAYNES; A80M, A91, B74, C9M{S}, C11M, D45, F51, G66{S}, I4, I9M, I49G, 160, K63G{S}, M69M, N24M, N37M, etc.

CULTIVARS {GR}

**Ashworth:** Precocious producer of small to medium, high quality acorns containing little tannic acid. Biennial bearing. Original tree was discovered by Fred Ashworth while delivering milk by horse and wagon. He stopped along the way, and having little to eat decided to try some of the acorns from a nearby tree, which turned out to be good and sweet. Reselected over a 25 year period. LOGSDON 1981; L27M

**Kreeder:** A vigorous seedling selection from the Midwest noted for its very large acorns and fast growth. Shows twice the vigor of other seedlings. Originally from Illinois. 160

**Sweet Idaho:** Found in northern Idaho from two isolated cross-pollinating trees. Eaten dry or still fresh, they are not just non-bitter but actually sweet, with a distinctive flavor. Best used ground in cakes and breads, after proper leaching. Apparently self-fertile. A91

*Quercus macrolepis* - *Valonia oak* {PL}. The acorns have no bitter principle and are eaten raw or boiled. Also the source of an edible manna. Eurasia. DONKIN, TANAKA; D95, K63G{S}

*Quercus muehlenbergii* - *Yellow chestnut oak* {PL}. Acorns are quite sweet and are rather pleasant eating. They are good roasted in an oven with butter and salt, or dipped in clarified sugar. North America. GIBBONS 1962, JAYNES, MEDSGER; A74, C11M, G21M, G66{S}, H4, H14M, 160, J39M, K37M, K38{S}, K63G{S}, M69M, N24M, N37M

*Quercus obtusiloba* - *Quercus stellata*

*Quercus palustris* - *Pin oak* {PL}. Acorns are sometimes eaten. In parts of Texas, the wood is preferred over other species of oak for use as a smoke flavoring in barbecue cooking. North America.

BYRNE-DODGE, KUNKEL; A82, C9M{S}, C11M, F51, H49, I4, I9M, J16, K38{S}, K63G{S}, M69M, P5{S}

*Quercus petraea* - *Durmast oak* {S}. The acorns are eaten or used as a substitute for coffee. Leaves can be made into a medium-dry white wine of good flavor. Along with *Q. robur*, one of the principal European oak species which produces barrels used for aging wine. Europe. BROUK, MICHAEL [Re], ROBINSON, J. 1994; A84{PD}, G66, K63G, N24M{PL}, N71M, N73{PL}, N84, P49, R78

*Quercus robur* - *English oak*, *French oak*, *Russian oak*, *Truffle oak* {PL}. Acorns are eaten or ground into flour. They are used as a substitute for coffee, called *eichel kaffee*. Also the source of a manna, *diarbekei*, used instead of butter in cooking. One of two principal European species of oak which produce oak barrels used in the aging of wine. Source of the famous *Memal oak* barrels of the Baltic region, rated very highly by the Coopers Guild of England, and contributing vanilla-cognac type flavors to wine. Wine-flavored shavings from French oak barrels, sometimes called *Cape smoke*, are used for smoking foods in barbecue cooking. Eurasia, cultivated. ANONYMOUS 1995, HEDRICK 1919, MABEY [Pie], ROBINSON, J. 1994, UPHOF; A71G{PD}, A84{PD}, A91, B8P{PD}, B74, E47{S}, H4, I4, I23M{PD}, 160, K38{S}, K63G{S}, K89, N37M, N84{S}, P5{S}, etc.

*Quercus x schuettei* (*Q. macrocarpa* x *Q. bicolor*) - *Schuettes oak* {PL}. Natural hybrid. Burr oak x swamp white oak. Native hybrid found where the above two species overlap. Produces large, edible acorns that are usually very low in tannin. North America. 160

*Quercus sessiliflora* - \**Quercus petraea*

*Quercus stellata* - *Post oak* {PL}. The acorns are pounded into a meal, cooked and eaten. Also used as a substitute for coffee. In parts of Texas, the wood is preferred over other species of oak for use as a smoke flavoring in barbecue cooking. North America. BYRNE-DODGE, UPHOF; D95, G21M, G66{S}, J21H{PD}, H14M, K63G{S}, M69M, N37M, N84

*Quercus suber* - *Cork oak* {S}. Acorns are eaten, especially after roasting. In parts of Spain they are fed to pigs which are the source of *jamon iberico* and *jamon serrano*, as well as other gourmet pork products such as *eam de lomo*, *chorizo*, *salchichon* and *morcon*. The acorns give a special flavor to the meat. Mediterranean region, cultivated. CAPEL, CLARKE, HEDRICK 1919; C9M, D95{PL}, H71, I83M{PL}, K63G, L13P{PD}, L47{PL}, N24M{PL}, P5, P49

*Quercus x sp.* (*Q. lyrata* x *Q. virginiana*) - *Compton oak* {PL}. Natural hybrid. Overcup oak x live oak. Rare hybrid found only where the above two species overlap. Notable for its sweet acorns and fast growth. North America. A80M, 160

*Quercus x sp.* - *Ooti oak* {PL}. Hybrid of *Q. macrocarpa*, *Q. muehlenbergii* and *Q. robur*. Seedlings of a grafted parent selected for lustrous leaves, fast growth and low tannin acorns. Cultivated. 160

FLACOURTIACEAE

*Dovyalis abyssinica* - *Abyssinian gooseberry* {S}. A small, globose fruit with thin, tender skin and juicy, melting flesh with an aroma and flavor faintly suggestive of apricot. More desirable for eating out of hand than the Ceylon gooseberry. When ripe it makes a very agreeable jelly and fruit punch. In Kenya, the roots and stems are eaten in tonic soups. Eastern Africa. GACHATHI, KENNARD, MORTON 1987a, STURROCK, UPHOF; T73M

*Dovyalis caffra* - *Kei apple*, *Umkokolo* {S}. Fruits are yellow-orange, juicy, aromatic, and pleasantly acid when fully ripe. Sometimes eaten out of hand, but mostly used in jams, jellies, marmalades, compotes and pickles. The fruit pulp is high in pectin and small amounts can be added to fruits that do not jell well. Southern Africa, cultivated. FOX, F., KENNARD, MORTON 1987a,

POPENOE, W. 1920 [Cu, Pro], UPHOF; E29{PL}, I83M{PL}, M7M{PL}, N84, P5, P38, S28M, S97M{PL}

*Dovyalis hebecarpa* - *Ceylon gooseberry*, *Ketembilla* {S}. Fruits are maroon-purple, velvety, somewhat juicy, and usually acid in flavor. Some types are sweeter and are said to taste like gooseberries. Otherwise used in jams, jellies, preserves, and to flavor meat and fish. Tropical Asia, cultivated. KENNARD, MORTON 1987a, POPENOE, W. 1920 [Cu], RICHARDSON, M. [Re], STURROCK, UPHOF; A41G{PL}, A79M, D56M, F85, G73,174{PL}, N40M, N84, P38

*Dovyalis* x sp. (*D. abyssinica* x *D. hebecarpa*) - *Florida gooseberry*, *Tropical apricot*, *Apricot velvet berry* {S}. Artificial hybrid. The fruits are brownish-orange, somewhat luzzy, with a juicy, melting, orange-yellow flesh of a very agreeable acid apricot flavor when fully ripe. Good eaten out of hand, or made into jams, preserves, syrups, soft drinks and pies. MORTON 1987a, STURROCK; M17{PL}, P38

#### CULTIVARS {GR}

**Prodigal:** An improved form with excellent flavor. Tree very productive. Selected in Florida. E29, N84

*Flacourtia cataphracta* - *Rumealma plum*, *Paniala* {S}. The fruit is round, about the size of a cherry, and a russet-purple color when ripe. The flesh is firm, dark red when ripe, with a pleasant, mildly acid flavor. Sometimes eaten out of hand, otherwise it makes excellent jams, jellies and preserves. Acid young shoots are eaten in Indonesia. Tropical Asia. MACMILLAN, MORTON 1987a, MOWRY, STURROCK, UPHOF; F85, N84, P5, P38, Q46

*Flacourtia indica* - *Governor's plum*, *Ramontchi* {S}. Fruits resemble crabapples or small plums in shape and are deep red to purple in color. The soft juicy pulp is, at its best, sweet and agreeable and can be eaten out of hand. Otherwise used in jellies, jams, preserves and pies. Tropical Asia, cultivated. MORTON 1987a, MOWRY, POPENOE, W. 1920 [Cu], RICHARDSON, M. [Pre, Re], STURROCK; E29{PL}, F85, N84, P38, Q46

*Flacourtia inermis* - *Lovi-lovi*, *Plum of Martinique* {S}. The reddish-purple fruits are the size of a small cherry. They are usually too acid to eat out of hand, though sometimes the fruits are sweet. Mostly used for jelly, syrup, pies, tarts, preserves and pickles. Tropics. HEDRICK 1919, KENNARD, MORION 1987a, RIFAI, TANAKA, UPHOF; F85, N84

*Flacourtia jangomas* - *Flacourtia cataphracta*

*Flacourtia ramontchi* - *Flacourtia indica*

*Flacourtia rukam* - *Rukam*, *Indian prune* {S}. Ripe fruits are purple, juicy, subacid, and can be eaten out of hand, especially after rolling them between the palms to reduce astringency. Also used to make jellies, jams and preserves. In Indonesia, they are cooked with tamarind, chilis, palm sugar, shallots, and fish sauce. The beautifully red young shoots are eaten raw in salads. Tropical Asia. KENNARD, MORTON 1987a, MOWRY, OCHSE, STURROCK; F85, N84

*Oncoba spinosa* - *Oncob*, *Snuffbox tree* {S}. The mealy fruits are edible, having somewhat the flavor of pomegranates or green apples. Seeds are the source of an edible oil. Tropical Africa. FOX, F., TANAKA; N84

*Pangium edule* - *Pangi*, *Pakem*, *Kepayang* {PD}. Seeds are eaten after the poisonous hydrocyanic acids have been removed. Unripe ones are used for preparing *sayor lodeh*, a spicy Indonesian side-dish. Ripe ones are fermented in pits, after which they become chocolate-brown, greasy and slippery and are known as *keluwak* or *kloowak*. *Keluwak* has a distinctive, slightly bitter flavor and serves for the preparation of stews, soups and condiments. Another fermentation produces *dageh peechong*, which is similar to *keluwak* but is sweeter and more slippery in texture. Also the source of a good cooking oil. The leaves are used to wrap and preserve meat. Southeast Asia. RREMNES, BURKILL, MAY, R., OCHSE, OWEN

[Re], SHURTLEFF 1979 [Cul, Re], TANAKA, TINGGAL; A45

#### FLAGELLARIACEAE

*Flagellaria indica* - *Supplejack* {S}. Young leafy shoots are boiled and eaten as a potherb. The fruits are also edible. In the Andaman and Nicobar Islands the sweet stems are chewed like sugar cane. Islands of Pacific and Indian Oceans. BHARGWA, CRIBB; F85

#### FOUQUIERIAEAE

*Fouquieria splendens* - *Ocotillo*, *Coach whip* {S}. Bright red flowers are soaked in an equal amount of water overnight and used as a beverage. This may be mixed with other fruit juices or consumed as is. The capsules and flowers can be eaten raw or cooked. Southwestern North America. CLARKE, KIRK; A69, C98, C98M{PL}, C99{PL}, F85, 133, I98M{PL}, K47M, L13, L55J, N84, 053M, Q41, R88, T25M, etc.

#### FUMARIACEAE

*Fumaria officinalis* - *Fumitory* {S}. The herb, including the flowers, is added to sour milk, a few sprays to every pint. When the milk has soured thickly, the fumitory is shaken free of the curd and discarded. It gives a tangy taste to the milk and also acts as a preservative, preventing the rancid taste that often spoils soured milk. Both fresh and dried leaves may be used. Eurasia, cultivated. DE BAIRACLI-LEVY; F37T{PL}, K18M{DF}, N7IM, N84, 048, 053M

#### GENTIANACEAE

*Centaurium erythraea* - *Centaury* {S}. The flowering tops are used in bitter tonic preparations and vermouth formulas. Has been used for this purpose in England for centuries, often combined with gentian. Eurasia, naturalized in North America. BURDOCK, LEUNG, LEYEL 1987a; C95, F37T{PL}, F68T, J82, L94M, N84, 053M, Q24, R53M, S55

*Gentiana cruciata* - *Cross gentian* {S}. Roots are sometimes used in the manufacture of *gentian bitters*. Eurasia. BROUK, UPHOF; D11T{PL}, F80, H98{PL}, J99D, L66{PL}, N84, 046, Q24, R88

*Gentiana lutea* - *Yellow gentian* {S}. The roots are used in the preparation of bitter liqueurs, called *gentian bitters*, *gentian brandy*, *enzian schnapps*, or *edelenzian*. Most of the enzian drinks are only flavored with gentian and their alcohol is derived from other sources. They are consumed as appetizers or taken with heavy or fatty meals to aid digestion. Also one of the main ingredients of *Angostura Bitters* and some very old, secretive, monastic liqueurs such as *Alpenkrauter*, *Fleur de Alpes* and *Millefiori*. *Psychaud's bitters*, said to contain gentian, are used in the famous *Sazerac* cocktail of New Orleans. They are also used for flavoring pork, poultry and rice dishes. Eurasia. BROUK, BROWN, G., CAMPBELL-PLATT, LAUNERT, MILLER, J., RAY, C., UPHOF; A49D{DF}, E38M{PD}, E61{PL}, F68T, H15T{PD}, J82, K18M{DF}, K29M{PD}, K54{PD}, L34{DF}, N7IM, 053M, R53M, R53M{PL}

*Gentiana punctata* - *Spotted gentian* {S}. Roots are sometimes used in the manufacture of *gentian bitters*. Europe. BROUK, UPHOF; A61, N84, 053M, PIO, Q24, R88

*Gentiana purpurea* - *Purple gentian* {S}. Roots are sometimes used in the manufacture of *gentian bitters*. Europe. BROUK, UPHOF; F80, N84, 053M, Q24

#### GERANIACEAE

*Erodium cicutarium* - *Red-stemmed filaree*, *Alfiliree*, *Heron's-bill* {S}. The young leaves are eaten raw or used as a potherb. They are added to salads, sauces, omelettes, sandwiches, or soups. May be used in recipes that call for the leaves of beet, plantain, sow thistle or amaranth. Eurasia, naturalized in North America. CLARKE [Re], FERNALD, HARRINGTON, H., LAUNERT [Re]; E66M, F63M, K15, N7IM, N84

*Geranium thunbergii* - *Gen-no-shoko*, *Chuisoni-phul* {S}. Young leaves are edible. Older leaves, when the plant is at its peak of growth, are dried and used as a tea substitute. Himalayan region to Eastern Asia. TANAKA, YASHIRODA; A61, K22{PL}, N84

*Geranium viscosissimum* - *Sticky geranium*, *Sticky crane's bill* {S}. The flowers are edible. They can be added to salads or used to decorate hors d'oeuvres. Western North America. C43V, E15, E66M, F44, G89M{PL}, 147, J26{PL}, J75{PL}, N84, 053M

*Pelargonium acetosum* - *Sorrel-leaved stork's bill* {PL}. The buds and acid leaves have been eaten as vegetables in the Cape of Good Hope area. They can be added to salads like sorrel. South Africa. HEDRICK 1919; J82, N84

*Pelargonium citronellum* - *Lemon geranium* {S}. The fresh leaves are used in cooking to impart a complex lemon flavor to foods, such as desserts, punch and vinegar, like those of *P. crispum*. Also infused into a tea. Southern Africa, cultivated. BOWN; C89M{PL}, N84, 053M

#### CULTIVARS

**Galwav Star:** Small, crinkled, deeply-cut leaves with a fine white edge and an exceptionally strong lemon-to-lime scent. Stems form stiff upright columns to create a small, tight shrub; lavender blossoms. E61, I32M, M82

**Mabel Grey:** Palm-sized, dark green, maple-shaped leaves with an intense and complex lemon scent. Arguably the best variety for culinary use. Makes excellent lemon sorbet. Shrubby, upright growth habit; showy, lavender blossoms. New growth frequently arises through the soil from the roots. Discovered in Kenya around 1960. C2, C89M, E61, F35M, F37T, G80, G96, I32M, J66, J76, J82, K2, K22, L56, L90J, L94M, M35, M82, etc.

*Pelargonium crispum* - *Lemon geranium* {PL}. Crushed leaves are used to flavor soups, poultry, fish, sauces, fruit dishes, and vinegar. Cake pans can be lined with the leaves and the batter will be infused with their essence. The flavor of jellies may be enhanced by adding leaves to the jar when the hot jelly is poured in. Southern Africa, cultivated. CLARKE, MORTON 1976; E61, F93G, G80, J76, L90J, N84{S}, S28M{S}

#### CULTIVARS

**Cinnamon:** Small, glossy, crinkled leaves with a spicy lemon scent and a hint of cinnamon. The cinnamon scent is most noticeable during cool winter temperatures. Compact, shrubby plant, a very prolific bloomer; pale lavender blossoms. C89M, F37T, G80, G96, H94M, I32M, /57{ES}, J66, J82, K2, K22, L56, M15T, M35, M82, N42, etc.

**French lace:** (Variegated Prince Rupert) Smaller, variegated form of Prince Rupert. Small ruffled leaves with a creamy-white edge, giving the plant, from afar, an almost white appearance. Small, pale lavender blossoms; stiffly upright growing under full sun conditions. A good pot plant. C67M, C81M, C89M, F35M, G80, G96, I32M, /57, J66, J82, K22, K57, K85, L56, N42, etc.

**Lemon Crispum:** (Fingerbowl Geranium) Small, crinkled leaves with a strong lemon fragrance. Lavender blooms; stiffly upright growth habit. Good for cooking and potpourri. The geranium traditionally put in finger bowls. A97, C81M, C89M, F35M, G96, H51M, I32M, /57{ES}, J66, K2, K22, K85, L56, M82

**Lemon Meringue:** Crinkled and cut leaves, about the size of a quarter or half dollar. Distinctive scent reminiscent of a lemon meringue pie. Strongly upright growing under full sun conditions, sprawling in less ideal exposures. Lavender flowers. Useful in cooking and potpourri. Developed by Frances Hartsook. C89M, I32M, K22, M35

**Limoneum:** Small, fan-shaped leaves with a distinctive citrus scent. Upright to sprawling growth habit; striking, neon rose-pink flowers. Very good in hanging baskets. E61, F35M, I32M, K85, M82

**Orange:** Exceptional viola-like blooms of mauve with maroon spots. Lew, bushy plant. Large leaves with a strong mandarin orange fragrance. Especially nice for adding to cakes, frostings and other desserts. Often confused with Prince of Orange, which has small crinkled leaves. C89M, E61, F35M, F93G, G96, H51M, H94M, I32M, J76, K2, K22, K85, M82, N42

**Peach:** (Gooseberry Leaved) Small, crinkled, dark-green leaves heavily mottled with golden creamy-white variegation. Slightly fruity, peach-like scent. Delicious in jams and jellies. Small, sturdy plant with very pale lilac flowers. C89M, E61, F35M, G80, H94M, I32M, J82, K57, K66, L90J, N42

**Prince Rupert:** Small ruffled leaves, larger than Lemon Crispum; mild, lemon-like scent. Pale lavender blooms; strong, upright grower under full sun conditions. A good pot plant. Also one of the best cultivars for standards. C9, C67M, C81M, C89M, F35M, G96, H51M, I32M, J66, J82, K2, K22, K57, K85, M53, etc.

*Pelargonium exstipulatum* - *Pennyroyal geranium* {S}. Leaves can be used to flavor jellies, cakes, and desserts. Southern Africa. MORTON 1976; N84, S28M

*Pelargonium x fragrans* - *Nutmeg geranium* {PL}. Artificial hybrid. Probably *P. odontissimum* x *P. exstipulatum*. The leaves are used to flavor jellies, cakes, puddings, stuffings, punches, coffee and tea, pates, vinegars, and potato salad. They have a pungent, spicy scent somewhat reminiscent of nutmeg. Cultivated. BOWN, LATHROP, MCKILLIGAN, MORTON 1976; A97, C67M, F93G, G80, G96, H51M, I32M, /57, J66, J76, J82, K22, K57, K85, M55,

**Apple Cider:** Well-shaped, self-branching plant. Smooth, rounded, grey-green leaves. Sprays of tiny white flowers scattered throughout the year. Has a clear apple cider scent in cool weather, becoming a bit more pungent in die heat. C81M, C89M, F35M, G80, I32M, K85, M35, M82

**Variegated:** (Golden Nutmeg) A sport of Nutmeg with an almost golden appearance from afar due to the chartreuse variegation on the leaf edges. Pale slate-grey leaves. Forms a small shrub with almost constant sprays of small white flowers. Excellent in hanging baskets. C89M, F15M, F35M, K57, G80, G96, I32M, /57, J66, J82, K22, K85, L90J, M82

*Pelargonium graveolens* - *Rose geranium* {PL}. Leaves and flowers can be used to lend flavor and fragrance to juice, wine, desserts, soups, sugar, vinegar, jellies, sauces, custards, and canned and baked fruits. Flowers are also eaten in salads. Leaves are brewed into a tea. In Tunisia, an aromatic distilled water made from scented geraniums is popular for flavoring drinks, confections and pastries. Many cultivars may also have *P. capitatum* or *P. radens* in their background. Those listed below show more <f the *P. graveolens* influence. South Africa. BRYAN [Cu, Re], DAGHER, GESSERT, LARKCOM 1984, LEGGATT [Re], MARCIN, MORSE, MORTON 1976; F35M, F93G, J66{DF}, J82, K2, K85, L90J, M15T, N19M{DF}, 053M{S}, S28M{S}

#### CULTIVARS

**Attar of Roses:** Compact spreading mound of light green, trilobed leaves, less finely cut than typical *graveolens*; excellent, full-bodied, classic rose scent. Very attractive lavender flowers. Useful in cakes, perfumery and potpourri. Highly valued in the perfume fields of France. C67M, C81M, C89M, G96, H51M, H94M, I32M, J66, J76, J82, K22, K85, L90J, M35, M53, etc.

**Grev ladv Plymouth:** Very attractive variegated type with an excellent scent. Silver-grey, deeply cut leaves with a narrow creamy-white edge, strongly rose-scented. Vigorous, compact plant with lavender flowers. Excellent for training into topiary. C9, C67M, C89M, E61, F37T, G80, H94M, I32M, J76, J82, K2, K22, K53, K85

**Ladv Plymouth:** Very attractive variegated form of True Rose. Fresh green, deeply cut, irregularly shaped leaves with a broad

creamy-white edge; strongly rose scented. Vigorous, upright plant with lavender flowers. Excellent for training into standards. C67M, C89M, E61, G80, G96, I32M, J66, K57, M35

**Mint Scented Rose:** Deeply cut, fresh green leaves with a broad creamy-white edge. Vigorous plant with lavender flowers. Resembles Lady Plymouth but with an appealing minty scent and only a slight hint of rose. F15M, I32M, K2, K22, K85, J66, H94M, M82

**Old Fashioned Rose:** Sturdy, vigorous, tall, bushy plant; deeply cut grey-green leaves; extremely fragrant, the odor resembling *Rosa nigosa*. Lavender colored flowers produced in umbels. Ancestor of many scented geraniums. Has the classic rose scent, useful in cakes and for foliage filler in floral arrangements. A97, C89M, F37T, I32M, J66, J76, J82, K22, K57, K85, L56, M35, M82, N19M, N42, etc.

**Roberts Lemon Rose:** Irregularly lobed, grey-green, tomato-like leaves with a strong lemon-rose scent. Tall, compact plant; small umbels of lavender flowers. Source of an essential oil used as a flavoring by the food industry. Occasionally arises from below the crown of True Rose. BOWN; C67M, C81M, C89M, F35M, G96, I32M, J57{ES}, J66, K2, K22, K57, K66, K85, M35, M53, etc.

**True Rose:** Deeply cut, fresh green foliage with an outstanding old-fashioned rose fragrance; abundant lavender blooms. The favorite for potpourri and rose cake. Occasionally arises from below the crown of Roberts's Lemon Rose. Vintage rose geranium cherished since Colonial times, travelling across the country with the early pioneers. C81M, F37T, F35M, G96, H51M, I32M, J66, K22

#### *Pelargonium limonum* - *Pelargonium crispum*

*Pelargonium x melissinum* - *Lemon balm geranium* {PL}. The strongly scented leaves can be used to flavor cakes, jellies, vinegar, drinks, butter, salad dressings, cookies, tarts, etc. Cultivated. MCKILLIGAN [Re]; C89M, F15M, G80, G96, I32M, J66, J76, K22, K57, K85, L56, L90J, M82, N42

*Pelargonium x nervosum* - *Lime geranium* {PL}. Leaves and flowers are used to flavor cakes, jellies, puddings, drinks, vinegar, wine and soups. Cultivated. GESSERT, LATHROP; C81M, C89M, F93G, G96, H51M, H94M, I32M, J66, J76, J82, K22, K85, L90I, M55, N19M, etc.

*Pelargonium x nervosum* 'Toronto' - *Ginger geranium* {PL}. The ginger-scented leaves are used to flavor cakes, jellies, drinks, desserts, etc. They can also be eaten in sandwiches. Cultivated. MCKILLIGAN; A97, C89M, F35M, F93G, G96, H51M, I32M, J66, J76, J82, K2, K22, K85, M55, N19M, etc.

*Pelargonium odoratissimum* - *Apple geranium* {PL}. The apple-scented leaves are used to flavor jellies and desserts. Also used in syrups, sauces, salads, rolls, punch, as a substitute for paprika, etc. South Africa, cultivated. MCKILLIGAN, MORTON 1976; C67M, C89M, F35M, G96, /57, J66, J76, K2, K22, K57, K85, L90J, M53

*Pelargonium radens* - *Rasp-leaved geranium* {PL}. The lemon-scented leaves can be used to flavor many foods, classically cakes and tea. Flowers make an attractive edible garnish. Many cultivars may also have *P. capitatum* or *P. graveolens* in their background. Those listed below show more of the *P. radens* influence. South Africa, cultivated. F15M, F93G, G80, K22, K57, N84{S}, R88{S}

#### CULTIVARS

**Dr. Livinaston:** (Skeleton Leaf Rose, Crow Foot Rose) Pungent lemon and rose scent. Vigorous, tall, upright growth; rough, light green, deeply cut foliage. Lavender flowers with darker, wine-colored signal patches. Readily trained into a standard. C67M, C89M, E61, G96, H51M, H94M, I32M, J66, J76, J82, K22, K57, K85, L90J, M35, etc.

*Pelargonium tomentosum* - *Peppermint geranium* {PL}. The leaves have a strong mint scent and can be used for flavoring cakes, puddings, pies, cookies, tarts, teas, and other desserts. South Africa.

GESSERT, MORTON 1976; A97, C89M, F93G, G96, I32M, J66, J76, J82, K22, K57, K85, M35, M82, N19M

#### CULTIVARS

**Bode's:** Large, moss-green, deeply cut, velvety leaves with a refreshing mint-like scent. White flowers. More upright than regular peppermint geranium and with a stronger scent. C89M, E61, F35M, I32M, M53

**Chocolate Mint:** Velvety leaves with a dark chocolate-brown center under cool growing conditions. Mild mint-like aroma. Showy, pink blossoms. Trailing growth habit makes it suitable for hanging baskets. A97, C67M, C81M, C89M, F93G, G96, H94M, I32M, J66, J76, K2, K22, K57, K85, M53, etc.

**Pungent:** Deeply cut, skeleton-like, velvety grey-green leaves with an excellent strong peppermint scent. Large, robust, upright plant; lavender flowers, but rarely blooms. Excellent in peppermint tea or for potpourri. C67M, C81M, C89M, H94M, I32M, J66, J76, J82, K22, K57, K85, M55, M82, N42

#### GESNERIACEAE

*Swertia chirata* - *Chiretta* {DF}. Tinctures and extracts of the plant are used in bitter tonic formulations or for flavoring alcoholic and non-alcoholic beverages. Often used as a substitute for gentian. Himalayan region. BURDOCK, LEUNG, LEYEL 1987a; F37T, F68T{S}, GO, K18M, N84{S}

#### GINKGOACEAE

*Ginkgo biloba* - *Maidenhair tree*, *Ichd*, *Ya-chiao-tzu* {PL}. Fresh seeds, called *ginkgo nuts*, *ginman*, or *pai-kuo*, are harvested in the fall, roasted, and eaten as a seasonal delicacy, having a mild, sweet, crisp flavor. Canned or dried seeds are boiled and used in soups, stews, stir-fried dishes, tempura, with deep-fried tofu, etc. Ginkgo nuts are used as a garnish for festive Korean dishes like *shinsollo* or *royal hot-pot*. Also the source of an edible oil. Cultivated. CHANG, W. [Re], COST 1988 [Cul, Re], CUSUMANO [Cul], HEDRICK 1919, MENNINGER, MILLON [Re], ROSENGARTEN, SHURTFLEFF 1975; C9M{S}, C27G{ED}, D45, E47, E47{S}, F5I, H4, 14, M75, N84{S}, 053M{S}

#### CULTIVARS {GR}

**Mother Load:** Extremely productive female clone selected by Louisiana Nursery. Produces an abundance of delicious kernels. Also lacks the pungent aroma most often associated with female trees. H4

**Salem Dandv:** Male tree used as a pollinizer for Salem Lady. Selected in Salem, Oregon by Lucile Whitman. J61M

**Salem Ladv:** Heavy producing type selected in Salem, Oregon by Lucile Whitman. Grafted female trees. J61M

#### GNETACEAE

*Gnetum gnemon* - *Meninjau*, *Melinjo*, *Bagu* {S}. The kernels are boiled and eaten like peanuts, or are ground to flour and pressed into thin wafers called *emping* or *krupuk emping*, which are fried in coconut oil and eaten with rice, palm sugar, tea, coffee, beer, etc. Fruits and inflorescences are used in soups. Young leaves are steamed and used as a potherb, and are added to the sour vegetable dish known as *sayor asam* in Indonesia. Peels of ripe fruits are dried and used in soups or fried in oil. The sap from the stem is drinkable. Tropical Asia. EISEMAN, MAY, R. [Nu, Re], MENNINGER, OCHSE, OWEN [Re], SHURTFLEFF 1979, TANAKA; A45{ffi}, N84

#### GROSSULARIACEAE

#### *Grossularia cynosbati* - \**Ribes cynosbati*

*Ribes americanum* - *American black currant* {S}. The fruits have a distinct, musky flavor and are only palatable when cooked. They can be used in jellies and pies. Eastern North America. HEDRICK 1919, MEDSGER; U7D



*Ribes aureum* - *Golden currant* {PL}. The fruits are large and flavorful. They are used in jellies, sauces, and pies. Indian tribes mixed the dried berries with dried buffalo meat and tallow to form *pemmican*. Western North America. HARRINGTON, H. [Re], HEDRICK 1919, MEDSGER; A91, C58, D95, E87, F43M, G60, G66, G66{S}, I47{S}, J25M{S}, J26, M35M, NO, N71M{S}

CULTIVARS {GR}

**Gwen's:** A superior selection from the wild. Long, oval, iridescent bluish-black fruits follow aromatic yellow flowers. Excellent for making jam, jelly or juice. Productive, hardy, and drought resistant. Foliage turns red in the fall while the fruits are still apparent, making for an attractive contrast. A91

*Ribes bracteosum* - *Sink currant* {S}. Fruits are eaten fresh, or are boiled with salmon roe, dried, and stored for winter use. Western North America. HELLER, KUNKEL, UPHOF; E15, N84

*Ribes cereum* - *Wax currant*, *Squaw currant* {PL}. Fruits are eaten fresh or dried. Also used in *pemmican*, jellies, jams, sauces, and pies. The young leaves are sometimes eaten. Flowers are also edible. Western North America. CLARKE [Re], HARRINGTON, H.; D95, G66{S}, G89M, I47{S}, J26

*Ribes x culverwellii* (*R. nigrum* x *R. spp.*) - *Jostaberry*, *Yostaberry* {PL}. Artificial hybrids. The fruits, high in vitamin C, are eaten fresh or made into jam, juice, preserves, syrups and cordials. They combine the refreshing acidity of the gooseberry with the distinct aroma of the black currant. Far more vigorous than all existing cultivars of either of its parents. Leaves and shoots are fully resistant to all diseases causing leaf drop and mildew. KENNEDY, C; A91, C34, D11M, D37, D47, E97, F43M, F70, F87, G87, I49M, J61M, NO, N24M

CULTIVARS {GR}

**Jostaaranda:** (Jograndia) Large, round fruit, more than 1 inch in diameter; skin deep purple; quality excellent. Ripens at the end of the raspberry season; will stay on the bush at full maturity for a week or longer; has a long shelf life. Bush very productive, more so than the type; spineless. Cross-pollinates with Jostina. Developed in Germany by Rudolph Bauer. D47, P68M

**Jostaki:** Large, roundish fruit, about 1 inch in diameter; dark purple to black skin; excellent quality; resembles Jostagranda. Tree very productive and hardy, spineless. Developed in Germany by Rudolph Bauer. Schwarze Traube black currant x Worcesterberry. REICH; D47

**Jostina:** Large, round fruit, about 3/4 inch in diameter; larger than the type; skin deep purple; quality excellent. Tree very productive, more so than the type; spineless; very winter hardy. Cross-pollinates with Jostagranda. Resistant to white pine blister rust, powdery mildew and currant bud mite. Developed in Germany by Rudolph Bauer. D47, P68M

**Orus 8:** Medium-sized, round, dark purple fruit of very good to excellent flavor. Good for eating out of hand. Also makes good jelly or wine. Upright growing, somewhat thorny bush; very vigorous and productive; highly resistant to mildew and aphids; tolerates heat well. 174, J2M, J61M, NO

**Swiss Red:** A unique type from the Wadenswil station in Switzerland that has dull red rather than dark-purple to black fruit. Very vigorous, upright plant; free of thorns; relatively productive. D47, J61M, NO

*Ribes cynosbati* - *American wild gooseberry*, *Prickly gooseberry* {S}. The fruits are pleasantly subacid when ripe and are good for quenching thirst. They also make excellent pies, jellies, and preserves. North America. MEDSGER, UPHOF; U7D

*Ribes divaricatum* - *Coast gooseberry* {S}. Fruits are sweet and juicy and are eaten fresh or dried. Considered to be one of the finest flavored native gooseberries. Young leaves and unripe fruits are used to make a sauce. Western North America, cultivated. HEDRICK 1919, TURNER 1979. A2, B74{PL}, D95{PL}, F88M. (see also Gooseberry, page 372)

CULTIVARS {GR}

**Worcesterberry:** At one time thought to be a hybrid of *R. grossularia* and *R. nigrum*, and was sold as such by a nurseryman in Worcester. Berries are born in trusses like currants. They change from green to purplish black when ripe. Can be used liked cooked gooseberries or black currants. Said to be immune to mildew. MASEFIELD, SIMMONS 1972 [Cu], TURNER 1979; D47, 081, R83

*Ribes grossularia* - *European gooseberry* {S}. Fruits are eaten raw, pureed, pickled, in jam, jelly, pies, tarts, ice cream, puddings, relishes, syrups, gooseberry fool, or made into wine. In France, where it is called *groseille a maqueureau*, its use is limited almost entirely to a sauce made for mackerel and other oily fish. Eurasia, cultivated. HENDRICKSON, JOHNS [Cul], MABEY [Re], SCHNEIDER 1986 [Cul, Re]; C94M{PD}, N84. (for cultivars see Gooseberry, page 372)

*Ribes hirtellum* - *American gooseberry*, *Hairy gooseberry*. The pleasant tasting fruits are eaten raw, cooked or dried. Also used in jams, jellies, preserves, pies, tarts, and other desserts. North America, cultivated. FERNALD, TURNER 1979 [Re]; (for cultivars see Gooseberry, page 372)

*Ribes lacustre* - *Prickly currant*, *Swamp black currant* {PL}. The berries are very juicy and tart, have a foul odor when crushed, but when eaten by the handful the odor is inoffensive and when cooked they make a good sauce. North America. FERNALD, HELLER; D95, 160, L3J{S}

*Ribes missouriensis* - *Missouri gooseberry* {PL}. The fruit has a rich, subacid, vinous flavor, which is very agreeable. Somewhat too acid to be eaten raw but when ripe makes delicious tarts. North America. HEDRICK 1919; C33. (for cultivars see Gooseberry, page 372)

*Ribes nigrum* - *Black currant* {S}. Fruits are used in jellies, pies, tarts, puddings, drinks, etc. Also used in the preparation of a liqueur called *Creme de cassis*, much used in France as an additive to champagne, dry vermouth and white wine. Honey wine or *melomel* made with black currant juice is known as *black mead* in England. Dried leaves make a very pleasant tea. The fresh leaves are eaten in soups. In Belarus, they are used for flavoring pickled cucumbers, apples and tomatoes. In France, they are added to *Pastis*. Flower buds are used in ice cream and liqueurs. Seeds are the source of a high omega-6 oil that can be used in salads, dressings or mixed into foods, but more often is taken as a food supplement. Eurasia, cultivated. ACTON, BOLOTNIKOVA, DOMING, ERASMUS, HEDRICK 1919, LEYEL 1987b, M/CNICOL, MURRAY, RAY, C, UNDSSET, UPHOF; A25G{PD}, A91{PL}, C17{m}, E14T{ED}, G66, G66{PL}, N40{PR}, P49. (for cultivars see Currant, page 356)

*Ribes odoratum* - *Buffalo currant*, *Missouri currant*, *Clove currant* {PL}. The sweet, ripe fruits are eaten raw, cooked, dried or made into jams, jellies, pies, juice and syrup. Leaves are cooked with meat or dried and used for tea. North America. KINDSCHER, MEDSGER, UPHOF; A91, B47, D95, F67, N24M

CULTIVARS {GR}

**Crandall:** (Crandleberry, Pruterberry, Pewterberry) Fruit medium to large, produced in clusters; skin smooth, very thick, tough; skin color bluish-black; flavor tart-sweet; high in pectin; ripens late, period of ripening unusually long. Bush is upright, often 8 feet in height; very vigorous; with dark green leaves and fragrant, yellow blossoms. Succeeds in regions having hot summers. Originated by R.W. Crandall, Newton, Kansas. Introduced in 1888. HEDRICK 1925; B74, C34, D37, D47, D95, E87, F43M, F87, I49M, 174, J2M, J61M, L12, L27M, M81M, NO, etc.

*Ribes petraeum* - *Rock red currant* {S}. Fruits are eaten raw or in tarts, jams, jellies, and preserves. One of the species from which red currant cultivars are derived. Eurasia, cultivated. BROUK, MASEFIELD, TANAKA; N84. (for cultivars see Currant, page 356)

*Ribes sativum* - *Red currant, White currant* {S}. Fruits are eaten fresh, in compotes, jams, jellies, *Cumberland sauce*, puddings, pies, syrups, drinks, or made into wine. They have a high vitamin C content. *Confiture de Bar-le-Duc* or *compote de luxe* is a preserve made from sugar syrup and whole red or white currants whose seeds are meticulously removed by a goose feather. Red currants are excellent cooked together with raspberries. Red currant wine is often served with cherry pie. Honey wine or *melomel* made with red currant juice is known as *red mead* in England. Eurasia, cultivated. ACTON, HENDRICKSON, JOHNS, LEYEL 1987b, SCHNEIDER 1986 [Cul, Re], UPHOF, VON WELANETZ; E9{PQ}, N40{PR}, P49. (for cultivars see Currant, page 356)

*Ribes triste* - *American red currant, Drooping currant* {S}. Red berries are similar to the garden red currant. They are sometimes eaten raw, but are mostly used in pies, cakes, and preserves. North America. FERNALD, HELLER, KUNKEL, MEDSGER; U7D, Z25M

*Ribes ussuriense* - *Karafuto-kuro-suguri* {S}. The fruit is edible. Northeast Asia. TANAKA; U7D. (for cultivars see Currant, page 356)

#### GUNNERACEAE

##### *Gunnera chilensis* - *Gunnera Unctoria*

*Gunnera tinctoria* - *Ranke* {PL}. The young leaf stalks are peeled and eaten raw or cooked as a vegetable. They have a subacid flavor, said to resemble rhubarb. Chile, Argentina. HEDRICK 1919, KUNKEL; B28, D95, E87, F80{S}, 128, N84{S}, Q24{S}

#### HALORAGIDACEAE

*Myriophyllum brasiliense* - *Cavallinho d'agua, Parrot\*feather* {PL}. Young shoot tips are used as a vegetable. South America. CORREA; M73M

#### HELICONIACEAE

##### *HeUconia bihai* - *Heliconia caribaea*

*Heliconia caribaea* - *False plantain* {PL}. Young shoots are consumed as a vegetable. The rhizomes are a source of starch. Seeds are also edible. Tropics. HEDRICK 1919, KUNKEL; A28, A79M, C9M{S}, F85{S}, K8, N84{S}

#### HELLEBORACEAE

*Aquilegia bueigeriana* - *Yama-odamaki* {S}. The sweet flowers are eaten or sucked for their nectar. Leaves are also edible. Eastern Asia. TANAKA; A61, A61{PL}, N84

*Aquilegia caerulea* - *Rocky mountain columbine* {PL}. The nectar-laden flowers are eaten as a snack, added to salads, or made into a jelly. Western North America. SCHOFIELD; D35G{S}, E66M{S}, E67T, F44M, F80, G89M, H92{PD}, N84{S}

*Caltha leptosepala* - *Western marsh-marigold* {S}. Young leaves, before the flowers emerge, are used raw in salads or boiled and eaten with a cream sauce. The flower buds can be added to salads or pickled and used as a substitute for capers. Western North America. HARRINGTON, H.; D35G, E15, E67T{PL}, J93T, K49Q, L13, N84, 053M

*Caltha palustris* - *Marsh marigold, American cowslip* {PL}. Young leaves are eaten like spinach, especially after having been boiled in two or more changes of water and cooked in a cream sauce. Flower buds are pickled in vinegar and used as a substitute for capers. The attractive golden flowers make an excellent wine. Roots are also edible. Northern temperate region. CROWHURST 1972 [Re], FERNALD, GIBBONS 1966b, MACNICOL [Re], MEDSGER, TANAKA, UPHOF; B77, D75M, E33M, 144, K34, L22, M73M, N9M, N9M{S}, 053M{S}

*Nigella damascena* - *Love-in-a-mist* {S}. Seeds are used as a condiment. Mediterranean region, cultivated. HEDRICK 1919;

B77M, D92M, E7M, E24, E61, E81M, FI, F32D{PL}, 139, J82, M82{PL}, 053M, S55

*Nigella orientalis* - *Yellow fennel-flower* {S}. Seeds are sometimes used to adulterate pepper. Eurasia. MOLDENKE; D68, D92M, E7M, E61, E81M, N84

*Nigella sativa* - *Black cumin, Kallonji, Fennel flower, Kala jeera, Tikar azmud, Chamushka* {S}. The aromatic seeds, called *siyah daneh* or *onion seed*, are sprinkled on rolls, flatbreads and cakes, Jewish rye bread, or used as a flavoring in curries, pickles, preserved lemons, Armenian string cheese (*Tel-banir*), *Haloumi* and other white brined cheeses, and vegetable dishes. In the Sudan they are added to various fermented foods, especially *abreh, hulu-mur* and *mish*. One of the ingredients of *panch phoran*, an Indian spice mixture. Eurasia, cultivated. DER HAROUTUNIAN 1982, DIRAR 1993, HEDRICK 1919, JAFFREY, MALLOS, VILMORIN [Cu], VON WELANETZ; A7{DF}, A7{PD}, D92M, E7M, F74{DF}, F80, F85, H51{DF}, J66M{DF}, K17J{DF}, L16{DF}, L17{DF}, N71M, N84, 053M, etc.

#### HYDRANGEACEAE

*Hydrangea anomala* - *Climbing hydrangea, Tsuru-ajisai* {PL}. The leaves are crushed and eaten fresh with miso, tasting like cucumber. Boiled leaf decoction was used to make a kind of syrup. The sap is sweet and drinkable. Eastern Asia. TANAKA; A50, B28, C9, D46, D95, E87, H4, K38{S}, M77, M98, N84{S}, 053M{S}, R78{S}

*Hydrangea macrophylla* - *Garden hydrangea, Ama-cha* {PL}. Young leaves when dried and rubbed between one's hands become very sweet and are used to make a tea called *sweet tea* or *tea of heaven*, used in Buddhist ceremonies. The leaves contain phylloolucin, which may be used as a sugar substitute. Asia, cultivated. HEDRICK 1919, HSU, TANAKA, UPHOF, YASHIRODA; B75, B96, D46, D95, E87, H4, 177M, L49, N84{S}

##### *Hydrangea petiolaris* - \* *Hydrangea anomala*

#### HYDROCOTYLACEAE

*Centella asiatica* - *Gotu-kola, Indian pennywort* {PL}. The leaves are eaten raw in tossed salads, steamed and served with rice, or cooked in vegetable soups and stews. In Thailand the juice of the leaves, diluted with water and sweetened with sugar, is used as a refreshing summer soft drink. A tea made from the leaves, called *long-life tea*, was regularly consumed by Professor Li Chuig Yon, who reputedly lived 265 years and married 24 times. Also a major ingredient of *Amrit Kalash*. Warmer regions of the Old World. BOND, DUKE, LEYEL 1987a, OCHSE, VAN DUONG; A26, C43M, F37T, F68T{S}, F85{S}, G84{DF}, H14{PD}, H51M, 174, J82, K18M{DF}, K22, K85, U4{DF}, M82, etc.

##### *Hydrocotyle asiatica* - *Centella asiatica*

*Hydrocotyle sibthorpioides* - *Water pennywort, Chidome-gusa* {PL}. The whole plant, which has somewhat the odor of parsley, is eaten raw, steamed as a potherb, or cooked with chilis and other spices. Paleotropics, naturalized in North America. OCHSE, UPHOF; E48

#### CULTIVARS

**Crystal Confetti:** Low spreading plant, grows about 1 inch tall; forms a full carpet of one-inch, frilled, heart-shaped, jade green leaves that are edged in cream. The foliage develops pink margins and burgundy stems as the plant matures. Excellent for containers, window boxes, and baskets. C74

#### HYDROPHYLLACEAE

*Eriodictyon californicum* - *Yerba santa*. {DF} An aromatic, sweet tea is made from the fresh or dried leaves. The fresh leaves are chewed for their refreshing taste and to relieve thirst. An extract of the leaves is used to flavor baked goods, candy, ice cream and soft drinks. Western North America. CLARKE, FARNSWORTH, GIBBONS 1979, KIRK, MORTON 1976, ROOS-COLLINS;

A49D, E14T, F37T, F68T, F86G, GO, G73,123G, I81T, J58, J82, K2, K18M, L90J{PL}, M15M, N84{S}, etc.

*Hydrophyllum canadense* - *John's cabbage*, *Shawanese salad* {S}. The young leaves and tender stem tips are sometimes eaten raw, but mostly they are cooked as a delicate potherb. North America. FERNALD; I31, J37M{PL}

*Hydrophyllum virginianum* - *Virginia waterleaf* *Indian salad*, *Shawnee salad* {PL}. When young and tender the leaves make a tasty addition to a tossed salad. They are also good boiled or steamed as a spinach substitute. North America. FERNALD, HEDRICK 1919, MEDSGER; C13T, HIM, J39M, J42, J42{S}, M77M, N84

*Phacelia tanacetifolia* - *Tansy phacelia* {S}. The flowers yield an amber colored honey with a mild, aromatic flavor. Cultivated as a honey crop in the former Soviet Union and neighboring countries. Western North America. CRANE 1975, PELLETT; A2, B49, C85M, D92M, E66M, F80, G59M, H80,139,199M, J25M, K15, L3J, N11M, JO, R47, etc.

#### HYPERICACEAE

*Hypericum perforatum* - *St. John's wort* {PL}. The fresh or dried herb or flowering tops are sometimes used as a tea. Flowers can be used for making *mead*. In Scandinavia, they are added to a bitter, herbal brandy known as *Perkom*. Eurasia. CROWHURST 1973 [Re], LEUNG, UNDSSET, UPHOF; A97, C43M, C81M, J76, J76{S}, K85, M82, N9M, N9M{S}, N71M{S}, N84{S}

#### HYPOLEPIDACEAE

*Pteridium aquilinum* - *Bracken*, *Pasture brake*, *Eagle fern*, *Warabi*, *Kosari* {PL}. Young *croziers*, or uncoiled fronds, are boiled until tender, dressed with butter or cream sauce, and served on toast. Uncooked stalks are preferred by some for their mucilaginous qualities. In Korea, the fresh or dried fronds are prepared with sesame oil and soy sauce and eaten as *namul*. A starch, derived from the roots, is made into dumplings which are eaten with sugar and soy flour as a delicacy. Rhizomes have been used as a hops substitute. Cosmopolitan. ANGIER [Re], FERNALD, HEDRICK 1919, HOMMA, MEDSGER, MILLON [Cul, Re], TANAKA; E33M, N7T, N9M, N9M{S}

#### ICACINACEAE

*Citronella mucronata* - *Congonha verdadeira* {S}. The dried leaves are occasionally used as a substitute for tea in parts of Brazil. South America. CORREA, HEDRICK 1919, UPHOF; K63G, N84

*Villaresia congonha* - \**Citronella mucronata*

#### ILLICIAEAE

*Illicium verum* - *Star anise* {PL}. The unripe fruit is chewed after meals to aid digestion and sweeten the breath. Dried fruits are used for adding a licorice flavor to curries, pickles, cookies, cakes, tea, coffee, sweetmeats and *Chinese five-spice powder*. The distilled oil is used in candy, ice cream, soft drinks, and liqueurs. Southern Asia. CHANG, W. [Re], CUSUMANO [Cul, Re], HEDRICK 1919, MORTON 1976, ROOT 1980b, ROUTHIER 1989, TANAKA; A7{DF}, A49D{DF}, C27G{DF}, E8M, F85{S}, I77G, J11M{PD}, L17{DF}, M15T

#### IRIDACEAE

*Crocsmia aurea* - *Montbretia* {PL}. Flowers are the source of a yellow dye used as a substitute for saffron. Tropical Africa. UPHOF; H4, J37M, M7M, N84{S}, S28M{S}

*Crocus cancellatus* - *Cross-barred crocus* {S}. The bulbs are eaten after boiling and grilling. They have a delicious, chestnut-like flavor and are much esteemed in parts of the Mediterranean and Middle East. In Turkey, they are traditionally eaten in early spring in a yogurt soup colored with powdered safflower. Eurasia. HEDRICK 1919, PAILLIEUX, WOLFERT 1994a; N74, R52{PL}

*Crocus longiflorus* - *Wild saffron* {PL}. The stigmas are used locally as a cheap substitute for saffron. May have potential in breeding, and due to its higher dyeing power, could be of economic interest in coloring foods, beverages and liqueurs. Mediterranean region. CASORIA; N74{S}, N84{S}, R52, S69

*Crocus sativus* - *Saffron* {PL}. Flower styles are used to flavor and color sauces, creams, biscuits, preserves, liqueurs, *bouillabaisse*, curries, rice dishes (*paella*, *risotto*, *biryani*), cakes, puddings, sweetmeats, eggs, butter and cheese. Also used as a tea substitute. Roots are eaten roasted. Eurasia, cultivated. CUSUMANO [Cul, Re], HEDRICK 1919, KUNKEL, MACNICOL, MORTON 1976, PAINTER [Re], ROOT 1980b, WOLFERT 1973 [Pre]; EII, E33, F37T, H37M, 139,191,199M, J82, K2, M77, R52

#### CULTIVARS

**Cashmirianus:** Large size, high quality bulbs from Kashmir. Fragrant, violet-blue flowers in autumn. Rich orange stigmas which form commercial saffron. Yields about 24 pounds per acre. Q40

*Crocus sieberi* - *Sieber's crocus* {PL}. The bulbs are eaten raw by shepherds in the mountains of Greece. They are said to have a flavor similar to hazelnuts. Mediterranean region. PAILLIEUX; H37M, M37M, N74{S}, R52

*Freesia hybrida* - *Freesia* {PL}. The highly scented flowers are eaten or used as a garnish. They are excellent infused in a sugar syrup and added to sorbets for flavoring. Cultivated. ORTIZ 1992; D24, EII, D11M, F70, H37M, 191, K33M, M37M

*Gladiolus dalenii* - *Khahla-ee-kholo* {S}. The anthers are removed and the flowers are eaten raw as a salad or used as a potherb. Children suck the flowers for their copious quantities of nectar. Southern and Eastern Africa. FOX, E; N84, S28M

*Gladiolus italicus* - *Salepotu* {S}. The corms are added to ice cream and other dairy foods, in the manner of salep. Mediterranean region. OZTURK; N84, Q24

*Iris x germanica* - *German iris* {PL}. Rhizomes are dried and used as a flavoring or sometimes they are chewed. Eurasia. MORTON 1976, UPHOF; FI, H29M, J37M, K18M{DF}, L88M, N84, 053M{S}

*Iris x germanica* 'Florentina' - *Florentine iris*, *Fleur-de-lis*, *Orris root* {PL}. The dried rhizomes produce an essential oil, *orris oil*, used to flavor soft drinks, candy, *gin* and chewing gum, and to enhance fruit flavors in food manufacturing. One of the ingredients of *ras el hanout*. In Russia, it was often added to mead and mead-like beverages. Also chewed to sweeten the breath. MORTON 1976, RAY, G, TANAKA, TOOMRE, WOLFERT 1973; C67M, E14T{DF}, G84{DF}, J66, K18M{DF}, K22, K85, ZJ4{DF}, L56, M82, N19M

*Iris missouriensis* - *Rocky Mountain iris* {S}. Seeds are used as a substitute for coffee. North America. KUNKEL; A2, C98, D35G, E66M, F44, G60{PL}, 147, J25M, L13, L75, N84, Q24

*Iris pallida* - *Sweet iris* {PL}. *Orris oil*, derived from the dried rhizomes, is used to flavor soft drinks, candy, and chewing gum, and to enhance fruit flavors in food manufacturing. Europe. MORTON 1976; B77, M82, N84{S}, Q40

*Iris setosa* - *Hiogi-ayame* {PL}. Parched seeds are ground and used as a coffee substitute. Rhizomes are eaten or used as a source of starch. Northern temperate region. HEDRICK 1919, TANAKA, UPHOF; B77, E63M, I47{S}, K49Q{S}, M77M, N84{S}, Q24{S}, Q41{S}

*Moraea edulis* - \**Moraea fugax*

*Moraea fugax* - *Uintjie* {S}. The bulbous roots are eaten roasted, boiled, or stewed with milk. They are said to taste much like potatoes or boiled chestnuts. Southern Africa. FOX, F., HEDRICK 1919; D19M{PL}, N84, S28M

*Tigridia pavonia* - *Common tigerflower* {S}. Roasted starchy corms have been used as food by Mazatecs and other Indian tribes in Mexico since pre-hispanic times. The eyes from the corms, when they begin to sprout, are probably eaten. Central America, cultivated. UPHOF, WILLIAMS, L.; C95, F85, H37M{PL}, M7M{PL}, N84, R49{PL}

*Tritonia crocata* - *Greater African ixia* {S}. The flowers are used to adulterate saffron. Southern Africa. KUNKEL; D19M{PL}, N84, S28M

#### IXONANTHACEAE

*Irvingia gabonensis* - *Dika nut, Wild mango, Mopae* {S}. The seeds are used in soups and as a seasoner for various native dishes. When ground and heated they form the principal ingredient of the paste known as *dika bread* or *Gabon chocolate*, a staple food. They also yield *dika butter*, which is comparable to cocoa-butter and is used as an adulterant of chocolate. Tropical Africa. DALZIEL, DANFORTH, MENNINGER, TANAKA; F85

*Irvingia smithii* - *Denge* {S}. The seeds are rich in fat, and although smaller than those of other *Irvingia* species they are reportedly the best tasting. Eaten alone or as a supplement to other foods. Tropical Africa. DALZIEL, DANFORTH; Y40

*Klainedoxa gabonensis* - *Sopei nut* {S}. Seeds are eaten fresh, roasted or crushed into a paste. The paste is rich and oily and is mixed with other foods as a gravy or relish. Tropical Africa. DALZIEL, DANFORTH, UPHOF; Y40

#### JUGLANDACEAE

*Carya x brownii* (*C. cordiformis* x *C. illinoensis*) - *Pleas nut* {PL}. Hybrid. Pecan x bitter nut. The seeds are edible. Generally considered bitter. The claim by some that the name *pleas* refers to the pleasing flavor of the kernels is erroneous. Seldom productive north of St. Louis, Missouri. Introduced in 1916 by E. Pleas of Collinsville, Oklahoma. JAYNES, KELSEY, KRUSSMANN, ROOT 1980a; 140

*Carya caroliniae-septentrionalis* - *Carolina hickory nut, Southern shagbark* {S}. The large, sweet seeds are eaten. Southeastern North America. KROCHMAL, TANAKA; T41M, U7A

*Carya cathayensis* - \**Juglans cathayensis*

*Carya cordiformis* - *Bitternut, Swamp hickory* {S}. The bitter, astringent seeds are sometimes eaten. Natural hybrids between the bitternut and other hickory species are valued for their ornamental qualities. North America. JAYNES; B68{PL}, C11M, D95{PL}, G66, H14M{PL}, K63G, K89, N73{PL}

*Carya glabra* - *Pignut, Pignut hickory* {PL}. The edible seeds vary considerably in quality, some being bitter and astringent, others are sweet and pleasant tasting. Source of most of the hickory wood sold in the United States for smoking foods. Eastern North America. BJORKMAN, GIBBONS 1979, JAYNES, MEDSGER; B32, F51, G66{S}, H14M, 160, J21H{PD}, K63G{S}, K89, M69M, N37M, P49{S}, R78{S}

*Carya illinoensis* - *Pecan, Black hickory* {PL}. Seeds are eaten raw, salted, in pies, candies, cakes, cookies, breads, ice cream, *seed yogurt*, etc. *Hickory milk*, prepared from the seeds, was used to thicken soups, season corn cakes and hominy, or was fermented into an alcoholic beverage. Also the source of an edible oil. The leaves are said to be used as a tea. Pecan wood is becoming very popular as a smoking wood. It adds a strong, nutty flavor to meat, chicken, fish and other foods. North America, cultivated. BJORKMAN, COLE, C. 1990 [Re], FERNALD, HEDRICK 1919, KUNKEL, MENNINGER, MEYEROWITZ 1994b, ROSENGARTEN [Re], UPHOF; A52M{PD}, A91, C11M, E14T{PD}, G0{PD}, G23, G72, H72{PD}, I9M, I25M{S}, I99T{PD}, J3{PD}, J21H{PD}, K38{S}, L14G{PD}, L56M{PD}, M69M, etc. (for cultivars see Pecan, page 469 and Rootstocks, page 510)

*Carya laciniosa* - *Shellbark hickory, King nut* {PL}. The edible seeds are sweet and of very fine flavor. They can be eaten raw or used in cakes, pies, etc. Their cracking quality is poor in comparison to the shagbark hickory. The sap is sweet, and when boiled down makes a syrup or sugar as delicious as that of the maple. North America, cultivated. FERNALD, JAYNES, MEDSGER; A82, A91, C11M, D76, F51, H14M, H49, 14, I9M, K38{S}, K89, M69M, N37M. (for cultivars see Hickory, page 388)

*Carya x laneyi* (*C. ovata* x *C. cordiformis*) - {GR}. Probably a natural hybrid. Shagbark hickory x bitternut. Nuts are edible. Generally faster growing, bears at a younger age, and matures nuts earlier than shagbark but lacks the high quality kernel. JAYNES, KUNKEL.

#### CULTIVARS

**Roof:** Produces a large nut. Potential material for use as an interstem for grafting on *C. cordiformis*. Originated in Iowa. 140

*Carya myristiciformis* - *Nutmeg hickory* {PL}. The sweet nuts are eaten and are said to resemble nutmegs, hence the name. North America. KROCHMAL, TANAKA; D95, G66{S}, H4, H14M, 160, K63G{S}, N37M

*Carya x nussbaumeri* (*G. illinoensis* x *C. laciniosa*) - *Hican* {DF}. Natural and artificial hybrids. Pecan x shellbark hickory. Seeds are edible. The hybrids exhibit many of the desirable traits of the parent species, but are generally unproductive. JAYNES; E62, I53M. (for cultivars see Hican, page 387)

*Carya ovata* - *Shagbark hickory* {PL}. Seeds are sweet and delicious. They are eaten raw, roasted, in pies, cakes, breads, cookies, candies, etc. From them the Indians prepared a kind of oily *hickory milk*, or *powcohicora*, which was used like butter on bread, sweet potatoes and vegetables. They also ground the seeds into meal or flour and used it to thicken broths and soups. Sugar and syrup can be prepared from the sap, and also by boiling the hickory wood chips and bark. Hickory wood is the traditional smoking wood in the Southern states. Hickory sawdust is preferred for smoking sausage. Liquid hickory smoke, a natural product made by burning wet hickory wood, is often added to sausage meat for flavoring. The wood is also used for making cooking planks, which impart a distinctive woody flavor to foods cooked on them. North America. FERNALD, GIBBONS 1962 [Re], GILMORE, ROSENGARTEN, TURNER 1979 [Re]; A38M{DF}, A91, B74, B74{DF}, C9M{S}, C11M, C21M{PD}, D7{PD}, D95, F51, G16, H49, 14, J3{ffi}, K27T{PD}, K38{S}, L15G{ED}, L16{PD}, L27M, M69M, M85{PD}, etc. (for cultivars see Hickory, page 388)

*Carya pecan* - \**Carya illinoensis*

*Carya tomentosa* - *Mockernut, White-heart hickory* {PL}. Seeds are sweet and edible, but the shell is very thick and hard and the kernel is so difficult to extract the squirrels even leave them to accumulate under the trees. Eastern North America. GIBBONS 1979, HEDRICK 1919, JAYNES; A80M, G66{S}, H14M, K63G{S}, N37M, N84{S}

*Carya x sp.* (*G. illinoensis* x *C. ovata*) - *Hican* {DF}. Natural and artificial hybrids. Pecan x shagbark hickory. The seeds are edible. JAYNES; I53M. (for cultivars see Hican, page 387)

*Juglans ailantifolia* - *Japanese walnut, Siebold walnut, Onigurumi* {S}. Seeds are eaten raw, cooked, or used in confectionery. Young buds and fruit stalks are boiled and eaten. Recommended as an ornamental by some because of its tropical appearance and long clusters of seeds. Japan, cultivated. JAYNES, TANAKA; D95{PL}, G66, K38, K63G, R78

*Juglans ailantifolia* var. *cordiformis* - *Heartnut, Hime-gurumi* {S}. The seeds are eaten raw, used in cooking, or made into candies, pies, cakes, etc. The flavor is mild and pleasant, resembling that of the butternut. Also the source of an edible oil. Similar to Japanese walnut, but with a more pronounced heart shape. Japan, cultivated. JAYNES, ROSENGARTEN, TANAKA; B74{DF},

H65{PL}, I49M{PL}, K38, K63G, R47, R78. (for cultivars see Heartnut, page 386)

*Juglans x bixbyi* (J. cinerea x J. ailantifolia \ar. cordiformis) - *Buartnut*, *Bixby walnut*, *Butterjap* {PL}. Artificial hybrid. The seeds are edible. Combines the aromatic kernel flavor and superior climatic adaptability of the butternut, with the higher yield, better appearance, and crackability of the heartnut. JAYNES, ROSENGARTEN; D76, H49, I49M, 174, 160, K63G{S}, K89

#### CULTIVARS

**Butterheart:** Heart-shaped nut, cracks out in half or whole kernels. Kernels sweet and rich, with no trace of bitterness. Tree very winter hardy, ornamental, bears early. Requires a pollinator. Introduced by Miller Nurseries. H65

**Cobles #1:** Very large butternut type nuts. Tree vigorous but slow to come into bearing, ornamental. Produces nuts in clusters of 7 or 8. Originated in Pennsylvania. 140

**Corsan:** Full, round nut much like Fioka. Vigorous, productive tree. Named by J.U. Gellatly. Originated as a seedling from the Toronto suburban planting of the late George H. Corsan, at Echo Valley. A91, B99

**Fioka:** Produces 55 nuts per pound, up to 24% kernel; shell hard, cracking quality good. Has the flavor of the butternut. Tree vigorous; bears annually; extremely hardy; grafts well to black walnut rootstock. Originated by J.U. Gellatly. Introduced in the early 1930's. BROOKS 1972; A91

**Mitchell:** Nut intermediate between parents; shell spiry, cracks easily; flavor resembles a butternut. Tree slightly protogynous, but probably self-fruitful most years. Originated in Scotland, Ontario, Canada by Claude Mitchell. Introduced in 1930. Won first prize in 1932 in a Michigan nut contest. BROOKS 1972; B99, E91M, E91M{GR}, 140, N24M

**Pierce:** Extremely hardy, grows where heartnuts are not hardy. Very vigorous, one seedling at five years of age was 20 feet tall and producing a heavy crop. Nuts grow in clusters of 10 to 15 and have good cracking qualities. L27M

*Juglans californica* - *California walnut*, *Southern California black walnut* {PL}. Sweet, thick-shelled seeds are eaten raw, used in pies, cakes, cookies, etc. Said to have a better flavor than the Eastern black walnut. Sometimes used as a rootstock for Persian walnuts. California. CLARKE, KIRK, MEDSGER, WICKSON; B94{S}, G60, I83M, I98M, N84{S}

*Juglans cathayensis* - *Chinese walnut*, *Cathay walnut* {PL}. Seeds are eaten roasted with salt, or made into confections and sweetmeats. A considerable amount are processed into an edible oil. China. MENNINGER, UPHOF; G66{S}, M35M, N37M

*Juglans cinerea* - *Butternut*, *White walnut* {PL}. The oily, sweet-tasting nuts are eaten raw, or used in cakes, cookies, breads, muffins, candies, etc. The sweet sap can be boiled down to syrup and sugar or added to maple sap. Unripe fruits are pickled in vinegar, sugar, and spices. The seeds yield an oil is used in cooking. Butternut wood is used for smoking foods, and is especially recommended for game meats such as buffalo and venison. Eastern North America, cultivated. ANGIER [Re], FERNALD, GIBBONS 1962, MEDSGER, ROSENGARTEN; A82, B74, C11M, D45, D76, H65, 14, I49G, 160, J3{PD}. K63G{S}. (for cultivars see Butternut, page 314)

*Juglans hindsii* - *Hinds walnut*, *Northern California black walnut* {PL}. The small, thick-shelled seeds are good to eat raw. Commonly used as a rootstock for Persian walnuts. California. JAYNES, KIRK; B71M, B93M, B94{S}, C54, D18, G59M{S}, G60, G66{S}, 160, I68, K38{S}, K73M, L47, N84{S}. (for cultivars see Rootstocks, page 510)

*Juglans honorei* - \* *Juglans neotropica*

*Juglans m%jor* - *Arizona walnut*, *Arizona black walnut* {S}. Small seeds are sometimes eaten. Also used as a rootstock. Southwestern North America. JAYNES, KIRK, YANOVSKY; B94, K63G, L3J, L55J, N84

*Juglans mandschurica* - *Manchurian walnut*, *Siberian walnut* {S}. Seeds are eaten raw or roasted. Also the source of an edible oil. Kernels are well filled, but they are difficult to extract. Recommended for severe cold climates. Sometimes used as a cold-hardy rootstock. Eastern Asia. JAYNES, TANAKA; E62{DF}, G66, H85{PL}, K38, K63G, K81{PL}, M35M{PL}, P49

*Juglans microcarpa* - *Texas walnut*, *Texas black walnut*, *Nogalillo* {S}. The small, thick-shelled seeds are sometimes eaten. Also used as a rootstock. Southwestern North America. JAYNES, LATORRE 1977b; B94, G66, 160, N37M{PL}

*Juglans neotropica* - *Andean walnut*, *Nogal*, *Tocte*, *Ecuadorian black walnut* {PL}. The nuts have a very thick, bony shell and a kernel of rich and pleasant flavor. They are mixed with sugar and milk to make a sweetmeat, called *nogada de Ibarra*, that is sold at local markets in Ecuador. Trees are nearly evergreen and have a low chilling requirement. Ecuador, Colombia. NATIONAL RESEARCH COUNCIL 1989, POPENOE, W. 1924, TANAKA, UPHOF; A41G, D57, 174, 183M, Q49M, Q49M{S}

*Juglans nigra* - *Eastern black walnut* {PL}. Nuts have a rich, distinctive, delicious flavor and are widely used in pastries, confectionery, ice cream, cakes, pies, nut-breads, cookies, puddings, and muffins. The oil extracted from the nut is used as a seasoning in bread, pumpkin, squash, and other foods. Unripe fruits are pickled. Yields sweet sap that can be made into syrup or sugar. North America. The wood is used by gourmet chefs for smoking venison and other foods. ANONYMOUS 1995 [Re], FERNALD, GIBBONS 1962 [Re], ROSENGARTEN, TURNER 1979 [Re]; A52M{DF}, A82, A86{DF}, £52, B74{DF}, C11M{S}, D45, F6IPD}, G29{DF}, H4, H65, H73{DF}, 14, J3{EQ}, L15M{DF}, L56M{DF}, etc. (for cultivars see Black Walnut, page 302)

*Juglans regia* - *Persian walnut*, *English walnut* {S}. Nuts are eaten raw, in baked goods, candies, ice cream, *pesto*, *satsivi* and other sauces, soups, nut milks, etc. Unripe fruits are pickled in vinegar, added to jams, preserved in syrup, or made into biandy. Finely ground shells are used in the stuffing of *agnolotti* pasta. Leaves are used as a tea or for wrapping *Cassette* and *Picadou* cheeses\* Walnut meal is used as a thickening agent for savory and sweet dishes. Also the source of an edible oil with a butternut-like flavor used in salad dressings with fruit-flavored vinegars. Eurasia, cultivated. CAMPBELL-PLATT, COLE, C. 1990 [Re], COST 1988 [Cul], CUSUMANO [Cul], GOLDSTEIN [Be], GRAY, P. [Cul], MALLOS [Re], MASUI, MENNINGER, ROOT 1980a, ROSENGARTEN, UPHOF; A82{PL}, C9M, D81M{PO}, D87D{ED}, E38M{PJ2}, H15T{PE}, K38, K63G, N84, 053M. (for cultivars see Walnut, page 568, and Rootstocks, page 510)

*Juglans regia* 'Carpathian' - *Carpathian walnut*, *Circassian walnut*, *Hardy walnut* {PL}. The nuts are eaten in the same manner as Persian walnuts. They are recommended for colder areas of northeastern United States and Canada. Introduced from the Carpathian mountains of Poland by Reverend Paul C. Crath. JAYNES; £52, D76, E82{S}, F93, G23, G66, H49, K38{S}, K63G{S}, L33, L47, M69M. (for cultivars see Walnut, page 568)

*Juglans sieboldiana* - \* *Juglans ailantifolia*

#### LAMIACEAE (LABIATAE)

*Acinos alpinus* - *Alpine basil thyme*, *Mountain calamint* {PL}. The herb is used for flavoring. Also brewed into a pleasant, cordial tea. Europe. MORTON 1976, NIEBUHR; C43M, E61, L94M, L94M{S}, N84{S}

*Acinos arvensis* - *Basil thyme*, *Acinos* {S}. In old English cookery, the flowering tops were used to season jugged hare. The herb is said to impart an appealing flavor to the flesh of animals that eat it.

Similar to thyme in odor and flavor but milder and more pleasant. Eurasia. MORTON 1976; F35M{PL}, F37T{PL}, J82, M82{PL}, N84, 048

*Acinos thymoides* - *Acinos arvensis*

*Agastache anethiodora* - *Agastache foeniculum*

*Agastache cana* - *Hoary balm of Gilead*, *Mosquito plant*, *Wild hyssop* {PL}. A very fragrant herb that is useful for putting in a *claret cup*. Southwestern North America. HEDRICK 1919; A61, D56M{S}, D92M{S}, E61, F44M, G89M, J25M, J25M{S}, K22, K85, L90J, L91M{S}, L13{S}, N7M{S}, M82, N40M {S}, etc.

*Agastache foeniculum* - *Anise hyssop*, *Licorice mint* {PL}. The anise-flavored leaves are used for making a pleasant tea. Fresh or dried leaves are added to fruit salads and drinks as seasoning. The flowers also have an anise or licorice flavor and can be used in a similar manner. North America. CROWHURST 1972, LATHROP, MEDSGER, MORTON 1976; A97, C43M, C67M, D92M{S}, E7M{S}, F80{S}, GO{DF}, G96, J76, K22, K85, L56, L90J, M35, N19M, R47{S}, etc.

#### CULTIVARS

**Texas American:** (Texas American Pennyroyal) Similar to anise hyssop but with an anise-pennyroyal fragrance. Height 2 feet. K85

*Agastache mexicana* - *Mexican giant hyssop*, *Lemon licorice mint* {PL}. The highly aromatic young leaves and flowers are used in salads, for flavoring, and for tea. Mexico. MORTON 1976, QUINTANA 1994; C43M, E61, F32D, F35M, H94M, K22, K49M{S}, K85, L94M, M77M, M82, N7G{S}, 053M{S}, S55

#### CULTIVARS

**Anise:** (Anise Mexican Hyssop) Selected form with very pleasant, anise-scented leaves. Makes a nice tea. Adapted to growing in Zone 8. E61

*Agastache neomexicana* - *Wild licorice mint* {S}. Leaves are used for flavoring and as a substitute for tea. Southwestern North America. MORION 1976, YANOVSKY; J93T, L3J, M77M{PL}, N84

*Agastache rugosa* - *Korean mint* {PL}. The fresh or dried leaves, anise-like in odor and flavor, are used for seasoning meats and dressings and are steeped for tea. Young shoots and leaves are boiled and eaten. Eastern Asia. MORTON 1976, TANAKA; C67M, D40G{S}, D92M{S}, J66, J82, K22, K49T{S}, K85, N7G{S}, R53M, R53M{S}

#### CULTIVARS {S}

**Superior Line:** An especially uniform, extra productive strain selected by Shoulder to Shoulder Farm. Stoutier, greener, and with uniformly larger flowers than the common form. N7G

*Agastache urticifolia* - *Giant hyssop*, *Sawtooth mountain-mint* {S}. Seeds are eaten raw or cooked. The dried flowers and leaves can be used to make an herbal tea. Western North America. KIRK, YANOVSKY; A61{PL}, C43V, F44, G60{PL}, 147, I98M, L13, N84, 053M

*Ajuga reptans* - *Bugle* {PL}. The leafy shoots are occasionally used in salads. Europe. BREMNESS; B28, B92, C9, C36, C58, C92{S}, E91G{S}, G89M, M16, M82, 053M{S}, R53M

*Amaracus dictamnus* - *Origanum dictamnus*

*Blephilia ciliata* - *Downy wood-mint* {PL}. The mildly aromatic leaves can be prepared as tea like those of the true mints. North America. PETERSON, L.; B29, B29{S}, E61, H70M, J39M{S}, J43{S}, M72, M77M, M82, N84{S}

*Blephilia hirsuta* - *Cherokee mint*, *Hairy wood-mint* {S}. Fresh or dried leaves are used as a substitute for tea. North America. PETERSON, L.; J39M, K85{PL}, M77M{PL}, N23, N84

*Calamintha acinos* - *Acinos arvensis*

*Calamintha grandiflora* - *Mint savory*, *Showy savory*, *Showy calamint* {PL}. The leaves have a pleasant mint-like fragrance and

flavor and can be used as a seasoning or for tea. Southern Europe. C43M, E61, G96, H51M, K22, K85, L56, M35, M82, N84{S}, Q24{S}

*Calamintha nepeta* - *Lesser calamint*, *Nepitella* {PL}. The herb can be used for flavoring and is especially delicious cooked with mushrooms. It has a stronger pennyroyal-like fragrance and a more pungent taste than calamint. Popular in Tuscan cooking. Eurasia. FIELD, MORTON 1976; B28, D92M{S}, E7M{S}, I18M, J82, K22, K57, K85, L91M{S}, M82, N84{S}, Q24{S}, S55{S}

*Calamintha officinalis* - *Calamintha sylvatica*

*Calamintha sylvatica* - *Calamint* {S}. An herb with a strong aromatic fragrance and a pleasantly pungent flavor. It is used in the preparation of zucchini and other "Roman style" vegetables, and has also been employed for flavoring roasts and stews. In Roman kitchens it was credited with removing the fetid odor and "gamey" taste of meat that had begun to spoil. The flavor is said to resemble a cross between mint and marjoram. Flowers are used for conserves. Eurasia. BIANCHINI, MABEY, MACNICOL, MORTON 1976; C2{PL}, C43M, C43M{PL}, C95, F15M{PL}, F35M{PL}, F37T{PL}, F80, J76, J76{PL}, N84, Q24

*Calamintha sp.* - *Niebita* {PL}. An Old World culinary herb, originally from Italy. Indispensable for bean and mushroom dishes. Hardy perennial, height 2 feet, does best in full sun. Showy, pale lavender flowers. C43M, C43M{S}, M82

*Cedronella cana* - *Agastache cana*

*Cedronella canariensis* - *Balm of Gilead* {PL}. Leaves are used in the preparation of a tea, called *the de Canarias*. Macaronesia. UPHOF; C43M, C43M{S}, C81M, F35M, F37T, G96, H51M, H94M, K22, K85, L56, M53, M82, N42, S55{S}, etc.

*Cedronella triphylla* - *Cedronella canariensis*

*Clinopodium vulgare* - *Wild basil*, *Field basil* {S}. Fresh or dried leaves are used for flavoring tomato sauce, omelettes, egg sandwiches, fish chowders, broiled fish, rice dishes, etc. The fresh leaves can be made into tea. Europe, naturalized in North America. CROWHURST 1972, MABEY, MICHAEL {Pre, Re}, PETERSON, L.; D92M, F37T{PL}, J82, L91M, M82{PL}, N71M, N84, 053M, S55

*Coleus amboinicus* - *Plectranthus amboinicus*

*Coleus aromaticus* - \**Plectranthus amboinicus*

*Coleus blumei* - *Sayabana*, *Jacob's coat* {S}. Tubers are eaten. The leaves are eaten with bread and butter, or bruised and put into country beer. Southeast Asia. BURKILL, DUKE; F73D, F85, G73, 053M

*Coleus dazo* - *Daju*, *Rizuka* {PL}. The starchy roots are washed by hand to remove the skin, then boiled and served. In flavor they are similar to an Irish potato. They can also be pickled. Sold in local markets. Tropical Africa. DALZIEL, DANFORTH, TANAKA; Y40

*Coleus dysentericus* - \**Solenostemon rotundifolius*

*Coleus parviflorus* - *Country potato*, *African potato* {PL}. The subterranean tubers are consumed like potatoes, either raw, baked, steamed, added to soups and stews, or mashed and fried as croquettes. Powdered tubers are sometimes used as a substitute for potatoes for the preparation of minced-meat balls. Southern Asia. MACMILLAN, OCHSE, TANAKA; Y81

*Coleus rotundifolius* - *Solenostemon rotundifolius*

*Coleus tuberosus* *Coleus parviflorus*

*Conradina verticillata* - *Cumberland rosemary*, *Mountain rosemary* {PL}. The leaves have a strong, pleasant scent reminiscent of rosemary and are occasionally used as a substitute in cooking, such

as in soups and stews. An endangered species. Eastern North America. REILLY, TUCKER 1994; B28, D46, D95, G96, HIM, I37M, K85, L55, M16, M82, N37M, N42, N84

*Coridothymus capitatus* - \**Thymus capitatus*

*Cunila origanoides* - *Maryland dittany*, *Stone mint* {PL}. The leaves have a pleasant, mint-like flavor and can be made into a refreshing tea. Both fresh and dried leaves are used. North America. CROWHURST 1972, MORTON 1976, PETERSON, L.; C43M, C67M, F32D, H51M, M77M

*Dracocephalum moldavica* - *Moldavian balm*, *Moldavian dragon's-head* {S}. The lemon-scented leaves can be used for tea. Young shoots are edible. Eurasia. VON REIS; C95, D92M, E7M, F80, I39, J20, J82, K71, L91M, N84, 053M, Q34, S55

*Elsholtzia ciliata* - *Vietnamese balm*, *Naginata-koju*, *Hsiang-ju*, *Kinh gidi ta* {PL}. Young plants are eaten raw in salads when finely cut, boiled as a potherb, or used as an aromatic condiment for vegetable dishes. Eastern Asia. BOND [Cul], TANAKA; H29M, J82, K22, K85, L77D{S}, M82, N84{S}, Q41{S}

*Elsholtzia cristata* - \**Elsholtzia ciliata*

*Galeobdolon luteum* - \**Lamium galeobdolon*

*Glechoma hederacea* - *Ground ivy*, *Alehoof*, *Gill-over-the-ground*, *Herbe St. Jean* {PL}. Fresh or dried leaves are used for making an herbal tea. The young shoots and leaves are eaten like spinach or cooked in vegetable soups, to which they lend a special flavor. The Saxons added the herb to their beer to clarify it and improve its flavor and keeping qualities. Eurasia, naturalized in North America. ARMSTRONG [Re], CROWHURST 1972, GIBBONS 1966b, GRIEVE, LAUNERT, MABEY, MICHAEL [Re], MORTON 1976; C43M, E33M, G89M, J82{S}, L90J, N71M{S}, N84{S}, 053M{S}, Q24{S}, R53M

*Hedeoma pulegioides* - *American pennyroyal*, *Squaw mint* {PL}. The leaves have a very strong mint-like aroma and taste and can be brewed into a refreshing tea, or used as a culinary flavoring. Source of an essential oil used in the food industry for flavoring beverages, ice cream, candy, and baked goods. North America. CROWHURST 1972, GIBBONS 1979, MORTON 1976, PETERSON, L.; C43M{S}, E5T{S}, F37T, J82{S}, K2{S}, K22, K85, M82, 053M{S}

CULTIVARS

**Lemon:** Lemon-scented form which has very much the same appearance as regular American pennyroyal, except the leaves are somewhat smaller. M82

*Hoslundia opposita* - *Mshwee* {S}. The small, orange to red fruit, composed of an elongated, succulent calyx, has soft, very sweet pulp and is eaten fresh. Has been recommended for improvement. Leaves are also eaten. Tropical Africa. DALZIEL, FOX, F., MARTIN 1975, TANAKA, TREGOLD, VON REIS; F85

*Hyptis suaveolens* - *Konivari*, *Bush tea plant*, *Chia gordo*, *Sangura* {S}. The tips of the shoots are added to food as a flavoring. A porridge or a refreshing beverage can be made by soaking the mucilaginous seeds in water. The aromatic leaves are used for preparing a mint-flavored tea substitute. Tropical America. ALT-SCHUL, DUKE, MORTON 1976, TANAKA, WILLIAMS, L.; F85, I16, N84

*Hyssopus officinalis* - *Hyssop* {PL}. The leaves and the tops of the young shoots are used for seasoning soups, salads, sauces, pickles, custards, meats, etc. Source of an essential oil employed as a flavoring for bitters and alcoholic beverages, especially liqueurs like *Chartreuse*. Flowers are added to salads or made into syrup. The dried herb can be brewed into tea. Mediterranean region, cultivated. GRIEVE, MACNICOL, MARCIN, MICHAEL [Re], MORTON 1976, ROOT 1980b [Cul], UPHOF; A7{DF}, A49D{DF}, A97, C9, C67M, D92M{S}, F80{S}, G84{DF}, H46{DF}, J66, K22, K54{PD}, K85, M35{S}, N19M, N84{S}, R47{S}, etc.

CULTIVARS

**Pink:** (Rose, Rosea) Very similar to common hyssop, but with attractive flowers that are pale pink in color. Grows approximately 18 inches tall. E61, F32D, F35M, M15T, M82, H94M, N84{S}, R53M, R53M{S}, S55{S}

**Sissinghurst:** Selected form with many terminal spires of blue flowers. Slightly larger brighter green leaves and more compact, erect habit than common hyssop. Grows to 12 inches tall. K22

*Koellia virginiana* - *Pycnanthemum virginianum*

*Lallemantia iberica* - *Balingu shahri* {S}. Leaves are used as a potherb in Iran. The seeds are the source of an edible oil, called *lalllemantia oil*. Southwest Asia. UPHOF; U63

*Lamiastrum galeobdolon* - *Yellow archangel* {S}. The young shoots and leaves are eaten boiled or sauteed in butter. Southern Eurasia. MABEY; B28{PL}, L59P{PL}, 048, Q24, S55

CULTIVARS {PL}

**Variegated:** Deep green foliage brushed with striking silver variegation; bright yellow flowers in spring; height 6 inches. Excellent rapid growing ground cover or rock wall plant, in partial sun and shade. A74, C9, D95, K22, K85, L21, L22

*Lamium album* - *White dead-nettle* {S}. The young leaves and stem tips are boiled and eaten as potherbs or added to omelettes. Also cooked with eel and sorrel in the French dish *anguille au vert a la flamande*. The flowers are candied. Eurasia. GRIEVE, HEDRICK 1919, MICHAEL [Re], UPHOF; N71M, N84, 048

*Lamium amplexicaule* - *Henbit*, *Hotoke-no-za* {S}. Young leaves and flowering tips are eaten in salads, boiled as a potherb, or used in dumplings. One of seven wild greens (*nanakusa*) traditionally mixed with rice gruel (*okaya*) on January 7th or 15th in warmer areas of Japan. Also dried and made into an herbal tea. Eurasia, naturalized in North America. BELLEME, FERNALD, HOMMA, KIRK, TANAKA; N71M, N84

*Lamium purpureum* - *Archangel red dead-nettle* {S}. The young leaves are used as a potherb. Young flowering tips are boiled or candied. Eurasia. HEDRICK 1919, KUNKEL, MABEY; A2, D26G, D56M, J76{PL}, J82, N40M, N71M, N84, Q24

*Lavandula angustifolia* - *English lavender* {PL}. Leaves, petals, and flowering tips are added to salads, dressings, soups, stews, vinegar, honey, jams and jellies, wine, and soft drinks. The fragrant flowers can be candied or used as a garnish for fruit cups. Fresh or dried flowers are brewed into tea. Source of an essential oil utilized as a flavoring by the food manufacturing industry. Produces a golden-colored, smooth honey of excellent aroma and flavor. Mediterranean region, cultivated. BRYAN [Cul], CRANE 1975, GRIEVE [Cu], LARKCOM 1984, LEGGATT [Re], MACNICOL [Re], MARCIN, MORION 1976, PAINTER [Re], ROOT 1980b; A7{DF}, C43M, C67M, C94M{PD}, D92M{S}, F35M, F80{S}, I49M{PD}, K22, K37P{PD}, L17{DF}, L74M{PD}, M35, N19M, N54{£D}, N84{S}, etc.

CULTIVARS

**Gray Lady:** Compact plant, to 18 inches tall, robust and rapid growing. Grayer foliage than the species. Dark-violet colored flowers. Introduced by J.J. Grullemans of Wayside Gardens, Mentor, Ohio, before 1967. C9, C43M, F32D, F35M, K22, K85, L74M, M82

**Hidcote:** Slow, compact grower, to 2 1/2 feet tall. Attractive shiny green foliage and rich, dark aster-violet flowers. Raised by Major Lawrence Johnston, Hidcote Manor, Gloucestershire, England, before 1950. C81M, D92M{S}, F37T, H94M, 139, J66, J76, J82, K22, K85, L74M, M65M, M82, N19M

**Jean Davis:** (Rosea) Forms small, compact tidy mounds, to 18 inches tall. Attractive, light-rose colored flowers. Excellent for borders and knot gardens. C43M, F32D, G96, J66, J76, K22, K85, L22, L56, L74M, M65M, M82, N19M

**Ladv:** Hairy, dwarf lavender, ideal for growing in pots or borders or where space is limited. Uniform, compact, branching habit; 8 to 10 inches tall; lavender-blue flowers. The first lavender cultivar to flower consistently the first year from seed. Can be treated as an annual north of Zone 5. All America Selections winner for 1994. B30, B75{S}, D11T, E7, F35M, F37T, G68, H29M, I91{S}, J76, J82{S}, K2, K66{S}, L91M{S}, M29{S}, M35, M82, etc.

**Munstead:** Dwarf, compact growth, 18 to 24 inches tall. Dark aster-violet flowers. Blooms several weeks earlier than other cultivars. Raised by Gertrude Jekyll, Munstead Wood, Surrey, England. Introduced in 1916. C43M, C67M, D92M{S}, F20M, F37T, H51M, J66, J76, K22, K85, L74M, M35, M65M

**Sharon Roberts:** Hardy to 0° E; has withstood temperatures of -10° F. Flowers are deepest lavender, intensely fragrant. Blooms twice each season, in June and again in September and October. Grows 20 to 24 inches tall. Developed in the Pacific Northwest. E61, F32D, 139, L74M, L94M, M82

*Lavandula x intermedia* (L. *angustifolia* x L. *latifolia*) - *Lavandin* {PL}. Natural and artificial hybrids. English lavender x spike lavender. The flowers are the source of an essential oil used for flavoring beverages, ice cream, candy, puddings, baked goods and aromatic vinegars. Hybrids of this cross are more vigorous growing, easier to grow, and yield more oil than their parents and are replacing them in some areas as an industrial source of essential oil. LEUNG, MORTON 1976; E14T{DF}, M82, N19M

#### CULTIVARS

**Pelohinensis:** (Lavender of Dauphine) Growing wild in France and Switzerland, this cultivar is collected for its oil. Larger and more robust growing, the flower spikes are longer and heavier. F37T, L74M, L90J, M82

**Grappenhall:** Large growing cultivar, to 3 feet tall. Slightly larger leaves than the type. Long spikes of richly colored, pale mauve flowers excellent for cutting and bunching. Introduced by Messrs. Clibran of Altricham, England, about 1902. C9, K22, L74M, L90J, L94M, M82, P92

**Grosso:** (Fat Spike) Vigorous hybrid with large, intensely fragrant gray leaves, twice the size of English lavenders. Excellent for landscaping purposes, a mature 5 year old plant forming an even mound about 16 inches high and 3 feet across with virtually no pruning. Disease resistant. Hardy to below 0° F. Holds its foliage well through the winter. Grown commercially in France for its oil. Named after the French lavender specialist Pierre Grosso. B28, C2, C9, C43M, E61, F32D, F44M, H94M, 139, J82, K66, L74M, L90J, L94M, M35, M82, M98, P92, etc.

**Provence:** Preferred by commercial growers in the Provence region of southern France. High oil content. Easier to harvest by machinery than other types. Grows to 2 feet tall. Mauve flowers. Begins to bloom in July and will continue into September if the old spikes are removed. C2, C9, C43M, D37, E7, E61, E87, F44M, F93G, H94M, I99P, 757{ES}, J82, L74M, L90J, L94M, M35, M82, M98, etc.

*Lavandula latifolia* - *Spike lavender*, *Sweet lavender* {PL}. Sun-dried flowers are the source of an essential oil sometimes used for flavoring salads, jellies and other commercially prepared foods. Mediterranean region. LEUNG, TANAKA; D92M{S}, E61, E81M{S}, F32D, H94M, J66, J82, K22, K85, M82, Q24{S}

*Lavandula officinalis* - *Lavandula angustifolia*

*Lavandula stoechas* - *French lavender*, *Spanish lavender* {PL}. Source of a golden to dark amber honey with an excellent, highly regarded flavor. When granulated, the honey is nearly as smooth as butter. Europe, cultivated. CRANE 1975; C43M, D92M{S}, E61, E81M{S}, F37T, F93G, H94M, 139, 199P, J82, L56, L74M, L90J, L94M, M82, Q24{S}, R53M, etc.

*Leonotis nepetaefolia* - *Giant lion's ear*, *Zungu* {S}. Flowers are eaten in Tanzania. In Uganda, they are cooked with green leafy

vegetables. Eastern Africa. GOODE, VON REIS; F37T{PL}, F73D, F80, F85, G80{PL}, G73, 139, J82, K22{PL}, K85{PL}, L94M, N84

*Leonotis ocymifolia* var. *raineriana* - *Leonotis raineriana*

*Leonotis raineriana* - *Wilde daggi* {S}. Young leaves are used as a condiment. Eastern Africa. KUNKEL; N84, S28M

*Leonurus cardiaca* - *Motherwort* {S}. The flowering tops are used as a flavoring for beers, ales, and stout. Fresh or dried flowers can also be added to soups, particularly lentil or split-pea soup, and can be brewed into a tea. Eurasia. CROWHURST 1973, MACNICOL [Re]; A26, A97{PL}, C43M{PL}, C95, D92M, E61{PL}, F35M{PL}, F80, M34M, 053M, R47

*Leonurus sibiricus* - *Chivirico*, *Siberian motherwort* {S}. Young plants and plant tops are eaten. In China, the roots are cooked with pork. Eastern Asia, cultivated. ALTSCHEUL, BURKILL, TANAKA; A26, C43M{PL}, C95, E61, F35M{PL}, F68T, F73D, F85, F86G, I81M, I81M{PL}, J82, L3J, L90J, L91M, L94M, etc.

*Lycopus uniflorus* - *Bugleweed* {S}. The crisp, white tubers are eaten raw in salads, boiled, pickled, or added to soups and stews. Boiled a short time in salted water, they are said to be an agreeable vegetable, much suggesting the *crossnes* of European markets. North America. CROWHURST 1972, FERNALD, PETERSON, L.; J6

*Majorana Heracleoticum* - *Origanum vulgare* ssp. *hirtum*

*Majorana hortensis* - \**Origanum majorana*

*Majorana onites* - *Origanum onites*

*Majorana syriaca* - *Origanum syriacum*

*Marrubium vulgare* - *Horehound* {PL}. The bitter, pungent leaves are candied, made into syrup and herb beer, or used as a flavoring for liqueurs. The crushed leaves can also be added to honey, and eaten off the spoon. Fresh or dried leaves are brewed into tea. Mediterranean region, naturalized in North America. CLARKE, GIBBONS 1966b, GRIEVE, MARGIN, MORTON 1976, PAINTER [Re], UPHOF; A49D{DF}, C3{S}, C67M, D92M{S}, D97{PD}, F35M, F80{S}, G84{DF}, H46{DF}, J66, J66M{PD}, J76, K22, K85, M35, N19M, N19M{DF}, etc.

*Melissa officinalis* - *Balm*, *Lemon balm* {PL}. The leaves have a pleasant lemon fragrance and are used for flavoring salads, soups, egg dishes, butter, tarragon vinegar, *claret cups*, sauces, etc. Also liqueurs such as *Chartreuse* and *Benedictine*. Fresh or dried leaves can be used to make a very refreshing tea. Eurasia, cultivated. GRIEVE, MARGIN, MICHAEL [Re], MORTON 1976, ROOT 1980b [Cul], TANAKA; A7{DF}, A49D{DF}, A97, C9, C67M, D92M{S}, F80{S}, G84{DF}, H46{DF}, K22, K54{PD}, K85, M35, N19M, R47{S}, etc.

#### CULTIVARS

**Ail Gold:** (Gold Leaf, Golden) The richly scented, pubescent leaves keep their bright chartreuse-yellow coloration throughout the season, unlike the faded Variegated cultivar. This property is fully developed when the plant is grown in partial shade. Grows 18 inches tall and 18 inches wide. C2, C43M, E48, F32D, F35M, J76, K22, M82, P92

**Dwarf:** (Compactum) Very compact, non-flowering strain, only growing to 6 inches tall. Deep green foliage. Of interest to gardeners with limited space or for those wanting only an occasional leaf. R53M

**Lime:** (Lime Balm) Grown and used the same as lemon balm, but has a distinct lime-like scent. Height 3 feet. Hardy in zones 4 to 9. C81M, F32D, F35M, F37T, H94M, J66, M82, N42

**Quedlinburger Niederliegende:** {S} Improved European type with higher yields and greater winter hardiness. Fresh leaves have an excellent lemon aroma. Suitable for use in salads and teas. G6, N84



**Variegated:** The new spring growth has attractive yellow variegations. These fade during flowering and summer heat, but provide color at a time of year when little else is available. After flowering, cut back to promote the growth of additional variegated leaves. LATHROP; C43M, C67M, F32D, F35M, H29M, H51M, J66, J76, K22, K85, L56, M82

Melittis melissophyllum - *Bastard balm* {S}. A coumarin-scented herb occasionally used for making a *Maiwein* or *Maibowle* type beverage. Europe. UPHOF; D92M, N84, 053M, Q24

*Mentha aquatica* - *Water mint* {PL}. The herb has a strong, distinctive, peppermint-like fragrance and flavor and is used as a seasoning for peas, potatoes, egg and cheese dishes, and for meat hash in Southeast Asia. In South Africa, it is used as a substitute for tea. Eurasia. GIBBONS 1966b, LATHROP, MABEY, MORTON 1976; C43M, C67M, H30, H94M, I90M, L56, M82, N3M, N42, N84{S}, 053M{S}, R53M, S55{S}>

*Mentha aquatica* var. *crispa* - *Curled mint*, *Crisp-leaved mint*, *Balm mint* {PL}. An herb with a resinous, pineapple-like odor that is used for flavoring jellies, sauces, dressings, punch, and liqueurs. The fresh or dried leaves make a pleasant tea. Eurasia, naturalized in North America. MORTON 1976, PETERSON, L.; C67M, F93G, G96, H4, H51M, K2, K22, K85, M35, M53

*Mentha aquatica* 'Citrate' - *Bergamot mint* {PL}. The leaves yield a citrus-scented essential oil similar to true bergamot oil. After being refined it can be used in food flavoring and forms an ingredient of *Chartreuse*. GRIEVE, MORTON 1976; C67M, F15M, G0{DF}, K54{ED}, M82

#### CULTIVARS

**Eau de Cologne:** (Eau de Cologne Mint, Perfume Mint) Dark-green, roundish leaves. Sweet, aromatic fragrance suggestive of old fashioned toilet water. Grows to 18 inches tall. Use in tea blends, cold drinks, and salads. LEGGATT [Re]; C67M, C81M, F35M, F93G, H94M, I39, K22, L90J, M53, M82, N42, R53M

**Lavender:** (Lavender Mint) Similar to Orange mint, but when steeped or dried, has distinct overtones of lavender. Smooth, oval grey-green leaves. The stems, veins, and undersides of the leaves are a dark-purple color. Lilac flower clusters. Plant in sun or semi-shade. Originated by Dot Montgillion of Smoke Camp Crafts in West Virginia. C81M, F32D, F35M, H94M, I39, J5M, 757, K66, L90J, M35, M53, M82, N42, R53M

**Lemon Bergamot:** (Lemon Mint) Light-green, crinkly leaves with a refreshing lemon and mint flavor and fragrance. Good for tea and in fish dishes. Small, pinkish, edible flowers. Grows to 20 inches tall. C67M, F32D, F35M, H94M, I99P, K22, K23, K85, M15T

**Lime:** (Lime Mint) Similar to orange mint, but with a slightly different lime-like scent and flavor. Attractive plant with round dark green leaves, dark purple runners and light purple flowers. Height 12 to 18 inches. Very good for tea and jellies. Can also be used for oils and potpourri. C43M, C67M, E61, F35M, F37T, F93G, H51M, H94M, J66, J66{DF}, J82, K22, K85, L90J, M82, N42, etc.

**Orange Bergamot:** (Orange Mint) Broad, smooth, dark-green leaves edged with purple. Purple flowers bloom from mid to late summer. Green, branching stems tinged with red, reach 2 feet in height. Very strong citrus-like scent and taste. Makes a very good tea. A97, C9, C67M, F35M, F93G, H46{DF}, J66, K22, K57, K85, L90J, M35, M53, N19M, N19M{DF}, N42, etc.

*Mentha arvensis* - *Field mint*, *Corn mint*, *Wild mint* {PL}. American Indians used the leaves for flavoring corn meal mush or for baking fish. Their strong odor and flavor makes them especially suited for adding to chutneys. The fresh or dried leaves can be made into tea. Also the source of an essential oil used in candies and beverages. Northern temperate region. CLARKE, KIRK, MABEY [Re], TANAKA; C43M, F37T, G0{DF}, G60, N9M, N9M{S}, N84{S}

*Mentha arvensis* ssp. *haplocalyx* - *Chinese mint*, *Hung gioi* {PL}. Used for scenting tea. Has an unusual sweet scent, reminiscent of sweet heliotrope. Southeast Asia. TANAKA; F32D, J82, K85, M82, N42, N84

*Mentha arvensis* var. *villosa* - *American wild mint* {S}. The fragrant, pleasant-tasting leaves are used as a seasoning. The Indians of Maine roasted them over a fire and ate them as a relish with salt. An infusion of the leaves is used as a beverage. North America. HEDRICK 1919, MEDSGER, YANOVSKY; G47M

*Mentha arvensis* f. *piperascens* - *Japanese mint*, *Japanese field mint*, *Hakka* {PL}. The flowers are used for scenting tea. Source of *Japanese mint oil* or *Japanese peppermint oil*, used in confectionery, cakes, and beverages. The leaves and shoots are eaten cooked or preserved. Has a strong peppermint or spearmint-like fragrance. Japan. MORTON 1976, SCHERY, TANAKA, YASHIRODA; C43M, F32D, F37T, J82, K22, K85, L90J, M35, M82

*Mentha australis* - *River mint*, *Native mint* {PR}. Fresh or dried leaves are used as a seasoning. Grown on a limited scale for the bushfoods industry. Also the source of an essential oil. Australia. ROBINS, TANAKA; N79

*Mentha canadensis* - \**Mentha arvensis*

*Mentha x cardiaca* - *Mentha x gentilis*

*Mentha cervina* - *Hart's pennyroyal*, *Holt's pennyroyal* {PL}. Leaves have a strong pennyroyal fragrance and can be used for tea. Europe. C43M, C81M, F32D, H51M, J66, J76, K22, K57, K85, L90J, M82, N42

*Mentha citrata* - \**Mentha aquatica*

*Mentha x cordifolia* - *Mentha x villosa*

*Mentha crispa* - *Mentha aquatica* var. *crispa*

*Mentha diemenica* - *Slender mint* {PL}. The herb is employed for culinary purposes. It has a unique flavor reminiscent of both spearmint and peppermint. Generally used sparingly to provide a subtle flavor to savory dishes as well as desserts. Becoming highly regarded in the bushfoods industry. Australia.

#### CULTIVARS

**Kosciusko:** Selected for its dense, mat-forming habit, strong scent and flavor, and profusion of delicate mauve flowers during warmer months. Small, oval leaves, about 3/4 inch long; strong, mint-like aroma. Ideal for garden beds, hanging baskets, window boxes, and courtyard gardens receiving partial to heavy shade. N79, N79{PR}

*Mentha x gentilis* (*M. arvensis* x *M. spicata*) - *American apple mint*, *Red mint* {PL}. Natural hybrid. Field mint x spearmint. The leaves are occasionally used for flavoring, having a refreshing odor and taste. In the United States, this plant is the principal source of *oil of spearmint*, used mainly in chewing gum. Naturalized in North America. MORTON 1976, UPHOF; B21P{DF}, C43M, F32D, F37T, F86G{DF}, I81T{DF}

#### CULTIVARS

**Austrian:** (Austrian Mint) Delightful flavor reminiscent of spearmint. Essential seasoning for the ravioli-like Austrian dish, *topfen nudeln* stuffed with mashed potatoes and cottage cheese. H94M, J82, M82, N84

**Ginger:** (Ginger Mint) Leaves light-green to grayish, slightly variegated with gold, pointed. Distinctive, brisk, fruity, mint-like flavor with a hint of ginger. Makes a nice tea. Grow in sun or partial shade. Ornamental novelty; grows 1 to 2 feet tall. C81M, E61, F35M, F37T, J76, J82, K2, K22, K57, K85, L56, M53, M82

**Golden:** (Golden Mint) Low, spreading plant to 1 foot tall. Smooth, green leaves variegated with yellow streaks. Stays bright golden throughout the summer. Pale purple flowers; appealing fruity flavor. K85

**Scotch:** (Scotch Mint, Variegated Scotch Mint) Erect growing plant, 1 to 1 1/2 feet tall; numerous short branches. Broad, spearmint-like foliage, variegated a vivid gold and green. Sweet smelling, mild, spearmint-like aroma and flavor. E61,139, H94M, K57, M15T, M82

**Vietnamese:** Excellent sweet spearmint-like flavor. The authentic strain widely used in various Vietnamese dishes. Grows to about 24 inches tall. Hardy in Zones 4 to 9. J82, MJ5, M82, N42, N84

*Mentha x gracilis* - *Mentha x gentilis*

*Mentha haplocalyx* - \* *Mentha arvensis ssp. haplocalyx*

*Mentha longifolia* - *Horse-mint* {S}. The fresh herb is used as a seasoning in Indian chutneys. In Afghanistan, it is sprinkled on mast (curds). Leaves are candied or used as a substitute for tea. The dried leaves and flowering tops are the source of a peppermint-like essential oil employed for flavoring candy. Eurasia. ALTSCHUL, MORTON 1976, TAN\KA, WATT; C43M{PL}, F32D{PL}, F35M{PL}, M82{PL}, N7D{DF}, N84, 053M, Q24, R88

CULTIVARS {PL}

**Caensis:** (Cape Spearmint) Unusual long, narrow, grey-green leaves and a soft, spearmint flavor and aroma. Height 2 feet. Can be used for tea. Originally from South Africa. C43M, L90J, M7M, N84{S}, S28M{S}

**Habak:** (Bible Mint) Tall growing plant with narrow, lanceolate leaves and lilac flowers. Distinctive spearmint-like aroma and flavor. May be the mint mentioned by Jesus in the Condemnation of the Pharisees. Marginally hardy in Zone 7. Introduced into the United States from Israel where it is common, each village or region apparently having its own strain. H49M, M82

**Silver:** (Silver Mint) Ornamental, slender, silver-grey leaves; grows 1 to 2 feet tall. Strong, refreshing spearmint odor and flavor. Good for tea or culinary use. Also attractive in dried arrangements. Hardy in Zones 4 to 9. C43M, C67M, E61, F37T, J82, K22, K85, L90J, M35, M82, N42

*Mentha x niliaca* - \* *Mentha x villosa*

*Mentha x piperita* (*M. aquatica* x *M. spicata*) - *Peppermint* {PL}. Natural hybrid. Water mint x spearmint. The aromatic leaves are widely used in sauces, jellies, jams, fruit salads, drinks, etc. In the Middle East, they are finely chopped and added to tossed salads as generous portions. The fresh or dried leaves make a refreshing tea that can be consumed hot or cold. Source of an essential oil utilized by the food industry in flavoring ice cream, candy, chewing gum, and alcoholic drinks, including *Benedictine* and *crime de menthe*. GIBBONS 1966b [Re], GRIEVE [Cu], MARCIN, MORTON 1976, ROOT 1980b [Cul], UPHOF; A97, C9, C67M, F80{S}, H46{DF}, J66, K22, K54{PD}, K85, M16, MJ5, M53, N19M. (for cultivars see Mint, page 427)

*Mentha pulegium* - *European pennyroyal*, *English pennyroyal*, *Mentuccia*, *Ombalo* {PL}. The leaves have a strong, pungent, menthol-like fragrance and taste and are used as a seasoning for meat sauces, stews, game, fritattas, *Carcifi alia Romana*, etc. In England, a famous stuffing was once made of pennyroyal, pepper, and honey. The dried leaves give a subtle flavor to stewed prunes, apricots, or mixed dried fruit. A favorite herb in western Georgia. Fresh or dried leaves and stem tips can be used for preparing an aromatic tea. Europe, cultivated. DE VITA [Re], FIELD, GOLDSTEIN, GRIEVE [Cu], MABEY, MARCIN, MICHAEL [Re], MORTON 1976; A49D{DF}, A97, C9, C67M, D92M{S}, F80{S}, G84{DF}, K85, M35, M53, N19M, N42, N84{S}, 053M{S}

CULTIVARS

**Dwarf:** (Cunningham Mint) Has a menthol-like aroma similar to regular English pennyroyal but is much lower in growth. Only grows to a height of 1 or 2 inches and is more compact, forming a tight mat of tiny leaves. C43M, E7, F32D, F35M, G80, H94M, J82, L94M, M82

*Mentha requienii* - *Corsican mint*, *Spanish mint*, *Crime de menthe* {PL}. The entire plant has a very strong creme-de-menthe fragrance and taste. As a flavoring, it is used mainly in liqueurs. Also widely grown as an ornamental ground cover in mixed herb plantings and rock gardens. Mediterranean region. GESSERT, LATHROP, MORTON 1976; A97, C9, C43M, C67M, G96, H51M, H94M, J66, J76, K22, K85, M82

*Mentha rotundifolia* - + *Mentha suaveolens*

*Mentha rubra* - *Mentha x smithiana*

*Mentha x smithiana* - *Red mint* {PL}. Natural hybrid of *M. aquatica*, *M. arvensis* and *M. spicata*. Used as a spearmint-like flavoring. Rare in cultivation. Mostly a sterile species, spreading vegetatively. ZEVEN.

CULTIVARS

**Red Raripila:** (Raripila Mint, Pea Mint, Rubra) Roundish, dull green leaves with unusual reddish veins; stems also reddish. Fruity scent; good spearmint-like flavor. Fine for use in salads, desserts and drinks, and is especially good with peas. Grows to about 2 feet tall. BREMNESS, LARKCOM 1984; N84, R53M

*Mentha spicata* - *Spearmint*, *Green mint*, *Lamb mint* {PL}. Leaves and flowers are used as a flavoring or garnish in salads, sauces, soups, fruit drinks, vegetable dishes, desserts, dressings, etc. Fresh or dried leaves are brewed into a refreshing tea that can be used hot or cold. Source of an essential oil that flavors ice cream, candy, soft drinks, etc. Pieces of dried spearmint leaves are often added to the salt sprinkled over *halloumi* cheese to enhance its characteristic flavor. Eurasia, cultivated. BRYAN [Cul, Re], GRIEVE [Cu], LEGGATT [Re], MARCIN, MORTON 1976, ROBINSON, R. 1991, ROOT 1980b [Cul], TANAKA, UPHOF; A97, C67M, H46{DF}, J66, K22, K85, M35, M53, N19M. (for cultivars see Mint, page 427)

*Mentha suaveolens* - *Pineapple mint* {PL}. Young leaves can be used for flavoring, as a garnish, or brewed into tea. The plant is low-growing, 10 to 12 inches high with small, white-blotched leaves. The foliage has a distinct pineapple-like fragrance and flavor when young, becoming more mint-like with age. GESSERT, LATHROP, MORTON 1976; A97, C9, C43M, C67M, E61, G96, H94M, J66, J76, K22, K85, M53, M82, N19M, N42, etc.

*Mentha sylvestris* - \* *Mentha longifolia*

*Mentha x villosa* (*M. spicata* x *M. x suaveolens*) - *Heart-leaved mint* {PL}. Natural and artificial hybrids. Pineapple Mint x spearmint. The leaves are used for flavoring. One type is grown commercially outdoors in southern England. MORTON 1976; N84. (see also Mint, page 427)

*Mentha x villosa* 'Alopecuroides' - *Applemint*, *Round-leaved mint* {PL}. The leaves have a delicate apple and spearmint-like aroma and taste and are used fresh for garnishing or flavoring. Considered by connoisseurs to be superior to spearmint for all culinary purposes but especially as a tea herb. Europe, cultivated. GESSERT, LATHROP, LEGGATT [Re], MORTON 1976; C67M, D3M{PR}, G96, H46{DF}, H94M, J66, J66{DF}, J76, K22, K85, M35, M53, M82, N19M, N19M{DF}, etc.

CULTIVARS

**Bowles':** (Bowles' Mint) Strain of a variable sterile hybrid between *M. spicata* and *M. suaveolens*. A fine-flavored, larger form of applemint with similar uses. Esteemed in England, especially for use in mint sauce. Originally from E.A. Bowles' garden. BOWN, MORTON 1976; R53M

**Egyptian:** (Egyptian Mint) The leaves have a strong, spearmint-like fragrance and taste and can be used in teas, iced drinks, fruit cocktails, and fish dishes. Ornamental plant with striking pale-lavender flowers, height 3 feet, very hardy. C43M, E61, F37T, H51M, H94M, K22, K85, L90J, M53, M82, N42

**Woolly:** (Woolly Mint) The fragrant leaves are highly esteemed in England for home use, especially in mint sauce. MORTON 1976; F32D, F37T

*Mentha x villosa-nervata* (M. longifolia x M. spicata) - *English mint*, *English spearmint* {PL}. Hybrid. Horse-mint x spearmint. A popular mint in England where it is grown in greenhouses for the fresh market trade. Lush, lustrous green leaves with a strong spearmint flavor. Delicious in mint sauce. MORTON 1976; F32D, F37T, J66, J82, K22, K66, K85, L90J, M53

*Mentha viridis* - *Mentha spicata*

*Mesona chinensis* - *Sian chhdu*, *Hsien-jen-ts'ao*, *Jellywort* {PD}. One of the sources of *grass jelly* drink found in Oriental markets. The product is prepared by boiling the plants in water to which potassium carbonate has been added. After removing the plants and boiling a second time, the liquid is cooled into a jelly. Cubes of the jelly are then mixed with water, sugar and corn starch. Southern China, Taiwan. HSU, TANAKA; L90G

*Micromeria brownei* - *St. John's mint* {PL}. Native ground cover, growing to three inches in moist areas. Hardy as far north as Richmond, Virginia. Strong peppermint-like flavor and fragrance. Popular locally for use as a culinary and tea herb. Florida. TUCKER 1994; C43M, K53M, M82

*Micromeria chamissonis* - \**Satureja douglasii*

*Micromeria obovata* - \**Satureja viminea*

*Micromeria viminea* - \**Satureja viminea*

*Micromeria* sp. - *Emperor's mint* {S}. Found thriving amidst the ruins of Emperor Hadrian's remarkable summer villa near Rome. Has a bold, mint-like fragrance and flavor. J82, M82, N84, O53M, S55

*Micromeria* sp. - *Roman mint* {PL}. Found growing wild near Rome where it is widely used in popular cooking. Sweetish, mint-like odor and flavor, reminiscent of both Menthol spearmint and pennyroyal. DEVITA; J82, M82, N84

*Monarda austromontana* - *Mexican bergamot*, *Mt. Pima oregano* {S}. Leaves are used as a seasoning in Mexico, especially for meat dishes. Also brewed into a tea. Can be used like commercial oregano but has a different and more subtle flavor. Mexico. ALTSCHUL, HUTSON 1987, MORTON 1976; E48{PL}, F35M{PL}, F80, I16{DF}, L13, L91M, N84

*Monarda citriodora* - *Lemon bee-balm*, *Lemon bergamot*, *Lemon mint* {S}. The lemon-scented leaves can be used for flavoring or brewed into tea. Hopi Indians boiled the leaves with hares and other wild game. Southwestern North America. GESSERT, YANOVSKY; C43M, C43MJPL, D92M, E61, F32D{PL}, F59, F80, I11, I91, J25M, K85, N11M

*Monarda clinopodia* - *White basil-balm* {PL}. Fresh or dried leaves and flower-heads are brewed into tea. Said to be excellent when mixed with other teas. North America. PETERSON, L.; A61, A61{S}, HIM, I37M, I37M, L55, M72

*Monarda didyma* - *Oswego tea*, *Bee balm*, *Bergamot* {PL}. The fresh or dried leaves and flower-heads are used for making an excellent aromatic tea. Young tips are used as a garnish for fruit salads and cool drinks and for flavoring cheese, stuffings, tossed salads, and apple jelly. The fresh flowers can be tossed on a mixed green salad. Leaves are eaten boiled with meat, by the Tewa Indians. North America. LARKCOM 1984, LEGGATT [Re], MACNICOL [Re], MARCIN, MEDSGER, MICHAEL [Re], MORTON 1976, PAINTER [Re], ROOT 1980b [Cul], UPHOF; A97, B39M, C67M, D92M{S}, F20M, F32D, I11M, J76, K22, K85, M53, R47{S}

CULTIVARS {S}

**Lavender:** (Lavender Bergamot) Citrus and oregano scented leaves and flowers that make a very pleasant and soothing tea. Grows to 4 feet tall. F86G, I99M, K49T, K85{PL}

*Monarda fistulosa* - *Wild bergamot*, *Horsemint* {PL}. The entire plant above ground may be used as a potherb, cooked with other foods as a seasoning, or dried for future use. Fresh or dried leaves are brewed into a refreshing, aromatic tea. The flowers make an attractive edible garnish in a salad. North America. GIBBONS 1979, KINDSCHER, KIRK, MORTON 1976, UPHOF; B51{S}, C43M, C43M{S}, D92M{S}, F32D, F80{S}, G47M{S}, G73{DF}, G89, G89{S}, H63, I11M, J39M, J42, J43{S}, etc.

CULTIVARS

**Wahoe Washtemna:** A lemon-scented form selected and grown by the Dakota Indians of the Missouri River region. Wahpe Washtemna means "fragrant leaves". Reportedly one of the plants associated with the Native American Sun dance. GILMORE; J39M

*Monarda fistulosa* var. *menthaefolia* - *Oregano de la sierra* {S}. The aromatic leaves have traditionally been used as a seasoning for cabrito, wild game and meat. The unique oregano-like flavor is favored by Southwestern chefs, especially for flavoring semi-soft ricotta cheese. Southwestern North America. HUTSON 1987, KAVENA [Re]; C11G{DF}, D92M, E61{PL}, *G89M?*?U, H94M{PL}, J25M, J25M{PL}, J93T, L3J, L13, L91M, N29{DF}, N84

*Monarda menthaefolia* - *Monarda fistulosa* var. *menthaefolia*

*Monarda pectinata* - \**Monarda citriodora*

*Monarda punctata* - *Horsemint*, *Spotted monarda* {S}. Leaves are brewed into an aromatic tea. North America. PETERSON, L.; B29, C43M{PL}, D40G, D92M, E61{PL}, F80, G47M, H94M{PL}, J39M, J40, M77M{PL}, Q24

*Monardella lanceolata* - *Mustang mint* {S}. Fresh or dried leaves and flower clusters can be used for brewing a pleasant mint-like tea. Western North America. CLARKE, YANOVSKY; L13, N84

*Monardella odoratissima* - *Mountain pennyroyal*, *Coyote mint* {S}. Fresh or dried, the aromatic leaves and flower-heads are steeped into a clear, refreshing, mint-like tea. Western North America. CLARKE; A61, A61{PL}, C43V, C95, E67T{PL}, I98M{PL}, L13, L55J, N84, Q24

*Monardella villosa* - *Coyote mint* {PL}. The leaves and flower heads, fresh or dried, are steeped (not boiled) in water to form a clear tea. It has a sweet, spicy aroma and a slightly bitter, mint-like flavor. Southwestern North America. CLARKE, MORTON 1976; B92, C2, G60

*Nepeta cataria* - *Catnip*, *Catmint* {PL}. The leaves can be candied, or brewed into an aromatic, mint-like tea. In France, the leaves and young shoots are eaten in salads or used for seasoning sauces, soups, and steaks. Eurasia, cultivated. GIBBONS 1966b, GRIEVE, LEYEL 1987b, MACNICOL, MARCIN, MORTON 1976, VILMORIN; A97, C67M, D92M, E61, F80{S}, G84{DF}, H46{DF}, H94M, K22, K85, M35, M53, N19M, R47{S}

CULTIVARS

**Lemon:** (Citriodora) Leaves have a pleasant, lemon-like aroma and flavor which makes it more appealing to humans and somewhat less so to cats. Lower growing than common catnip. Makes a refreshing tea. C43M, C43M{S}, C67M, D92M{S}, E61, H94M, I91{S}, J66, J76, J76{S}, K22, K85, M35, M82

*Nepeta hederacea* - *Glechoma hederacea*

*Ocimum americanum* - \**Ocimum canum*

*Ocimum basilicum* - *Sweet basil* {S}. Young leaves and flowering tops, both fresh and dried, are used for seasoning tomato sauce, vinegar, soups, salads, omelettes, etc. Also the principal ingredient of *pesto* sauce. Types with very large leaves may be used for wrapping chicken or fish before grilling. Flowers are also used as a garnish. In the Near East, the seeds are eaten alone or added to bread dough and other foods as a flavoring. They form a mucilaginous gel when soaked in water and are made into a refreshing beverage, called *cherbet tokhum* in Mediterranean countries. The dried stems,

known as *basilwood*, are used in barbecuing as a smoke flavoring, and are especially good with lobster and salmon. They can also be added to the water in cooking pasta or poaching fish or they can be used for making flavored oils and vinegars. Source of an essential oil used in catsups, mustards, sauces and vinegars. Old World Tropics and Subtropics. HAMPSTEAD [Cu, Re], LEGGATT [Re], MORTON 1976, ROOT 1980b [Cu], UPHOF; A45{DE}, B75, C43M, C81M, D92M, E61, G84{DF}, H41{PD}, J3{PD}, J20, J85T{PR}, M35{PL}, M53{PL}, N19M{PL}. (for cultivars see Basil, page 298)

*Ocimum canum* - *Hoary basil, Hairy basil, Maeng lak, Kemangi* {S}. Young leaves are eaten steamed, as a side-dish with rice, or added to curries and soups. Also used as a flavoring in sauces, salads, soups, poultry stuffings, meat dishes, etc. The seeds, when soaked in water, swell into a gelatinous mass called *indring* in Java, which is mixed with coconut milk and sugar to form a sweet, cooling beverage. Old World Tropics and Subtropics. FOX, E, JACQUAT, LOHA-UNCHIT, MORTON 1976, OCHSE, OWEN [Re], SHURTLEFF 1979 [Re], TANAKA; C95, F68T, F85, N84, S28M, S55. (for cultivars see Basil, page 298)

*Ocimum gratissimum* - *East Indian basil, Tree basil, Clove basil* {PL}. The leaves are eaten as a potherb, or cooked with other foods as a flavoring. Seeds are sometimes eaten in India. Tropics. BURKILL, MORTON 1976, WATT; C43M, D92M{S}, F37T, F85{S}, H94M, J66, J82, J82{S}, K57, L94M{S}, M35, M82, N84{S}, P1G{S}, S28M{S}, etc.

*Ocimum gratissimum* var. *viride* - *Tea bush, Green basil, West African basil* {PL}. The leaves have the flavor of lemon thyme and are used in salads and as a seasoning for soups, meats, and poultry stuffing. Also brewed into tea, which is drunk as a beverage with milk and sugar. Tropical Africa. DALZIEL, FOX, F., MORTON 1976; C43M, C43M{S}, J82, M35, N84

*Ocimum kilimandscharicum* - *Camphor basil, Karpoor basil* {PL}. The leaves have a very distinctive camphor-like fragrance and are occasionally brewed into tea. Used in the regional Vedic cuisines of Bihar and West Bengal, India—as a flavoring for rice, dais and vegetables. East Africa. DEVI; C43M, C43M{S}, D92M{S}, F15M, F37T, F68T{S}, F85{S}, F86G, J82, K57, M35, M53, M82, P38{S}, Q12{S}, etc. (for cultivars see Basil, page 298)

*Ocimum micranthum* - *Peruvian basil, Married man pork* {S}. The herbage is used in the preparation of soups and stews to which it imparts a characteristic flavor. Tropical America. OMAWALE, WILLIAMS, L.; C43M, C43M{PL}, D92M, F37T{PL}, F73D, J76, J76{PL}, K22, 053M

*Ocimum sanctum* - *Holy basil, Sacred basil, Tulsi, Pagoda basil, Besobila* {PL}. Fresh leaves are eaten raw in salads, cooked as a potherb, or used as a flavoring for fruit dishes, sweet yeast breads, chile pastes, jellies and preserves. They are sweetly spicy with a sharp, pronounced clove scent and pungency. Also brewed into a refreshing tea. Dried leaves are ingredients in the Ethiopian spice mixtures *berbere*, *awaze*, and *shiro* and the spiced butter *niter kibbeh*. Fragrant flowers are eaten. The mucilaginous seeds are made into a sweet, cooling beverage. Tropical Asia, cultivated. BURKILL, COOK, CRIBB, HAMPSTEAD, HERKLOTS, MESFIN [Re], MORTON 1976, ROBINS; C43M, C67M, E7M{S}, F80{S}, G44M{DF}, H51{DF}, H51{PD}, J76, K17J{PQ}, K22{S}, M53, M82, N19M, 032M{DF}, R47{S}, etc.

#### CULTIVARS

**Purple:** (Purple Tulsi, Krishna Tulsi) The whole plant has a reddish-purple tint and a clove-like aroma and taste, much sweeter than common tulsi. Development of full purple coloration requires strong sunlight and hot temperatures. The seeds are non-mucilaginous. DARRAH; C43M, C43M{S}, D92M{S}, F68T{S}, J76, J82{S}, M82

**Red and Green:** Distinctive type with reddish-purple markings on the leaves; height 16 to 20 inches. Originally from Thailand where it is often found being grown in backyards for home use. Milder in

aroma than regular holy basil. Used for making tea. C81M, C81M{S}, F93G, G6{S}, K57, Q34{S}

*Ocimum tenuiflorum* - *Ocimum sanctum*

*Ocimum viride* - *Ocimum gratissimum* var. *viride*

*Origanum dictamnus* - *Dittany of Crete, Hop marjoram* {PL}. The aromatic foliage is used for flavoring salads and vermouth. In Saxon kitchens it was an ingredient of a sauce to be used with fish. Combined with parsley, garlic, thyme, salt and pepper, it added a pleasant, aromatic flavor. The flowering tops are dried and brewed into tea. Mediterranean region. GESSERT, JONES, D., LATHROP, MORTON 1976; C43M, C67M, C81M, E61, F32D, F35M, G96, H51M, H94M, J76, J82, K85, L90J, M53, N7D{DF}, N19M, etc.

*Origanum heracleoticum* - *Origanum vulgare* ssp. *hirtum*

*Origanum majorana* - *Sweet marjoram, Knotted marjoram* {PL}. Leaves, flowers, and tender stems are used for flavoring syrups, stews, dressings, liqueurs, sauces, soups, sausages, stuffings, geese, etc. The aromatic seeds flavor candy, beverages, condiments, and meat products. Fresh or dried leaves are brewed into a sweet, mellow tea with a flavor that resembles a blend of thyme, rosemary, and sage. Thought to be one of the sources of the *Hymettus honey* of Greece. Dried stems can be used as a smoke flavoring. Eurasia, cultivated. BARASH [Re], CRANE 1975, LEGGATT [Re], MACNICOL [Re], MARCIN, MORTON 1976, TANAKA, UPHOF; C9, C43M, C43M{S}, C67M, D92M{S}, E13G{PR}, E14TIDF}, F80{S}, G84{DF}, H46{DF}, J66, K22, K22{S}, K27T{DF}, K66{S}, L17{DF}, M35, N19M, N42, etc.

#### CULTIVARS

**Compact Greek:** Small, bushy plant; height about 12 inches; white flowers. Strong marjoram flavor. Ideal for growing in containers. J66

**Golden:** (Golden Marjoram, Creeping Gold Marjoram, Aurea) Crinkled, yellow to white leaves. Grows to 6 inches tall. Makes an attractive, golden-green ground cover; also a good potted plant. C43M, C67M, E61, F35M, H51M, J66, L56, M82, N42

**Variegated:** Attractive plant with small slightly fragrant leaves, variegated with creamy-white and green. Grows to about 8 inches tall. Ideal for adding texture and color to the herb garden. Hardy in Zones 6 to 9. C43M, M35, M82, N42

*Origanum x majoricum* (*O. majorana* x *O. vulgare*) - *Hardy marjoram, Culinary oregano, Cooking oregano, Italian oregano* {PL}. Natural hybrid. Sweet marjoram x oregano. Has the appearance, aroma and flavor of marjoram, but some of the hardness of the oregano. Hardy to Zone 6. Released by the United States Department of Agriculture. Grows 18 to 24 inches tall. Does not set seed. Excellent flavor for culinary use. BOWN; C9, E7, F32D, F35M, H94M, J66, M82, N42

*Origanum maru* - *Origanum syriacum*

*Origanum onites* - *Pot marjoram, Cretan oregano, Rhigani, Turkish oregano* {PL}. The herb has a strong thyme-like aroma and flavor. Fresh or dried, it is used in salads or for flavoring, especially with heavy meats. One of the flavorings added to *Turkish Delight*. It can also be brewed into a tea. Eurasia. DE SOUNIN, LATHROP, MORTON 1976. NIEBUHR; C9, C43M, F32D, H94M, J66, J82, K22, K85, L90J, M82, N42

#### CULTIVARS

**Kaliteri:** Excellent culinary oregano from Greece, where it is grown commercially for the quality oregano market. Specially selected for its high essential oil content. Strong, spicy flavor. Compact plant, 8 to 12 inches tall; silver-gray foliage. Kaliteri means "the best" in Greek. F37T, J82, K57, L94M, M35, M82

*Origanum pulchellum* - *Showy oregano* {PL}. The herb is used for flavoring pizza and other Italian dishes. Mediterranean region. C2, C9, C43M, F15M, G96, J37M, K22, K79, K85, N42

*Origanum syriacum* -*Za'tar*, *Syrian oregano*, *Bible hyssop* {PL}. Leaves and flowering tops are used as a seasoning, having a flavor reminiscent of a blend of thyme, marjoram, and oregano. In the Middle East, the dried herb is mixed with sumac to form the spice blend known as *w'tar* which is used, along with olive oil, as a topping for breads. Bedouins grind the dried leaves, add salt, and eat the dry mixture on bread. Eastern Mediterranean region. BAILEY, C., FLEISHER, WOLFERT 1973; A7M{PD}, C9, E69{PD}, H94M, J66, J82, K22, K66, K85, L50M{£D}, L90J, M35, M82

## CULTIVARS

**Bevanii:** Form of Levant or Syrian oregano first grown in the United States in California. Silvery, gray-green, pubescent foliage. Strong, distinctive, oregano-like flavor. Forms a nice, compact mound. M82

*Origanum tythantum* - *Kyrgyz oregano*, *Turkestan oregano* {PL}. The herb has an excellent mild flavor and can be used for culinary purposes. Central Asia. A50, H94M, J82, K22, K85, L90J, M55, M82

*Origanum vulgare* - *Wild marjoram*, *Common oregano* {PL}. Fresh leaves and tender shoots are cooked as greens in India. The fresh or dried leaves and flowers season soups, stews, casseroles, sauces, olives, stuffings, tomato and egg dishes, etc. Also brewed into an herbal tea. The flowering tops are sometimes put into beer and ale to flavor and preserve it. Eurasia. BARASH [Re], GRIEVE, HEDRICK 1919, MABEY [Re], MARCIN, MICHAEL, MORTON 1976; C43M, C81M, E61, F32D, F35M, K57, M55, M53, N19M, S55{S}

## CULTIVARS

**Dark:** (Dark Oregano) More upright growth habit than common oregano, to 2 feet tall. Larger, very dark green, dense leaves. Excellent for seasoning. Whitish-pink flowers. K22, K85, L90J

**Dwarf:** (Dwarf Oregano, Compactum Nanum) Grows 2 to 4 inches high, 24 inches across. Produces a dense mat of dark-green foliage that turns purple in winter, and short purplish flower-spikes in summer. A fine ground cover for sunny areas; excellent for rockeries. Strong, spicy flavor. The dried foliage is a flavorful seasoning. Does well on a cool windowsill during the winter. C9, E61, F32D, F35M, J66, J82, K22, K79, K85, L90J, MJ5, M82, N42, R53M

**Gold Tipped:** Variegated type that is good for culinary use Very attractive greenish foliage with yellow-gold tips. Has a very good flavor and scent. Should be cut back in July to maintain the variegated effect. N84, R53M

**Golden:** (Golden Oregano, Golden Creeping Oregano) Compact, creeping habit, to 6 inches high. Attractive golden colored foliage. Good ground cover for rock gardens and edges of flower beds. Mild, thyme-like oregano flavor used in Mediterranean cooking. C9, C43M, C67M, J66, J82, K22, K85, L56, L90J, M55, M53, M82, N19M, N42

**Seedless:** (Seedless Oregano) Leaves resemble sweet marjoram; the flowers resemble a combination of sweet marjoram flowers and oregano flowers. An excellent culinary herb, as strong and distinct as Greek oregano but sweeter and less biting. Hardy to 10° F. Brought to the United States from Goeta, Italy in 1917. Likely a natural hybrid between oregano and marjoram. C43M, F32D, L90J

**Silver:** (Silver Oregano) Ornamental silver-gray leaves. Mild to medium oregano flavor and fragrance. Can be used in cooking. Tender perennial; loosely upright, height 12 inches. Does best when grown in full sun. F32D

**Variegated:** (Variegated Oregano) Attractively speckled and streaked with golden variegation that contrasts prominently against the deep green background. Mildly flavored. Prostrate habit, height 8 inches. Excellent for edging or in the rock garden. C9, H51M, J82, N42

**White:** (White Oregano, Viride) {S} Culinary type with a strong aroma and very good flavor. Excellent on pizza, with fish and in dressings. White flowers. Height 1 to 2 feet. D26D, G6

**White Anniversary:** Bright green leaves, broadly margined in white. Mild flavor. Spring growth is a white ground hugging mat, changing to a pale cream by fall. Height 8 inches. Inconspicuous flowers. Grows best in light shade. C2, D95, F32D, G96,139, /57, K79, L90J, M35, M82

*Origanum vulgare* ssp. *gracile* - \**Origanum tythantum*

*Origanum vulgare* ssp. *hirtum* - *Winter marjoram*, *Winter sweet marjoram*, *Righani* {S}. The herb is used for flavoring salads, soups, broths and stuffings. Fresh or dried leaves are steeped for tea. Mediterranean region. HEDRICK 1919, NIEBUHR, UPHOF; N84, R47

## CULTIVARS {PL}

**Greek:** (Greek Oregano) Bright green leaves; white flowers. Grows 1 1/2 to 2 feet tall. Strong, aromatic, spicy flavor. Excellent culinary oregano, a standard in pasta and tomato sauces. If you go to the store and buy ajar of "oregano", this is probably the kind you'll be receiving. A7M{DF}, A49D{DF}, A97, C9, C67M, D92M{S}, H51M, H94M, J85T{PR}, K22, K66{S}, K85, M55, M53, N19M, N42, etc.

**Italian:** (Italian Oregano) Somewhat narrow leaves. Aromatic, strong, resinous flavor. Used in spaghetti sauce and pizza. More bushy and upright than Greek oregano; height 12 inches. C67M, C81M, F93G, /57, J82

**Sicilian:** (Sicilian Oregano) White flowering oregano with a heady, sweet pungent aroma. Has somewhat the flavor of both sweet marjoram and oregano. Excellent for culinary purposes. Edible flowers. Height 18 inches. H94M, 139

*Perilla crispa* - *Petilia frutescens*

*Perilla frutescens* - *Shiso*, *Beefsteak plant*, *Tia to* {PL}. Leaves are eaten in salads or used as a wrapping for beef, pork or fish. Salted leaves are used as a condiment for tofu and as a garnish for tempura. The young cotyledons, called *mejiso*, are eaten with *sashimi* (raw fish). Immature flower-clusters, known as *hojiso*, serve as a garnish for soups and chilled tofu, while older ones are fried. The seeds (*shisonomi*) are preserved in salt or used as a spice in pickles, tempura, *shichimi*, and miso. They can also be sprouted. Source of an essential oil used to flavor candy and sauces. The seed oil is occasionally used for culinary purposes. Eastern Asia, cultivated. HAWKES [Re], LARKCOM 1991, MORTON 1976, SHURTLEFF 1975, SHURTLEFF 1976 [Re], TANAKA, TSUJI [Cul, Re], YASHIRODA; C67M, C95{S}, E56{PD}, E66T{ED}, F85{S}, G20M{PR}, K85

## CULTIVARS {S}

**Bronze:** Typical warm, spicy scent and flavor reminiscent of cinnamon. The leaves are not as deep purple as Aka Shiso. Preferred by some for culinary use. Grows to about 4 feet tall. C43M

**Green:** (Ao Shiso) Bright green leaves with a cinnamon-like scent and a taste reminiscent of ginger. The leaves are milder in flavor than Aka Shiso and are preferred for fresh use in salads and as a garnish. SHURTLEFF 1975, YASHIRODA; A2, C43M, C43M{PL}, D55, F37T{PL}, F80, G33,139, J76, J76{PL}, K49M, L59, N84, R47, S55, etc.

**Green Cumin:** A rare and unique type whose fresh green leaves have the aroma of cumin. Maturing flowering spikes have the typical cinnamon-like aroma of Ao Shiso and Aka Shiso. Excellent for culinary use, both fresh and dried, especially in salsas. D92M, K49T, L7M, L77D

**Hojiso:** Specially bred for the production of flower spikes. Shorter, more compact flower spikes. Usually harvested when about 3 inches long, pulling up the whole plant. Sometimes covered with black plastic in the morning and evening to reduce the daylength to 6 or 7

hours. Uniquely colored leaves—green in front, red in back. LARK-COM 1991; S70

**Kkaennio:** Large-leaved, green Korean strain lacking the typical cinnamon-like aroma and flavor of Japanese types. Very large leaves, 6 or more inches in diameter. Traditionally eaten raw with rice and *kochujang*, cooked with soy sauce and sesame oil as a side dish, fermented into *kimchi*, or wrapped around meat and fried in batter. Erroneously called *sesame leaves*. Available in Korean markets. LEE, F. 1988 [Re], MILLON [Re], NOH [Re]; Q3

**Purple Cumin:** Similar to Green Cumin but with ruffled purple leaves. Excellent aroma and flavor, a combination of cumin and cinnamon. Originated in Japan. D92M

**Red:** (Aka Shiso, Purple, Crispy) Reddish-purple leaves with a strong aroma and flavor. Used for giving a purplish-red color and unique flavor to pickled *ume* plums, ginger root, and the tubers of Chinese artichoke. Also pickled in salt and used as a wrapping for *mochi* in confections. SHURTLEFF 1975, TANAKA, YASHI-RODA; C43M{PL}, D55, E63D, F37T{PL}, F80, G6, G33, H49, J20, J76, J76{PL}, K49M, L7M, L59, R47, etc.

*Perilla nankinensis* - *Perilla frutescens*

*Perovskia atriplicifolia* - *Russian sage* {PL}. The small, lavender flowers are sweet and can be eaten in salads or used as a garnish. Himalayan region. TANAKA; B92, C9, E30, F35M, G96, H51M, H63, I37M, J37M, J76, K22, K85, L22, Q24{S}

*Phlomis armeniaca* - *Silvanok, Silvanoki* {S}. The yellow flower petals are eaten raw as a vegetable or used in the preparation of a tea. Ibrkey. OZTURK; P10

*Phlomis tuberosa* - *Tuberous sage, Bodmon sok* {S}. Roots are eaten cooked by the Kalmyks. Eurasia. HEDRICK 1919; D92M, E7M, M7M{PL}, N84, 053M, Q24

*Plectranthus amboinicus* - *Cuban oregano, Country borage, Spanish thyme, Five seasons herb* {PL}. The fresh leaves have an oregano-like aroma and are cooked with fish or goat's flesh in order to disguise their strong smell. They are also used as a potherb, added to chili paste, or mixed with minced young fruits to form a side-dish for rice. Often used in the preparation of the Vietnamese sour soup known as *earth chua*. In India, they are added to wine and beer. Also steeped for tea. Tropics, cultivated. DEWITT 1993 [Re], HERK-LOTS, MORION 1976, OCHSE, PAINTER, VAN DUONG; A97, C89M, E7, E48, G96, H51M, H94M, 112, J82, L56, L90J, L94M, M82, N42

#### CULTIVARS

**Variegated:** Thick, succulent, very pungent leaves; 2 to 4 inches long. Medium green in color, variegated with white around the edges. Leaves are chopped for use in Puerto Rican and Spanish dishes. E48, G80, G96, /57, J82, L90J, M82, N84

*Plectranthus tuberosus* - *Coleus parviflorus*

*Pogostemon cablin* - *Patchouli, Patchouly* {PL}. Fresh leaves are sometimes used as a seasoning. The dried, cured leaves yield an essential oil that flavors chewing gum, baked goods, and candy. Also used for perfuming a tea made from *Cleistocalyx operculatus*. Tropical Asia. MORTON 1976, TANAKA, VAN DUONG; C43M, E14T{DF}, E48, F35M, F37T, F93G, G84{DF}, H51M, K18M{DF}, K22, L54{DF}, L56, L90J, M53, M82, N42, etc.

*Pogostemon heyneanus* - *Java patchouli, Smooth patchouli* {PL}. The dried herb is used in the preparation of a country spirit. Southern Asia. TANAKA; A26, F37T, G73, G96, 112, J66, K22, K85, L90J, M82, N19M, N84{S}

*Poliomintha incana* - *Rosemary mint* {DF}. Fresh leaves and flowers are eaten off the stem with beans, added to scrambled eggs, boiled, or dipped in salt. The dried herb is used as a flavoring agent. A favorite of the Hopis. Southwestern North America. KIRK, YANOVSKY; N29

*Poliomintha longiflora* - *Mexican oregano* {PL}. The aromatic leaves have a strong oregano-like flavor reminiscent of *Lippia graveolens*. Used as a condiment by the Kickapoo Indians and also a popular oregano in Southwestern cuisine. Mexico. BUCHANAN, HUTSON 1987 [Cul], LATORRE 1977b; C43M, F93G, J66, K22, L90J, M82, N37M, N51

*Prostanthera rotundifolia* - *Australian mint bush* {PL}. The fresh or dried leaves are used for seasoning, having a very strong mint-like aroma and flavor with a pleasant peppery aftertaste. Suitable for both savory and sweet foods such as dressings, sauces, meat dishes, desserts, etc. They also make a good tea. The flowers can be added to fruit jellies or used as a garnish for cakes and desserts. Australia. ROBINS [Re]; C43M, F15M, F32D, F35M, G96, H94M, J66, K85, L90J, L94M, M15T, N79, M82, N84, 032M{DF}, R77, etc.

*Prunella vulgaris* - *Self-heal, All-heal* {PL}. A refreshing beverage can be made by soaking the leaves, either freshly chopped or dried and powdered, in cold water. Young shoots and leaves are eaten raw in salads, cooked with other greens as a potherb, or added to soups and stews. Eurasia, naturalized in North America. KIRK, LAUNERT, YANOVSKY; A2{S}, A97, C43M, C81M, D92M{S}, E81M{S}, F37T, F80{S}, K22, K85, N9M, N9M{S}, N71M{S}, R47{S}

*Pycnanthemum incanum* - *Hoary mountain-mint* {PL}. Fresh or dried leaves are brewed into an aromatic, mint-like tea. North America. GIBBONS 1979, PETERSON, L.; C13T, F32D, I11M, I11M{S}, I37M, K22, L55, M16, M77M, N84{S}

*Pycnanthemum muticum* - *Short-toothed mountain mint* {PL}. The leaves have a pleasant mint-like aroma and flavor and can be used for preparing a refreshing tea. North America. GIBBONS 1979, PETERSON, L.; C81M, F93G, H51M, K22, K57, L56, M16, M72, M82, N19M

*Pycnanthemum pilosum* - *Hairy mountain-mint* {PL}. Fresh or dried leaves are used for tea, having a delicious mint-like flavor. North America. PETERSON, L.; E61, F37T, G80, J39M, J39M{S}, J66, J82, J82{S}, K22, M35, M77M, M82, N84{S}, R53M, S55{S}, etc.

*Pycnanthemum virginianum* - *Virginia mountain-mint* {PL}. Chippewa Indians used the flowers and buds for seasoning meat and broth. The fresh or dried leaves are steeped into a refreshing mint-like tea. Eastern North America. YANOVSKY; B29, E61, G47M{S}, J39M, J39M{S}, J41M, J41M{S}, J42, J42{S}, J43{S}, K22, K85, L56

*Rosmarinus officinalis* - *Rosemary* {PL}. Young shoots and leaves are used as a seasoning for stuffings, soups, sausages, vermouth, sauces, fish, lamb, etc. The flowers have a somewhat milder flavor and are also utilized as a flavoring. They can be candied, preserved, or added to jellies, honey, vinegar, and wine. Fresh or dried leaves and flowers make a good tea, especially when combined with tan§r. Yields particularly fine and delicious honey, including the famous *Narbonne honey* of France. Rosemary honey is also one of the honeys preferred for making *turrone*s, the nougat-like sweetmeats of Spain. Mediterranean region. Dried stems are a popular smoking wood. BRYAN [Cu, Re], CRANE 1975, DE SOUNIN, GRIEVE [Cu], LEGGATT [Re], MACNICOL [Re], MARCIN, MICHAEL [Re], MORION 1976, WALDRON [Re]; C67M, D92M{S}, G84{DF}, G96, H46{DF}, J3{PC}, /57{ES}, J66, J76, J85T{PR}, K2{DF}, K85, L17{DF}, M35, N42, R47{S}, etc.

#### CULTIVARS

**Anaustifolia:** (Pine-Scented Rosemary) Thin, needle-like, light green leaves with a strong scent of pine; attractive dark blue flowers. Upright growing plant; height 2 to 3 feet; very haidy. Although not usually considered a culinary rosemary, it is actually preferred by some gourmet chefs. C9, C43M, C81M, F35M, F37T, F93G, G80, H51M, H94M, J66, J82, K2, K22, L90J, M55, M82, etc.

**Arp:** Thick, dull gray-green leaves, spread apart on the stems. Semi-upright growth\* height 5 feet. Light-blue flowers; dull fragrance. Haidy to -10° F., making it one of the hardiest cultivars

known at the present. Selected in 1972 from a plant growing in Arp, Texas, by Mrs. Madalene Hill. C9, C43M, C81M, F37T, G96, H51M, H94M, J66, K22, K85, M16, M53, M82, N19M, N42, etc.

**Benenden Blue:** Attractive, very thin, glossy dark-green foliage; large sky blue flowers; typical rosemary flavor. Small, dense plant with a semi-cascading habit; height about 2 feet; ideal for growing in containers. A prolific bloomer in winter. Recipient of the Royal Horticultural Society Award of Merit in 1933. Originated near Bonifacio, Corsica. BOWN; E61, F32D, F37T, H78, J66, J82, K85, L90J, M82, N84

**Blue Spire:** (Blue Spears) The new branches are spear-like and upright, arching and twisting downward with age. An interesting beginning for bonsai and topiary. It has a fine flavor, also. Origin unknown. C2, C43M, E61, F37T, K22, K57, K85, L94M, M82, N42

**Gorizia:** Long broad leaves, double the size of common plants, extend from thick, rigidly upright stems. The new growth is creamy; the more mature part of the stem is a reddish brown. Medium-blue flowers in spring and sometimes in late summer. The aroma of the leaves is mild with just a hint of ginger. From Gorizia, a city on the Italian-Slovenian border. C43M, E61, F32D, F37T, J66, K22, L90J, L94M, M35, M82, N42

**Joyce DeBaaio:** (Golden Rain) Medium-sized, pointed leaves, variegated with gold edge and green center. Compact, bushy habit; self-branching. Strong, sharp fragrance and flavor similar to the species, which is considered best for culinary use. Dark-blue flowers, very sparse. Attractive landscape specimen, appearing bright gold from a distance. C43M, E7, E61, F32D, F35M, F93G, G96, H51M, J66, J82, K22, K57, L90J, M53, M82, N42

**Soice Island:** Wider, more numerous leaves than standard rosemary. Very woody, upright-growing plant. Rosemary-blue flowers. The cultivar once used by the Spice Island seasoning company for the production of their dried rosemary. Highly recommended. B41, L90J

**Trailing:** (Creeping, Prostratus) Medium-green, short, narrow leaves; white, arching stems. Height 3 feet; grows rapidly, self-layers. Mild flavor. Excellent ground cover or hanging potted plant. A97, C9, C43M, C67M, C81M, E61, G96, H51M, H94M, J66, K22, K85, M53, M82

**Tuscan Blue:** Tall, vigorous, upright growth, moderate branching even with pinching; height 6 feet. Short, wide, light medium-green leaves, thickly clustered on the stems. The large leaves are ideal for drying in quantity. C43M, E61, F35M, F93G, H94M, J66, K22, K57, K85, L56, L90J, M82

*Salvia apiana* - *White sage* {S}. Seeds are sold as a natural food to be soaked in water overnight and drunk in water, fruit juice, or eaten with cereal. Leaves can be used in cooking. Western North America. WHISTLER, R.; C9M, C95, F37T{PL}, F80, G59M, G60{PL}, I98M, I98M{PL}, I99P{PL}, JO, K15, K22{PL}, K370{DF}, L13, L90J{PL}, N84, 053M, etc.

*Salvia azurea* var. *grandiflora* - *Pitcher sage, Azure sage* {S}. The nutritious seeds are eaten raw, roasted, popped, ground into flour or cooked with other grains. North America. B30IPL}, C9{PL}, E7M, E33{PL}, F44M{PL}, F59, H61M, H63{PL}, H70M, H70M{PL}, 147, J25M, K46T, K49T, L3J, M32, N7M, etc.

*Salvia ballotaeflora* - *Majorano mexicano* {PL}. An infusion of the flowering tops is used as an aromatic tea. Southwestern North America. VON REIS, YANOVSKY; H4

*Salvia calycina* - \**Salvia pomifera*

*Salvia carduacea* - *Thistle sage* {S}. Roasted seeds are ground into flour. Also made into a cooling beverage by the Indians of California. Southwestern North America. DOYLE, UPHOF; I98M, L13, N84

*Salvia clevelandii* - *Cleveland's sage, Blue sage* {PL}. The leaves have a pleasant fragrance and flavor and are a good substitute for common sage in cooking. Western North America. LATHROP; C9, C9M{S}, C43M, C81M, F80{S}, G60, G96, H51M, H94M, I98M, K22, K85, L90J, 053M{S}

#### CULTIVARS

**Aromas:** An improved selection that is very fragrant. Gray-green leaves; lavender flowers. Grows about 5 feet tall. N7J

*Salvia columbariae* - *Golden chia* {S}. The golden tan, nutty seeds were parched, ground into *pinole* and *at ole*, and made into dark-colored cakes and loaves. The Indians also mixed them with com meal when making mush or with ground wheat for gruel. After soaking in water, the seeds make a nourishing addition to pancakes, waffles, cookies, biscuits, honey, candy, and cakes. A refreshing beverage is made by soaking the seeds in water and adding sugar and lemon, lime, or orange juice. The leaves are occasionally used as a sage-like seasoning. The dried seed heads can be brewed into a pleasant tea. Sprouted seeds are eaten in salads and sandwiches. Western North America. ANGIER, CLARKE [Re], DOYLE [Cu, Nu], KIRK, MEDSGER, YANOVSKY; A2, F85, G59M, 116, I98M, JO, K15, L3J, L13, L55J, N7M, N29{DF}, N84

*Salvia dorisiana* - *Fruit-scented sage* {PL}. The strongly aromatic leaves, having a fragrance of mixed fruits, are occasionally used for flavoring salads and salad dressings. Also brewed into a flavorful tea. Central America. BOWN, BUCHANAN; C43M, F15M, F32D, F35M, G96, H29M, J66, J76, J82, K22, K85, M15T, M35, M82, N42, etc.

*Salvia elegans* -> *Salvia rutilans*

*Salvia fruticosa* - *Greek sage* {PL}. Leaves are used as a spice or as an adulterant of common sage, *S. officinalis*. Although somewhat inferior in quality, it is easier to grow indoors. In Cyprus, they are brewed into a tea known as *chanomilia*. Also mixed with the leaves of *S. pomifera* to make *faskomilo* tea. Sold locally in tavernas. Eastern Mediterranean region. BOWN GRAY, P., KUNKEL, MORTON 1976, NIEBUHR; C82, E61, F37T, F86G, H94M, J57{ES}, J66, J82, K22, K57, K85, L90J, M82, N42, P92

*Salvia gesneriflora* - *Grapefruit sage* {PL}. The large red, tubular flowers are excellent eaten out of hand. They are sweet, melting and filled with nectar. Ideal for garnishing or adding to salads. Mexico. K22, K85, L13, L90J

#### CULTIVARS

**Tequila:** Stunning, bright red flowers with black calyces, slightly larger than the common form; sweet, abundant nectar. Broad, fuzzy leaves. N7J

*Salvia glutinosa* - *Hardy sage, Yellow sage, Jupiter's distaff* {S}. In Holland, the aromatic leaves are used to give flavor to country wines. Eastern Mediterranean region. GRIEVE; A61{PL}, C43M{PL}, D92M, E61{PL}, I77M{PL}, N84, 053M, Q24

*Salvia hians* - *Amara, Ape* {S}. The fruity pith of the stem has a sweet taste and is eaten by children in Nepal. The flowers are sucked for the sweet nectar that accumulates in the tube. Himalayan region. POHLE; A61, A61{PL}, D92M, I77M{PL}, L66{PL}, N84, Q24

*Salvia hispanica* - *Mexican chia* {S}. When soaked in water, the seeds form a gelatinous mass which is flavored with lemon juice and cinammon and consumed as a cooling drink known as *agua de chia* in Mexico. The gelled seeds can also be prepared as a gruel or pudding. Sprouted seeds are eaten in salads, sandwiches, soups, stews, etc. Due to their mucilaginous properties, they are sprouted on clay or other porous materials, and clay animals or *chia pets* are sold commercially for this purpose. The seeds are ground into meal and made into breads, biscuits, muffins, and cakes. They also yield an oil recommended as a nutritional oil due to its high content of linoleic and alpha-linolenic acids. Central America, cultivated. ALTSCHEUL, DOYLE, ERASMUS [Nu], WHISTLER, R.; C43M, C43M{PL}, E56{DF}, F71M, F68T, F80, F97M{DF}, I16{DF},

J25M, K18M{DF}, L94M, N84, R47. (see also Sprouting Seeds, page 524)

*Salvia horminum* -> *Salvia viridis*

*Salvia indica* - {S}. Cultivated in India for its leaves, which are added to country beer to which they impart a fresh, pleasant aroma and taste. Tropical Asia. HEDRICK 1919; N84

*Salvia lavandulifolia* - *Spanish sage, Lavender sage* {PL}. Source of an essential oil used commercially to flavor ice cream, candy, baked goods, chewing gum, soft drinks, and alcoholic beverages. Also used as an adulterant of common sage. Southwestern Europe. MORTON 1976; B28, C43M, K22, K79, K85, M15T, M82, 053M{S}

*Salvia mellifera* - *Black sage, Button sage* {S}. The aromatic leaves can be brewed into a tea. Early settlers in California used them to season sausage, poultry, and meat stuffings. Also the principal source of *sage honey*, a heavy-bodied, light-colored honey with a delicious, delicate flavor and a tendency not to crystallize. Western North America. CLARKE, PELLET; B54M{PD}, C9M, C43M{PL}, F37T{PL}, G60{PL}, H80M{PD}, H94M{PL}, I98M, I98M{PL}, JO, K15, L13, L90J{PL}, M82{PL}, N84, etc.

*Salvia moorcroftiana* - *Moorcroft's salvia* {S}. The peeled stalks are occasionally eaten. Himalayan region. WATT; C43M{PL}, I77M{PL}, L90J{PL}, L91M, 046, Q40

*Salvia officinalis* - *Common sage, Broadleaf sage* {PL}. The herb is widely utilized as a seasoning for meats, fowl, stuffings, soups, stews, sausages, sauces, butter, sage-milk, etc. Young leaves and flowers are eaten raw, boiled, pickled, or in bread and butter sandwiches. Fresh or dried leaves are steeped into an aromatic tea. The flowers can be sprinkled on salads to add color and fragrance. Sage extract and oil are used commercially to flavor ice cream, candy, baked goods, etc. *Sage Derby* cheese, a marbled cheese, is flavored with moistened ground sage leaves. American Sage cheese, usually made from cheddar, uses sage extract for flavoring. The dried stems are used for smoking turkey and other foods. Mediterranean region, cultivated. BRYAN [Cul, Re], GRIEVE, HEDRICK 1919, LARKCOM 1984, LEGGATT [Re], MACNICOL [Re], MARCIN, MICHAEL [Re], MORTON 1976, ROBINSON, R. 1995, TANAKA, UPHOF, WALTER; A97, C67M, D92M{S}, E63K{PD}, F42M{FD}, F80{S}, G84{DF}, H46{DF}, J3{PD}, J66, K22, K66{S}, K85, M35, M53, N19M, N84{S}, etc.

#### CULTIVARS

**Beraarten:** (Giant German) The largest-leaved culinary sage. Similar to Holt's Mammoth but with larger grey-blue silvery leaves and a robust, low growth habit. Grows to 18 to 24 inches tall. Excellent flavor for culinary use. Originally from the Royal Gardens in Hanover, Germany. A97, B28, C2, C9, C43M, E7, E48, E61, F93G, H94M, I49M, J82, K22, L22, L90J, L94M, M35, M82, etc.

**Dwarf:** (Dwarf Sage, Nana, Compacta) Smaller leaves than common garden sage. Compact, low-growing habit; height 12 inches, spreads to 2 feet across. Bright-blue flowers. Makes a good border, rock garden, or container plant. C9, C43M, C67M, G96, H94M, I39, J82, K22, K85, L90J, M35, M82, N42

**Golden:** (Golden Sage, Aurea) Leaves brilliantly colored chartreuse-yellow with a few dark-green areas around the veins. Compact, dense growth habit, height 18 inches. Attractive border plant. Hardy to 10° F. Also a good culinary herb. C67M, F32D, F35M, G96, H51M, H94M, J66, J76, J82, K22, K85, M35, M53, N42

**Holt's Mammoth:** (Mammoth Sage, Giant) Very large, rounded leaves borne well above the soil, keeping them clean. Strong flavor; quality very good. Vigorous growth, to 3 feet tall and 3 feet in diameter. Heavy producer. Excellent for culinary use and good for drying in quantity. Rarely flowers and never runs to seed. Introduced prior to 1888. ANONYMOUS 1888; E61, F35M, I39, J66, J82, K22, K85, M82

**Purple:** (Purple Sage, Purpurea) Aromatic, deep red-purple, strap-like foliage; retains its color throughout the growing season. Compact, bushy growth habit, height 18 inches. Ornamental but also has a good flavor and can be used like common sage in cooking. A97, C9, C43M, C67M, E61, G96, H51M, H94M, J66, J82, K22, K85, L90J, M35, N19M, etc.

**Town of Bath:** Similar to garden sage in growth habit and with the same uses; however, has the added attraction of attractive lavender pink flowers. Adapted to full sun or partial shade. Hardy in Zones 3 to 9. N42

**Tricolor:** (Tricolor Sage; Variegated Sage) Leaves are brightly variegated in cream, purple-red, and pink. Grows to 2 feet tall. Hardy to 10° F. Very ornamental but also has the flavor of common sage and can be used as a culinary seasoning. Flowers irregularly and sometimes reverts to purple sage. C9, C67M, E61, G96, H51M, H94M, J66, J76, J82, K22, K85, L90J, M35, M53, N19M, etc.

*Salvia pitched* - \**Salvia azurea van grandiflora*

*Salvia polystachya* - *Salvia apiana*

*Salvia pomifera* - *Apple sage* {PL}. *Sage apples*, semi-transparent galls caused by the sting of an insect are collected from the branches and made into a kind of sweetmeat or conserve, which is regarded by the Greeks as a great delicacy. The leaves have a strong odor and flavor resembling lavender and common sage and are used as an adulterant of the latter. An infusion of the herb is used as a tea in some parts of Greece. Eastern Mediterranean region. GRIEVE, MORTON 1976, UPHOF; M82

*Salvia pratensis* - *Meadow sage, Meadow clary* {S}. The pungent, bitter-flavored herb was formerly used for flavoring beer and wine. It also serves as an adulterant of the common sage. Europe. KUNKEL, MORTON 1976; D11T{PL}, D92M, E61{PL}, L66{PL}, L91M, L94M, M15T{PL}, M82{PL}, N71M, N84, 053M

*Salvia rutilans* - *Pineapple sage* {PL}. The herb has a distinct pineapple-like fragrance and flavor and is added to fruit salads, desserts, and cold drinks. Fresh or dried leaves can be used as a mild-flavored substitute for common sage in cooking. The flowers are eaten in salads, having an excellent sweet, fruity flavor. An infusion of the leaves is used as a substitute for tea. Cultivated. BARASH [Re], GESSERT, LATHROP, MORTON 1976; A97, C9, C67M, G96, H94M, J66, J76, K22, K85, M35, M53, N19M, N42, N84{S}

#### CULTIVARS

**Dwarf:** (Gracilis) Small, compact form of pineapple sage. Good for flower borders and also makes a very good potted plant. Bright-red flowers. Tender to hard frosts. J66, M82

**Freda Dixon:** (Peach Pineapple Sage) Same growth habit and usage as pineapple sage, but with salmon-colored flowers instead of the typical bright red. Produces masses of flowers from September to November. C2, C43M, E61, K22, K57, M82, N7J, N42

**Honeydew:** (Honeydew Melon Sage) Oval leaves with a strong aroma of honeydew melons. Intense deep-red flowers. Similar to pineapple sage in growth habit and usage, but flowers over a much longer period. Height 24 to 30 inches. C43M, E61, F32D, F35M, F37T, J57, J76, K22, K85, L90J, M15T, M82, N42

*Salvia sclarea* - *Clary sage, Gaiden clary* {PL}. Young, tender leaves are dipped in cream, fried and eaten with sugar-and-orange sauce, or dipped in egg batter and fried as fritters. Finely chopped leaves are cooked in soups and omelettes. They are added to *Rhine* wine to impart a muscatel taste, and also flavor *vermouth*, beer, ale and liqueurs. The ornamental flowers have a pleasant taste and can be sprinkled on a tossed salad. Euiasia. GRAY, P. [Cul, Re], GRIEVE [Cu], HEDRICK 1919, LARKCOM 1984, LATHROP, MACNICOL [Re], MORION 1976, PAINTER [Re], UPHOF; A97, C67M, D92M{S}, F80{S}, H51M, J58{DF}, K22, K85, L90J, N19M, N42, N84{S}, 053M{S}



## CULTIVARS {S}

**Turkestanica:** (Turkish Clary, Vatican Clary) Similar to clary sage in appearance and usage except for the pinkish stems, larger white flowers that are tinged with pink, and the light bracts, often almost white. Blooms over an extended period during the summer. A61, A61{PL}, C43M{PL}, D92M, F80, I77M{PL}, J24{PL}, J76{PL}, L91M, M82{PL}, N84, 053M

*Salvia tiliaefolia* - *Lindenleaf sage, Tarahumara chia* {S}. Seeds are sold in the markets of Mexico for making a drink, which is sometimes mixed with barley water. They are roasted, ground and added to water, forming a gel. Central America. UPHOF; C43M, C43M{PL}, C95, F80, 116, K23{PL}, K46T, K49T, L3J, L77D, L94M, N84, 053M

*Salvia triloba* - *Salvia fruticosa*

*Salvia verbenaca* - *Vervain sage, Wild English clary* {S}. Young leaves are eaten fried, candied, or cooked in omelettes. The flowers are used for flavoring salads. Macaronesia to Southwest Asia. KUNKEL; C95, E61{PL}, K85{PL}, M82{PL}, N84, 053M, S55

*Salvia viridis* - *Joseph sage, Bluebeard sage, Annual clary, English clary, Painted sage* {S}. In England, the leaves were once added to salads, soups, and cooked greens. The seeds are eaten fried with honey and are also used as a condiment. Source of an essential oil used for flavoring certain wines and beers. Mediterranean region to Southwest Asia. GESSERT, GRIEVE, HEDRICK 1919, MORTON 1976, UPHOF; C53, D92M, F24D, 139, J82, M15T{PL}, M82{PL}, N84, Q34, S55

*Satureja biflora* - *Lemon savory, African savory* {PL}. The leaves are used as a flavoring for chicken, baked fish and other foods, having an intense lemon-like aroma and flavor. Also brewed into a tea. Southern Africa. F35M, /57, J76, J82{S}, L94M{S}, M82, N84{S}

*Satureja calamintha* -> *Calamintha sylvatica*

*Satureja douglasii* - *Yerba buena, Oregon tea* {PL}. The dried leaves steeped in water make a palatable tea. American Indians rolled the leafy stems into a ball and dried them for later use. Western North America. KIRK, MEDSGER, MORTON 1976; C43M, D95, E61, G60, G96, H51M, J82, L90J, L94M, M82, N84

*Satureja hortensis* - *Summer savory* {S}. Fresh leaves and shoots are used as a garnish in salads, and are rubbed on meat before cooking. They are often used in cooking to cut the odor of cabbage and turnips. Dried leaves and flowering tops are widely used for flavoring bean dishes, soups, stews, stuffings, cakes, puddings, and sausages. The leaves can be harvested before the plant blooms and brewed into a tea with a tangy, marjoram-like flavor. Eurasia, cultivated. BARASH [Re], GRIEVE [Cu], HEDRICK 1919, MARCIN, MORTON 1976, REILLY, ROOT 1980b [Cu]; A7{DF}, A97{PL}, C3, C81M{PL}, F35M{PL}, F80, G84{DF}, G93M, H46{DF}, 191, J20, J66{PL}, K22, R47

## CULTIVARS

**Aromata:** New improved type with a more intense aroma and a spicier flavor. Dark green leaves also have a higher essential oil content, up to 4%. Sturdier, shorter plant than regular summer savory, more uniform, longer lasting. Developed for commercial sausage making in Eastern Germany. G6, J82, K57{PL}, K66, M82{PL}, N84

*Satureja montana* - *Winter savory, Mountain savory* {PL}. Leaves and flowering tops are used for seasoning soups, salads, sauces, fish, stuffings, egg dishes; poultry, meats, vegetables, olives, etc. Has a stronger, sharper flavor than summer savory. Fresh or dried leaves are steeped for tea. Said to be a source of the famous *Hymettus honey* of Greece. Mediterranean region. BARASH [Re], CRANE 1975, GRIEVE, LATHROP, MARCIN, MICHAEL [Re], MORTON 1976, ROOT 1980b [Cu]; A7{DF}, A97, C67M, D92M{S}, H46{DF}, I77M, J66, J76, K22, K85, M35, M53, N19M, N19M{DF}, R47{S}

## CULTIVARS

**Adamovica:** (Yugoslavian Winter Savory) Very hairy, low shrub; height 12 to 18 inches. Superior flavor. Profuse, pinkish-white flowers. An excellent border plant. Originated in the mountains of the former Yugoslavia. C9, K22, K85, L90J, M82

**Creeping:** (Dwarf, Trailing, Nana, Repanda) Prostrate form making a mound of twisted branches; minute bright-green leaves; white flowers. Height 3 to 4 inches. Attractive in rock gardens and hanging baskets. Strong flavor similar to winter savory. Same usage as other savories. C9, E61, F32D, 139, J66, J82, K22, K85, L56, L90J, L94M{S}, M82

**Lemon:** (Lemon Savory, Citriodora) Small, spreading plant, grows to about 6 inches tall. Has a distinctive lemon savory flavor that adds a piquancy to foods. Should be cut back after flowering. Suitable for growing in a rock garden. N84, R53M

**Purple Mountain:** (Purpurea) An attractive^ compact form of savory; height 9 inches. Small, green leaves with a similar but sweeter flavor and aroma than the common winter savory. Can be used in all savory bean dishes. Showy heads of bright purple flowers in late summer provide an attractive garnish for foods. N84, R53M

*Satureja thymbra* - *Thryba, Barrel sweetener, Za'atar rumi, Roman hyssop* {PL}. The leaves are used as a seasoning for brine-cured olives, grilled meat, meat ragouts, and vegetables. A strong infusion of the herb is used in the fall to clean wine-barrels in preparation for the new vintage. In Crete, thryba is principally used as tea for pleasure and refreshment. It is said to be one of the best-tasting of all the herbal teas. Eastern Mediterranean region. GRIEVE, NIEBUHR, WHALLON; H94M, J76, K22, K85, M82, N84

*Satureja viminea* - *Costa Rican mint bush, Jamaican mint bush, Shrubby savory* {PL}. The small, bright-green leaves have a strong pennyroyal-like fragrance and flavor and can be used for tea or seasoning. Shrub-like perennial. West Indies. BURR, HEDRICK 1919; C43M, E61, F32D, F35M, F37T, H94M, 112, J66, J82, K22, K85, L90J, L94M, M82, N84, etc.

*Satureja vulgaris* -> *Clinopodium vulgare*

*Scutellaria baicalensis* - *Soksokeun-phul, Baikal skullcap* {S}. Young leaves are eaten as a boiled vegetable, while the whole plant is dried and used as a substitute for tea. Central Asia. TANAKA; D26G, D40G, E61{PL}, F68T, F86G, G68, J82, J82{PL}, L91M, L90J{PL}, L94M, N84, Q24, R47

*Sideritis syriaca* - *Mountain tea, Tsai, Tsailopita* {S}. Leaves and flowering tops are brewed into an excellent, golden-colored, aromatic tea. Sold in local markets and at ethnic stores in New York and other large cities. Mediterranean region. A7M{DF}, E81M, J82, J82{PL}, L91M, N84, Q24

*Solenostemon rotundifolius* - *Hausapotato, Fra-frapotato* {PL}. The tubers are eaten like potatoes, either cooked or raw. In Thailand, they are boiled and eaten with coconut meat, cooked in hot and sour soup, or added to *kaeng tai pla*—a curry made with fermented fish offal. Leaves are also edible. Tropical Africa, cultivated. DALZIEL, DANFORTH, FCK, F., HERKLOTS, JACQUAT, MARTIN 1975; W90, X56, Y40

*Stachys affinis* -> *Stachys sieboldii*

*Stachys annua* - *Woundwort* {S}. The flowers are the source of a very light amber honey with soft, fine granulation. Eurasia. CRANE 1975; D92M, N84

*Stachys lavandulifolia* - *Woundwort, Daggayi* {S}. In Turkey, the herb is used in the preparation of a tea. Eurasia. OZTURK; P10

*Stachys officinalis* - *Betony, Bishop's wort* {PL}. An infusion of the leaves and flowering tops makes a refreshing, aromatic beverage. Europe. MACNICOL, MARCIN, MICHAEL [Re], MORTON 1976, PAINTER; C43M, C67M, C95{S}, D92M{S},

F80{S}, H51M, J82, K85, L90J, M82, N84{S}, R47{S}

*Stachys palustris* - *Marsh woundwort* {S}. The crisp, white tubers are eaten raw, roasted, boiled, or dried and made into bead. Young shoots are cooked and eaten like asparagus. Northern temperate region. FERNALD, GRIEVE, HEDRICK 1919, KIRK; B28{PL}, C74{PL}, N3M{PL}, N71M, N84, 048

*Stachys sieboldii* - *Chinese artichoke, Crosnes, Chorogi* {PL}. The crisp, white tubers have a nutty, artichoke-like flavor and are eaten raw, fried, roasted, steamed, boiled, or pickled. In Japan, they are pickled like *ume* plums in a mixture of salt and red beefsteak leaves (Ferilla). Tubers quickly discolor when exposed to the air, and are said to lose their flavor when peeled. Eastern Asia, cultivated. HAWKES [Re], HEDRICK 1919, HERKLOTS [Cu], LARKCOM 1984 [Re], ORGAN [Cu], TANAKA, UPHOF, VERGfi [Re], YASHIRODA; C43M, C82, E61, F73D, H24, H25M{PR}, 174, J5M, J82, K49M, M16, N84, R49, R53M

*Teucrium chamaedrys* - *Wall germander* {PL}. Tinctures and extracts of the flowering tops are used commercially for flavoring bitter tonic wines and vermouth. Eurasia. BREMNESS, BURDOCK; B28, B92, C9, C43M, D11T, D92M{S}, E61, F37T, F93G, G89M, 139, 177M, L56, L90J, L22, M35, M82, etc.

*Teucrium polium* - *Ja'adah* {S}. The plant is mixed with boiled water and sugar to form a refreshing beverage. Also used as a spice. Mediterranean region, Southwest Asia. BAILEY, C., KUNKEL; E61{PL}, H94M{PL}, J93T, N84, 053M, Q24

*Teucrium scordonia* - *Wood germander, Sage-leaved germander* {PL}. A strong infusion of the bitter leaves and flowers, called *ambroise*, is used in France and the Channel Islands as a substitute for hops in flavoring ale. Europe. GRIEVE, HEDRICK 1919, MORTON 1976; C43M, D95, E61, F35M, F80{S}, H51M, J76, M82, N42, N71M{S}, 053M{S}, Q24{S}, R53M, R53M{S}, S55{S}, etc.

*Thymbra spicata* - *Za'atar hommar, Donkey hyssop* {PL}. Occasionally used as a condiment in salads and other dishes. The flavor of its essential oils is similar to those of *Origanum syriacum*, *Thymus capitatus*, and *Satureja thymbra*. In Turkey, the fresh leaves and flowering shoots are added to *herbal cheese*. Eastern Mediterranean region. FLEISHER, NIEBUHR, OZTURK, WOLFERT 1994a [Re]; M82

#### *Thymus azoricus* - *Thymus caespititius*

*Thymus caespititius* - *Azores thyme, Cretan thyme* {PL}. The fresh leaves have a tangerine-like scent and are used for flavoring custards. They are also used as a substitute for lemon thyme, or in combination with it. Macaronesia, Mediterranean region. MORTON 1976; C43M, F32D, H29M, K22, K85, L94M, M82, N42, N84{S}, R53M

#### CULTIVARS

**Celery:** (Celery Thyme) Lew, compact grower that forms small mounds of growth, about 3 inches tall. Narrow, very small, light green leaves that have a celery-like aroma. Light pink flowers. Half hardy. F15M, L56

**Tuffet:** Forms attractive, compact cushions of light green, aromatic leaves. Pinkish flowers are produced in late summer. Excellent in rock gardens. Adapted to growing in Zone 7. C2, E61

*Thymus capitatus* - *Conehead thyme, Za'atarfarsi, Persian hyssop* {PL}. Considered the strongest of all thymes, the leaves are used as a condiment for roasts and grills, and also make an excellent tisane. Source of the *pickled thyme* sometimes available in Middle Eastern stores. Also the source of an essential oil, called *Spanish origanum oil*, employed in the food industry for flavoring baked goods, condiments, meats, beverages, ice cream, and candy. The flowers produce the famous *Hymettus honey* of Greece. Mediterranean region. FLEISHER, GRAY, P. [Cul, Re], MORTON 1976, NIEBUHR, UPHOF; A7M{PD}, C43M, H94M, K22, K85, M82, N54{PD}, N84{S}, 053M{S}

*Thymus x citriodorus* (T. pulegioides x T. vulgaris) - *Lemon thyme* {DF}. The strongly lemon-scented leaves are used as a seasoning for salads, soups, sauces, fish, poultry, cheese, desserts, beverages, etc. An infusion of the leaves makes a very refreshing tea. GESSERT, MORTON 1976, VILMORIN; A97{PL}, E13G{PR}, E14T, F37T, H41, K2, K18M, K85{PL}, L90J, M82, N19M. (for cultivars see Thyme, page 553)

*Thymus herba-barona* - *Caraway thyme* {PL}. The herb has a fragrance reminiscent of caraway seeds and is an excellent seasoning for soups, vegetables, poultry, etc. It was once used to rub the baron of beef, before it was roasted, and came to be called *herbe baronne*. Mediterranean region. GESSERT, GRIEVE, LATHROP; A97, C81M, G96, H94M, J66, J82, K22, K85, L90J, M35, M53, N19M, N19M{DF}

#### CULTIVARS

**Lemon:** (Lemon Caraway Thyme) Small arching, creeping plant, grows to about 3 inches tall. The foliage is exotically flavored and scented with lemon and caraway. Attractive mauve flowers. Relatively drought tolerant. C2, K22, L94M, M82, N84, R53M

**Nutmeg:** (Nutmeg Thyme) Very low, creeping growth habit; height 4 inches. A rapid grower. Blooms a week later than caraway thyme with deeper pink flowers in late summer. Pronounced fragrance somewhat reminiscent of nutmeg. Same culinary use as caraway thyme. Excellent for paths between stepping stones. C43M, C67M, F37T, J76, J82, K22, K85, L56, M53, M82, N42

*Thymus mastichina* - *Mastic thyme, Spanish marjoram* {S}. Leaves are used for seasoning. Also the source of a distilled oil, called *oil of wild marjoram*, used extensively for flavoring meat sauces and soups. Mediterranean region. GRIEVE, MORTON 1976, UPHOF; C43M{PL}, N42{PL}, N84, 053M

*Thymus praecox* ssp. *arcticus* - *Mother-of-thyme, Wild thyme, Creeping thyme, Serpolet* {PL}. The herb is employed as a seasoning for salads, sauces, stews, seafood dishes, vinegar, stuffings, pickles, etc. In Iceland, it is used to give an agreeable flavor to sour milk. In Switzerland, it is rubbed over a goat's milk cream cheese, called *banon*, to which it imparts flavor. Dried flowers are steeped for tea. Also the source of an essential oil that flavors *Benedictine*. Eurasia. FOX, H., GIBBONS 1979, HEDRICK 1919, MORTON 1976, NIEBUHR; A97, C43M, C67M, D92M{S}, F37T, F80{S}, F85J{PD}, J76, K22, K54{PD}, K85, M53, N19M, N84{S}, 053M{S}, R47{S}, etc.

#### CULTIVARS

**Britannicus:** (Woolly Stemmed Sweet) Forms a fuzzy, gray-green mat; height 6 to 8 inches. Has an appealing scent of lemon, mint and thyme. Very hardy. Good for teas and culinary use. Also good as a ground cover and for gray gardens. E61, F32D, H94M, K22, K85

**Mint:** Hybrid of creeping Red-Flowered thyme developed by Sandy Mush Herb Nursery of North Carolina. Blooms one week later. Fuzzy, medium green leaves; delicate mint aroma. Grows to 2 inches tall. K22

**Red-Flowered:** (Creeping Red, Crimson, Coccineus) Forms dark-green mats of foliage; height 1 to 2 inches. Flowers profusely in early summer, with star-like scarlet flowers. Blooms later than mother-of-thyme. Withstands heat well. C9, C43M, E61, 139, J66, J76, K22, K85, L94M, M35, M82, N19M, R53M

*Thymus pulegioides* - *Greater wild thyme, Creeping thyme* {PL}. The leaves of some cultivars can be used for flavoring. Europe. C43M, D92M{S}, E61, K79, M82, N84{S}, 053M{S}, Q24{S}, R53M. (for cultivars see Thyme, page 553)

*Thymus quinquecostatum* - *Japanese thyme, Ibuki-jako-so* {PL}. Source of an essential oil used for flavoring. Central to Eastern Asia. TANAKA; C43M, E61, L94M, M82

#### *Thymus serpyllum* - *Thymus praecox* ssp. *arcticus*

*Thymus vulgaris* - *Thyme* {PD}. Leaves and flowering tops, both fresh and dried, are widely used for flavoring stuffings, fish, meat,

cheese, vinegar, gravies, sausages, etc. Also an essential ingredient in the spice mixtures *bouquet garni* and *herbes de Provence*. In Spain, they are added to the brine in which olives are pickled. An infusion of the herb is the basis for a Catalan soup called *sopa de farigola*, that also contains eggs and bread soaked in olive oil. The fresh or dried leaves can be brewed into a pungent, spicy tea. One of the sources for the famous *Hymettus honey* of Greece, a strongly aromatic, golden amber honey that is rich in enzymes. Dried stems can be added to the fire when grilling foods. Young shoots are used as a garnish. Mediterranean region, cultivated. BARASH [Re], BRYAN [Cul, Re], CRANE 1975, GRAY, P. [Cul], GRIEVE [Cu], HERBST, S., LEGGATT [Re], MACNICOL [Re], MARCIN, MORTON 1976, ROOT 1980b [Cul], WALDRON [Re]; A7M, A97{PL}, C94M, H41, J3, J11M, M53, N54. (for cultivars see Thyme, page 553)

*Thymus zygis* - *Sauce thyme* {S}. Leaves are used as a condiment. Southwestern Europe. BROUK, GRIEVE; N84{PL}, 053M

*Ziziphora seravschanica* - {PL}. In the Pamir Mountains, the aromatic foliage is used for making a tea. Central Asia. A61

#### LARDIZABALACEAE

*Akebia quinata* - *Akebi* {PL}. The somewhat sweet fruits are eaten raw with lemon juice or pureed and made into a cream or a drink. Soft young shoots are used in salads or for salt pickling. The bitter skin of the fruit is fried and eaten. Leaves are used as a tea substitute. Japan, cultivated. FERNALD, HEDRICK 1919, JOHNS, KAJIURA, SIMMONS 1972 [Cu], TANAKA; C9, C36, D37, E87, G66{S}, H4, I37M, J61M, M16, M77, N84{S}, R78{S}

##### CULTIVARS {GR}

#1: Sausage-shaped fruit, 3 to 4 inches long; white, fleshy pulp with jet black seeds. Semi-evergreen vine; fragrant deep-purple flowers. Plant with #2 for best production of fruits. 146, I49M, I66T, 174

#2: Sausage-shaped fruit, 3 to 4 inches long; pulpy, white flesh with jet black seeds. Semi-evergreen vine; fragrant light pink to white flowers. Plant with #1 for best production of fruits. 146, I49M, I66T, 174

*Akebia trifoliata* - *Mitsuba-akebi* {S}. Pulp of the fruit is white, fleshy, somewhat sweet, and is eaten out of hand or made into refreshments. Valued for the novel sausage-like shape and deep purple color. The dried, young leaves are used for tea. Japan. KAJIURA, SIMMONS 1972 [Cu], TANAKA, UPHOF; D37{PL}, D95{PL}, F85, G66, H4{PL}, K63G, N61, N84, 053M, 093, R78

#### *Decaisneafargesii* - *Holboellia fargesii*

*Holboellia coriacea* - *Sausage vine* {PL}. The fruit is purple, about 2 inches long and 1 inch wide. The pulp is white with jet black seeds. It is edible but the taste is generally considered to be insipid. China. SIMMONS 1972, TANAKA; D95, E87, I49M, I49P, I66T, N37M

*Holboellia faigesii* - *Wu-yieh-ku-t'eng* {PL}. The fruits are edible, having a sweetish white juicy pulp. They are of interest for their startling metallic-blue color. China. TANAKA; A79M{S}, B96, D37, D95, E63, E87, I49M, 174, J61M, K38{S}, K63G{S}, NO, N73, N84{S}, 053M{S}, etc.

*Holboellia latifolia* - *Domyem* {S}. Fruits are purple, sausage-shaped, with many black seeds contained in the white pulp. The taste is rather insipid, however in the Himalayas it is considered very palatable. Usually eaten out of hand but with experimentation other suitable ways of using it may be found. Himalayan region. HEDRICK 1919, SIMMONS 1972 [Cu]; F85, I74{PL}, Q40

*Lardizabala biternata* - *Aquiboquil*, *Zabala fruit* {S}. The fruits are somewhat sweet and are much appreciated in Chile where they are collected and sold in the local markets. Considered a novelty because of the sausage-like, deep purple fruits. Chile. Peru. HEDRICK 1919, SIMMONS 1972 [Cu]; D95{PL}, N84, 053M

*Stauntonia hexaphylla* - *Japanese stauntonia*, *Mube* {PL}. The purple, walnut-shaped fruits have white pulp with a sweet, honey-like flavor. They are eaten out of hand or made into refreshments. Highly esteemed in Japan. China to Japan. KAJIURA, SIMMONS 1972 [Cu], UPHOF; A93M, D95, I74, NO, N37M, N51, 053M{S}

#### LAURACEAE

*Aniba rosaedora* - *Rosewood-oil tree* {PD}. The wood yields an essential oil, known as rosewood oil or *bois de rose oil*, used commercially for flavoring baked goods, candy, frozen dairy desserts, gelatin, chewing gum, etc. Amazonian region. BURDOCK, LEUNG, MORTON 1976; E14T, GO, L34

*Beilschmiedia anay* - *Anay* {S}. Small, pear-shaped fruits that are eaten out of hand. They have yellow flesh that is high in oil and has a rich flavor. Central America, Northern South America. DUKE, WILLIAMS, L.; F85

#### *Benzoïn aestivate* - *Undera benzoïn*

*Cinnamomum aromaticum* - *Cassia*, *Chinese cinnamon* {DF}. The bark, and an essential oil derived therefrom, are used to flavor curries, confectionery, beverages, baked goods, chewing gum, and condiments. Immature fruits, or *cassia buds*, are used for flavoring breads, cakes, chocolate and pickles. China. COST 1988 [Cul], KUNKEL, MORTON 1976, NORMAN, UPHOF; A7, A49D, E14T, G66{S}, I83M{PL}, L16{DE}, N84{S}

*Cinnamomum burmannii* - *Batavia cinnamon*, *Korintje cinnamon*, *Indonesian cassia* {DF}. The dried bark, taken from the trunk, is the source of an important spice much used in the Netherlands and the United States. Cultivated in Java and Sumatra. Indonesia. MORTON 1976, UPHOF; A49D, D92M{S}, E14T, F37T, F85{S}, I74{PL}, K18M, L16, L17, L34, N84

*Cinnamomum camphora* - *Camphor tree* {S}. Young shoots and leaves are boiled and eaten. In India, edible crystalline camphor, known as *kacha karpoo*, is added in very small quantities as flavoring for milk puddings and confections—especially in Bengal and Orissa. *Camphor smoked duck*, a popular Chinese dish, is flavored with camphor wood smoke—along with smoke from tea leaves, tangerine peel and other spices. Source of an essential oil that flavors commercial baked goods, candy, non-alcoholic beverages, etc. Also an ingredient of *Swedish bitters*, a famous tonic formula. Southern Asia. ACHAYA, BURDOCK, DEVI, LEE, G. [Re], LIN [Re], ORTIZ 1992, PASSMORE [Re], TANAKA, TREBEN; A41M, C9M, D56M, F37T{PL}, F68T, G66, I74, J82{PL}, K38, K63G, M82{PL}, N40M, 053M, P5, P38, Q12, Q46, etc.

#### *Cinnamomum cassia* - *Cinnamomum aromaticum*

*Cinnamomum biers* - *Wild cinnamon* {S}. The aromatic bark and leaves are used for seasoning, especially in curries. An essential oil, distilled from the leaves, is used to flavor candy and sweetmeats. Tropical Asia. MORTON 1976, TANAKA; F85, N84

*Cinnamomum japonicum* - *Yabu-nikkei*, *Shan-kuei* {PL}. The bark is used as a substitute for cinnamon and cassia in flavoring foods. Fruits are collected and used as a substitute for cacao beans. Seed oil may be used in food. Eastern Asia. TANAKA; E87

*Cinnamomum loureiri* - *Saigon cassia*, *Saigon cinnamon*, *Baker's cinnamon* {DF}. The bark is very high in essential oil, has a sweet, rich pungent flavor, and is much esteemed in China and Japan. Considered superior to Ceylon cinnamon for seasoning cinnamon toast, apple pie, and other foods. Often regarded as the best cinnamon in the world. Unripe fruits are dried and sold as *cassia buds*. Southeast Asia. HEDRICK 1919, MORTON 1976, UPHOF, WOLFERT 1973; A49D, K27T, L16

*Cinnamomum tamala* - *Indian cassia*, *Tejpat*, *Indian bay* {DF}. The aromatic leaves are dried and used as a flavoring in Indian cooking, especially in Bengal and Orissa. They are often fried briefly first, releasing a strong, woody flavor then added to dishes such as pilafs, *shukta* and *charchari*. In Kashmir, they serve as a

substitute for *paan* (betel leaves). Tejpatt leaves are the *malabathrum* that was exported to Rome in classical times. The bark, known as *Indian cassia lignea* is commonly used to adulterate Ceylon cinnamon. India. ACHAYA, ATAL, DEVI [Re], HEDRICK 1919, MEHTA [Re], MORTON 1976; F74

*Cinnamomum zeylanicum* - *Cinnamon*, *Ceylon cinnamon*, *Canela* {PL}. The bark is commonly used to flavor curries, buns, rolls, apple butter, puddings, beverages, etc. Essential oils from the bark and leaves are similarly used. Cinnamon leaves are one of the ingredients used for flavoring  *jerked pork* in Jamaica, where they are also used in place of cinnamon bark in puddings and hominy dishes. *Cinnamon sugar*, a fragrant mixture of cinnamon and white sugar, is a popular topping for French toast and cappuccino. The preferred cinnamon in Europe and Mexico. Southern Asia, cultivated. BENGHIAT [Cul, Re], MORTON 1976, UPHOF; A7{DF}, A7{EE}, A79M{S}, C34G{DF}, D92M{S}, E29, F85{S}, I77G, I83M, L16{DF}, L17{DF}, L34{DF}, M17, M82, N84{S}, etc.

*Laurus nobilis* - *Sweet bay*, *Laurel* {PL}. Fresh or dried leaves are widely used for flavoring soups, stews, stuffings, tomato sauces, gravies, poultry, etc. The dried fruits and the leaf oil are also used for flavoring. In Ancient Rome, bay bark was one of the spices added to *mustacei*, predecessor of the modern day *mostaccioli* biscuits. The berries are distilled to make a liqueur called *floravanti*. In Corfu, the leaves are wrapped around *sikopsoma*, a flattened cake of dried, spiced figs. Dried leaves are brewed into an herbal tea. The wood is used as an aromatic smoke flavoring. Mediterranean region, cultivated. BIANCHINI, BREMNESS, BRYAN [Cu, Re], CHATTO, GIACOSA [Re], MARCIN, MORTON 1976; A97, C9M{S}, C67M, D92M{S}, H4, I77M, I83M, K22, K63G{S}, K67, K85, N19M, N40{PR}\ 053M{S}, R47{S}, etc.

*Lindera benzoin* - *Spice bush*, *Wild allspice* {PL}. Young leaves, twigs, and fruits contain an aromatic oil and make a very fragrant tea. The twigs are best gathered when in flower as the nectar adds considerably to the flavor. Dried and powdered fruits can be used as a substitute for allspice. The new bark is pleasant to chew. Eastern North America. FERNALD, GIBBONS 1979, HALL [Pre, Re]; B9M, B68, C95{S}, H4, H49, H70M, K63G{S}, M69M, M92, N7T, N9M, N9M{S}, N37M

*Lindera communis* - *Ta-hsiang-yieh-tzu-shu* {S}. Leaves are occasionally used as a condiment. In China, the dried powdered leaves and twigs are added to rice bouillon for flavor. Eastern Asia. TANAKA; M7M

*Lindera glauca* - *Yama-kalbashi*, *Shan-hu-shu* {S}. The fruits are used as a substitute for pepper. Powdered leaves are mixed into noodles and dumplings. Eastern Asia. TANAKA; F85, G66

*Lindera obtusiloba* - *Dankdbai*, *Shui-luo-po* {S}. Young buds and leaves are used as a tea substitute, called *jaku-zetsu-cha*. Young leaves are fried and served as a Buddhist ceremonial dish. Eastern Asia. TANAKA; D92M, D95{PL}, E63{PL}, E87{PL}, G66, H4, K38, K63G, M77M{PL}, N37M{PL}, 053M, P5

*Litsea cubeba* - *Mountain pepper*, *May-chang* {S}. Scented young fruits are used as a substitute for cubeb pepper in flavoring goat's meat and fish. The fragrant flowers are eaten or used to flavor tea. Roots are cooked with pork. All parts of the plant have a pleasant lemon-like aroma. Tropical Asia. ALTSCHUL, MORTON 1976, UPHOF; U71M, Y76

*Litsea garciae* - *Engkala*, *Pengalaban*, *Pepe babae* {S}. The fruit is eaten raw or cooked. It has thin, bright pink edible skin and creamy white flesh that is similar to avocado, but softer and with a more delicate flavor. Before eating, it is rolled or bruised briefly, as one would a lemon or pomegranate. Indonesia, Philippines. TANKARD, TINGGAL, VON REIS; 019

*Litsea glaucescens* - *Mexican laurel*, *Laurel de especia* {DF}. The aromatic leaves are used as a bay-like seasoning, especially in soups, stews and pickles. Also brewed into a tea, known as *te de laurel*. Dried leaves are commonly found in large markets of Guatemala.

Mexico, Central America. ALTSCHUL, QUINTANA 1994 [Re], VON REIS, WILLIAMS, L.; 116

*Litsea thunbergii* - *Tabu-no-ki* {PL}. Dried leaves are ground into a flour, mixed with wheat flour to make cakes and used as a substitute for rice cakes. The fruit is made into a steamed dumpling called *saji-mochi*. Eastern Asia. TANAKA; F85{S}, H4, H78, N37M, N51

#### *Machilus thunbergii* - *Litsea thunbergii*

*Persea americana* - *Avocado* {S}. Buttery fruits are much eaten in salads, soups, *guacamole*, sandwiches, spreads, ice cream, with tortillas, seasoned with salt, pepper, sugar and lime juice, made into wine, etc. In Bali, the fruits are added to sugar and water to form a popular iced drink known as *es apokat*, and are mixed with other fruits, chipped ice, and brilliant red sugar syrup in the dessert called *es campur*. The flesh is the source of avocado oil, a mild, pleasant tasting oil used in salad dressings and with strong-flavored greens such as chicory, watercress and arugula. A tea made from the leaves is commonly sweetened with sugar cane juice: Toasted leaves are used to season stews and bean dishes. The soaked leaves are occasionally used as smoke flavorings in Mexican barbecues. Tiiy, unpollinated fruits are marketed as *cocktail avocados*. Source of a dark-colored, heavy-bodied honey. Central America, cultivated. CRANE 1975, CUSUMANO [Cul], DUKE, EISEMAN, GIBBONS 1967, MORTON 1987a [Cu], ORTIZ 1973 [Re], POPENOE, W. 1920 [Cu, Pro], QUINTANA 1994, RICHARDSON, M. [Re], THOMSON 1983 [Cu, Pro], UPHOF, VON WELANETZ; B23P{PR}, B54M{PD}, B60M{PR}, C34G{DE}, D7{ffi}, E13G{PD}, E29{PL}, F32D{ffi}, F85, G66, I64M{ffi}, L34{PD}, N40{PR}, N84, P38, etc. (for cultivars see Avocado, page 292 and Rootstocks, page 510)

*Persea borbonia* - *Red bay*, *Tisswood* {PL}. Fresh or dried leaves are used to flavor soup, especially crab gumbo, stews, meats, stuffings, poultry, and other Creole dishes. The flavor and quality are comparable to *Laurus nobilis*. Also made into a tea. Southern North America. MEDSGER [Pre], MORTON 1977, UPHOF; B96, F73, H4, K63G{S}, M77M, N37M

*Persea schiedeana* - *Coy6 avocado*, *Cojou*, *Chucte*, *Chinini* {S}. The fruits are eaten in salads. Quality is variable from seedling trees. The best fruits are quite large, the brownish pulp free from fibers or nearly so, and the flavor a very appealing combination of avocado and coconut. Central America. MORTON 1987a, SIMMONS 1972, WILLIAMS, L.; F85

#### *Persea thunbergii* - *Litsea thunbergii*

*Sassafras albidum* - *Sassafras* {PL}. The roots are added to maple sap and brewed into a pleasant tea. Strong tea can be made into jelly. Young leaves are used in salads or dried and powdered to form *filet powder*, used in Creole cooking for thickening soups, stews, chowders, and gravies. A condiment is prepared by boiling the dried root bark with sugar and water until it forms a thick paste. Young buds are eaten. *Sassafras* wood is combined with that of hickory for smoking Southern dry-cured, country hams. North America. ANGIER, BISSELL, FERNALD, GIBBONS 1962 [Pre, Re], HEDRICK 1919, MILLER, J.; A82, B9M, B52, C17M{Pm}, C81M, C94M{ED}, D97{ED}, E38M{DE}, E97M{PD}, H4, H49, J3{m}, J66M{DE}, K63G{S}, K89, L36M{EC}, M69M, M82M{DF}, N37M, etc.

#### *Sassafras variifottum* - *Sassafras albidum*

*Umbellularia californica* - *California bay*, *California laurel*, *California nutmeg* {PL}. The leaves are used for flavoring soups, stews, and meat dishes. They are packaged commercially in San Francisco and sold as a sweet bay substitute. The flavor is much stronger. Nuts are parched and eaten or ground into flour for bread. Bark of the root is sometimes used as a coffee substitute: Western North America. CLARKE, CREASY 1982, KIRK, YANOVSKY; B74, C9M{S}, D95, E87, G59M{S}, G60, H41{ED}, I83M, J61M, L17{DF}, NO

## LECYTHIDACEAE

*Bertholletia excelsa* - *Brazil nut*, *Para nut* {DF}. Seeds are eaten raw, roasted, salted or used in ice cream, baked goods and confections. They are sometimes grated with the stilt roots of *Socratea* palms, forming a savory white mash called *leite de castanha*, that is stirred into cassava flour. Also the source of an oil, Brazil nut oil, suitable for culinary purposes Venezuela-Brazil. MENNINGER, ROSENGARTEN [Re], SMITH, N., UPHOF; G5M{PD}, 166{ED}, L14G{PD}, L56M{DE}, M63M

*Grias cauliflora* - *Anchovy pear* {S}. The fruits are pear-shaped, russet-brown, and are eaten raw, or when unripe are pickled like the mango, which they resemble in taste. Caribbean region. HEDRICK 1919, MACMILLAN; X88M

*Gustavia superba* - *Chupo*, *Membrillo* {S}. Eaten raw or cooked, the pulp of the fruit is also used like grease to cook rice. Panama. DUKE; N84

*Lecythis pisonis* - *Sapucaí nut* {S}. The oily seeds are similar to the Brazil nut in size and shape. They are eaten raw and are considered quite delicious. When fresh they are soft, not crisp like the cashew nut. Brazil. ALTSCHUL, MENNINGER; N84

## LEMNACEAE

*Lenina minor* - *Lesser duckweed* {PL}. Occasionally used as a vegetable. Somewhat harsh in taste compared to *Wolffia* because of a high oxalic content, but still considered far superior to *Chlorella* algae. Widespread. LANDOLT, MARTIN 1975; C7M, E13, H30, I90M, J7M, K34, M15, M39, M73M, N84, P38

*Wolffia globosa* - *Khai-nam*, *Mijinko-uki-kusa* {PL}. A floating, aquatic plant that is used as a vegetable in Burma, Laos, and northern Thailand. The taste is excellent, a little like sweet cabbage. Cultivated in ponds and sold in local markets. Recommended for mass culture because of its rapid multiplication and high nutrient content. Contains 20% protein, 44% carbohydrate, 5% fat, vitamins C, A, B<sub>6</sub>, B<sub>2</sub>, and nicotinic acid. One of the smallest flowering plants on earth. Kai-nam means "eggs of the water". Often cited as *Wolffia arrhiza*. Widespread. HILLS, C. 1978, LANDOLT, NATIONAL RESEARCH COUNCIL 1976, ZEVEN; F85

## LENTIBULARIACEAE

*Pinguicula vulgaris* - *Butterwort*, *Thickening grass* {S}. A Scandinavian cultured milk called *taemjolk* or *langfil*, a type of *ropy milk*, was prepared by pouring milk over a strainer on which fresh leaves of butterwort had been laid. The milk was apparently left for a day or two until it soured, the butterwort providing lactic acid and a degree of "ropy" thickening. The resultant product was a mildly acidic milk with a pleasing consistency and a delicious taste that had a shelf life of several weeks at ambient temperatures. A small portion could have been saved to inoculate another batch of milk. Northern temperate region. FERNALD, GUNDA, KURMANN, ROBINSON, R. 1995; N84, 042, R88

## LEONTICACEAE

*Bongardia chrysogonum* - *Chrysogomum* {PL}. The roots are roasted or boiled and used as food in Iran. Leaves are eaten in the same manner as sorrel. Southwestern Asia. HEDRICK 1919; N84

## LEPTOSPERMACEAE

*Astartea fascicularis* - *Dainty astartea* {S}. The leaves are used as a tea substitute. Australia. TANAKA; M7M{PL}, N79M, N84, 033, P17M, Q32, R15M, R33M, S92

*Backhousia anisata* - *Aniseed myrtle* {DF}. The leaves are a popular flavoring in Australian bushfoods cuisine. They have a mild anise-like flavor with a sweet aftertaste. Fresh leaves can be used whole like bay leaves in flavored vinegars and oils. Dried ground leaves flavor meats, seafood, cheeses, breads, teas, etc. Also the source of an essential oil that is especially good for flavoring ice

cream. Australia. ROBINS; N79{PL}, N79{PR}, N79{DF}, 032M, 032M{PD}

*Backhousia citriodora* - *Lemon myrtle*, *Sweet verbena tree* {S}. Leaves, flowers and seeds are used as seasoning, having an intense, extremely pleasant flavor reminiscent of lemon verbena. They also make an excellent tea. Also the source of an essential oil. Widely planted for the gourmet bushfood industries. Australia. ROBINS [Cul, Re], TANAKA; B76M{DF}, N79{PL}, N79{PR}, N79{DF}, N79{PD}, N79M, 032M{DF}, 032M{ED}

*Backhousia myrtifolia* - *Cinnamon myrtle* {S}. The leaves can be used for seasoning, having a flavor and aroma reminiscent of cinnamon or nutmeg. Will tolerate somewhat cooler temperatures than the other *Backhousia* species. Australia. ROBINS; N79{PL}, N79M, N84, P17M

*Baeckea virgata* - *Twiggy heath myrtle* {S}. Leaves are used as a tea substitute. It produces a pleasant drink with a good aroma similar to that of *Leptospermum*. Australia. CRIBB; F85, N79M, N84, 033, 093, P5, P17M, Q32, R15M, R33M, S92

*Eucalyptus albens* - *White box* {S}. The flowers are the source of an almost water-white honey of excellent flavor and rapid fine granulation. A major source of honey in New South Wales. Australia. CLEMSON, CRANE 1975; N79M, N84, 093, P5, P17M, Q32, R15M, S92

*Eucalyptus caleyi* - *Caley's ironbark* {S}. A major source of honey in New South Wales. The honey is exceptionally clear, has an excellent flavor, and is one of the lightest in color of all honeys. It granulates rapidly to produce a white candy with an extremely fine grain. Much in demand for producing premium quality packs of candied honey, and is also one of the best honeys for exhibition and trade purposes. Australia. CLEMSON, CRANE 1984; N79M, N84, 094, R15M, R33M

*Eucalyptus calophylla* - *Marri* {S}. Produces a light amber honey of excellent flavor that granulates slowly. One of the most dependable honey sources in Western Australia. Also the source of a delicious, high protein (28%), varietal bee pollen eaten as a nutritional food supplement. Australia. CRANE 1975; B2{ED}, C9M, H71, N79M, N84, 033, 093, P5, P17M, Q32, Q41, R15M, R33M, S92

*Eucalyptus citriodora* - *Lemon-scented gum* {S}. Produces a sweet, manna-like substance that is scraped off the leaves and eaten. Australia. DONKIN; C9M, C43M{PL}, C81M{PL}, D92M, E61{PL}, F80, G66, J76{PL}, K85{PL}, L91M, M82{PL}, N84, 053M, 094, R33M, etc.

*Eucalyptus crebra* - *Narrow-leaved red ironbark* {S}. A major producer of honey in New South Wales, although yields may be sporadic in some areas. The honey is of excellent quality, light in color, of good density, and has a pleasant, mild, sweet flavor. Australia. CLEMSON; N79M, N84, 093, 094, P5, P17M, Q32, R15M, S92

*Eucalyptus diversicolor* - *Karri gum* {S}. The tree produces large quantities of an extra light amber honey with a mild, characteristic flavor and of the finest quality. The honey granulates readily but fairly coarsely. Australia. CRANE 1975; C9M, N79M, N84, 033, 093, P5, P17M, Q32, R15M, R33M, S92

*Eucalyptus dives* - *Native peppermint*, *Broad-leaved peppermint* {S}. Fresh or dried leaves are a popular bushfoods seasoning, having a very strong peppermint-like aroma and flavor with hints of eucalyptus. Also the source of an essential oil used for flavoring sauces, dressings, desserts, dairy foods, etc. The dried leaves make a refreshing tea. Australia. ROBINS; N79{DF}, N79M, N84, 032M{DF}, 032M{PD}, P5, P17M, Q32, R15M, R33M, S92

*Eucalyptus dumosa* - *Congoo mallee*, *Water mallee* {S}. Produces a sweet, manna-like substance called eucalyptus manna or *lepp*, prepared into a delicious drink. The bark of young roots is baked and eaten. It is said to be rather sweet, resembling the taste of

malt. Australia. CRIBB, DONKIN, UPHOF; N79M, N84, 033, P5, P17M, Q32, R15M

*Eucalyptus eximia* - *Yellow bloodwood* {S}. The plant produces a sweet, manna-like substance. Australia. DONKIN; F85, N79M, N84, P5, P17M, Q32, R15M, R33M, S92

*Eucalyptus globulus* - *Blue gum* {S}. An essential oil, distilled from the fresh or dried leaves, is used to flavor candies, baked goods, ice cream, and liqueurs. Australia. MORTON 1976, TANAKA; C9M, C43M{PL}, D92M, E81M, F80, G66, K38, K85{PL}, ^{PD}, M82{PL}, N84, 053M, Q12, S92

*Eucalyptus gummifera* - *Red bloodwood* {S}. The flowers produce copious amounts of nectar which the natives sucked directly, or mixed with water to make a sweet drink called *bool*. Australia. CRIBB; N79M, N84, P5, P17M, Q32, R15M, R33M, S92

*Eucalyptus gunnii* - *Cider gum, Cider tree* {S}. A sugary sap that exudes from the trunk can be drunk directly or left to ferment into a sort of hard cider. Also the source of an edible manna. Australia. CRIBB, DONKIN, TANAKA; A41M, C9M, D95{PL}, E87{PL}, G66, H4{PL}, L91M, M16M{PL}, N79M, N84, 053M, 093, P5, Q32, R15M, R33M, R47, etc.

*Eucalyptus intermedia* - *Pink bloodwood* {S}. The copious nectar produced by the flowers can be sucked, or mixed with water to form a sweet drink. Australia. CRIBB; N79M, N84, 094, P17M, R15M

*Eucalyptus intertexta* - *Gum-barked coolibah, Western red box* {S}. The seeds were ground and used as food by the Aborigines. Produces and extremely light-colored honey with very good density and flavor. Australia. CLEMSON, UPHOF; N79M, N84, 094, P17M, R15M, S92

*Eucalyptus leucocylon* - *Yellow gum* {S}. Source of an essential oil used to flavor certain candies, baked goods and ice cream. Australia. MORTON 1976, ZEVEN; C9M, F80, H71, N79M, N84, 033, 093, P5, P17M, Q15G, Q32, R15M, R33M, S92

*Eucalyptus macrorhyncha* - *Red stringybark* {S}. Yields a clear, highly colored honey-bright amber with a reddish tint—and a strong but pleasant flavor. It blends well with milder honeys, especially yellow box honey, with which it frequently occurs as a natural blend. Australia. CLEMSON; N79M, N84, 093, P5, P17M, Q32, R15M, S92

*Eucalyptus maculata* - *Spotted gum* {S}. The plant is the source of a sweet, manna-like substance called eucalyptus manna or *lerp*. Australia. DONKIN; A41M, C9M, H71, N79M, N84, 033, 093, 094, P5, P17M, Q32, Q46, R15M, R33M, S92, etc.

*Eucalyptus mannifera* - *Manna gum* {S}. An exudation that forms on the leaves and twigs, called manna or *lerp* is used as food. Whitish, sugary deposits left on the leaf surface by evaporation of this exudate are generally termed manna. The exudate is produced by insects feeding on the leaves and in some cases contains a considerable concentration of sugar extracted from the plant. Australia. CRIBB, DONKIN; B94, N79M, N84, 093, P5, P17M, Q32, R15M, S92

*Eucalyptus marginata* - *Jarrah* {S}. The flowers yield a dense honey with a distinctive, slightly frothy quality. When produced near coastal areas, it has a pleasant nutty flavor. Also the source of a very tasty, high protein (22%), varietal bee pollen occasionally available at natural food stores. Australia. CRANE 1975; B2{PD}, I43T{m}> N79M, N84, 033, 093, Q32, R15M, R33M, S92

*Eucalyptus melliodora* - *Yellow box* {S}. Flowers are the source of a choice extra light amber honey of good density and sweet, cloying flavor. It is very slow to granulate when free of other honeys. Reportedly the most prolific honey producing plant in the world. Australia. CLEMSON, CRANE 1975; C9M, D92M, E61{PL}, F37T{PL}, H71, J76{PL}, J82, J82{PL}, M82{PL}, 033, 093, P5, P17M, Q32, R15M, etc.

*Eucalyptus microtheca* - *Coolibah* {S}. Source of a sweet, manna-like substance known as *lerp* in Australia. The powdered seeds are made into cakes which are baked and eaten. Sap from the roots is a well-known source of emergency water. Produces a light-colored honey with excellent density and flavor. Australia. CLEMSON, CRIBB, O'CONNELL; A67M{ED}, B94, C9M, F53M{PL}, H71, J86{PL}, N79M, N84, 033, 093, P5, P17M, Q32, Q41, Q46, R15M, S92, etc.

*Eucalyptus ochrophloia* - *Napinyah* {S}. One of the major honey producers in New South Wales. The honey is light in color, and has excellent flavor and density. It granulates very rapidly. Australia. CLEMSON; N79M, N84, R15M

*Eucalyptus pachyphylla* - *Red-bud mallee, Intjinya* {S}. The nectar from the flowers can be sipped directly, or mixed with water to make a sweet beverage. Australia. O'CONNELL; N79M, N84, 033, 093, P5, P17M, Q46, R15M, S92

*Eucalyptus paniculata* - *Grey ironbark* {S}. The flowers are the source of a light colored, medium honey with a pleasant aroma and excellent flavor. One of the most prolific honey yielders, comparable with *E. melliodora*. Australia. CLEMSON, CRANE 1975; G66, N79M, N84, P5, P17M, Q32, Q46, R15M, S92

*Eucalyptus papuana* - *Ghost gum, Ulimpa* {S}. A type of honey dew or manna is collected from under the bark and eaten. Australia. O'CONNELL; C9M, H71, N79M, N84, 033, 093, 094, P5, P17M, Q32, Q41, R15M, R33M, S92

*Eucalyptus polybractea* - *Blue mallee* {S}. The essential oil derived from the leaves is used as a flavoring in certain candies, baked goods, and ice cream. Australia. MORTON 1976; N79M, N84, P5, R15M

*Eucalyptus pulverulenta* - *Silver-leaved mountain gum* {S}. A sweet, manna-like substance that forms on the leaves and twigs is collected and eaten. It sometimes falls in such large amounts that a tree appears to be raining. Australia. CRIBB, DONKIN; B94, C9M, D95{PL}, E53M, F80, H71, N84, 053M, 093, P5, P17M, Q32, R15M, R33M, S92, etc.

*Eucalyptus radiata* - *White-top peppermint* {S}. Said to be the source of a nutritious, saccharine substance called eucalyptus manna or *lerp*. Australia. DONKIN; C9M, E61{PL}, J82, M82{PL}, N79M, N84, 033, 053M, 093, P5, P17M, Q32, R15M, S55, S92, etc.

*Eucalyptus resinifera* - *Kino eucalyptus, Red mahogany* {S}. The sap is the source of a saccharine drink. Also produces an edible manna. Australia. DONKIN, KUNKEL; C9M, G66, N84, 094, P5, P17M, Q32, Q46, R15M, R33M, S92

*Eucalyptus rubida* - *Candlebark gum* {S}. Source of an edible manna-like substance. It is said that one tree can produce up to twenty pounds. Australia. CRIBB, DONKIN; B94, M7M{PL}, N79M, N84, 053M, 093, P5, P17M, Q32, Q41, R15M, R33M, S92

*Eucalyptus sideroxylon* - *Red ironbark, Mugga ironbark* {S}. Produces a light amber, mild-flavored honey that granulates readily to form a fine-grained white candy. Often blended with other honeys. One of the most reliable sources of honey in Australia. Australia. CLEMSON, CRANE 1975; B94, C9M, F80, H71, N79M, N84, 033, 093, P5, P17M, Q32, R15M, R33M, S92

*Eucalyptus smithii* - *Gully gum* {S}. One of the principal producers of Eucalyptus oil, an essential oil distilled from the fresh or dried leaves. It is highly aromatic, pungent, bitterish, and is used to flavor certain candies, baked goods, and ice cream. Australia. MORTON 1976; C9M, G66, N79M, N84, 093, P5, P17M, Q32, R33M, S92

*Eucalyptus tereticornis* - *Forest red gum* {S}. Said to produce a nutritious, saccharine substance that falls from the leaves like manna. Australia. DONKIN; C9M, G66, H71, N84, 094, P5, P17M, Q12, Q15G, Q32, Q46, R15M, R33M, S92

*Eucalyptus terminalis* - *Kutcha bloodwood* {S}. An edible manna, procured from the leaves and young branches is eaten by the natives of northern Queensland. Australia. CRIBB, DONKIN, HEDRICK 1919; N79M, N84, P17M, Q46, R15M, S92

*Eucalyptus viminalis* - *Ribbon eucalyptus*, *Manna gum* {S}. Produces a white, manna-like exudate of a very pleasant, sweet taste, much esteemed by the Aborigines of Australia. They collected it after it fell to the ground or scraped it from the leaves. Heavily covered leaves were pounded and baked. Australia. CRIBB, DONKIN, UPHOF; B94, C9M, F80, 7/77, 7S{PL}, M16M{PL}, N84, 033, 053M, 093, P5, P17M, Q15G, R15M, R33M, S92, etc.

*Eucalyptus viridis* - *Green mallee* {S}. A major honey producer in New South Wales. The honey is of choice quality, light in color, of good density, and has a pleasant flavor. It is much sought after by packers. Australia. CLEMSON; C9M, N79M, N84, 093, P5, P17M, R15M, S92

*Eucalyptus wandoo* - *Wandoo* {S}. Source of a high quality amber to light amber honey of good density and mild flavor. Granulates to a medium grain, and light creamy color. Also the source of a delicious, high-protein (26%), varietal bee pollen eaten as a snack, added to cereal and yogurt, or used as a food supplement. Western Australia. CRANE 1975, CRANE 1984; B2{PD}, N79M, N84, 033, P5, P17M, Q32, R15M, R33M, S92

*Kunzea pomifera* - *Muntries*, *Munthari*, *Native apple* {S}. The fleshy capsules are gathered by the natives of sandy desert areas and eaten out of hand, dried, or used for jams, preserves, and tarts. They have a delicious flavor reminiscent of apples and raisins. Also excellent for chutneys, pickles, relishes, sauces and muffins. Becoming popular with bushfood chefs and restaurants. Australia. CRIBB, ROBINS [Cul, Re], TANAKA; N79{PL}, N79{PR}, N79{PD}, N84, 032M{PD}

#### CULTIVARS {SC}

**Rivoli Bav:** Vigorous, evergreen, prostrate or creeping shrub; 1 1/2 to 10 feet wide. Selected for its heavy crops of large (to 15 mm), brightly colored (dark-pink), flavorsome berries. Ripens in the summer. In hot dry climates, partially shaded conditions have a beneficial effect on fruit size and flavor. Begins fruiting in about 2 years. N79

*Leptospermum coriaceum* - *Green tea-tree* {S}. The flowers produce copious nectar that can be sucked directly, or added to water to make a sweet beverage. Australia. DONKIN; N79M, N84, R15M, S92

*Leptospermum flavescens* - *Yellow tea-tree*, *Tantoon tea-tree* {S}. Leaves are used as a tea substitute. Australia. CRIBB, UPHOF; F85, N79M, 093, P5, P17M, Q32, R15M, R33M

*Leptospermum liversidgei* - *Swamp may* {S}. The leaves can be used as a substitute for tea. Australia. BEAN, W.; M7M{PL}, N79M, N84, 093, 094, P5, Q52, R15M, R33M

*Leptospermum petersonii* - *Lemon tea-tree* {S}. Leaves are used to brew a strongly aromatic tea. A few leaves added to the pot when making Chinese tea produces a refreshing variation. Australia. CRIBB; D92M, F85, 183M{PL}, M82{PL}, N79M, N84, P17M, R15M, R33M, R47

*Leptospermum scoparium* - *Manuka*, *Broom tea-tree* {S}. Fresh, pungent leaves are used to produce an aromatic, very agreeable tea substitute. Manna is reported to form on the leaves. Source of a light amber, thixotropic honey with a distinctive flavor best obtained from comb honey. Australia and New Zealand. CRANE 1975, CRIBB, DONKIN, HEDRICK 1919, UPHOF; C3M{PD}, F80, F85, G5M{PD}, M82{PL}, M84{PD}, N79M, N84, 093, P5, P17M, Q32, R15M, R33M, S43M, etc.

*Lophostemon confertus* - *Brush box* {S}. The flowers yield an aromatic light amber honey with excellent flavor. It is of choice quality and granulates quickly to form a haidish white candy. Australia. CLEMSON, CRANE 1975; F80, G66, K63G, N79M, 033,

053M, 093, 094, P5, P17M, P38, Q32, R15M, R33M, S92, etc.

*Melaleuca leucadendron* - *Cajuput-oil tree*, *Paperbark tree* {S}. The fruits and leaves are used for tea. Also the source of an essential oil that flavors candy, baked goods, condiments, relishes, beverages, etc. Australia. ATAL, KUNKEL, LEUNG, TANAKA; H71, 76S{PL}, L34{FD}, N79M, N84, 033, 094, P5, P17M, Q32, R15M, R33M, S92

*Melaleuca preissiana* - *Freshwater paperbark* {S}. The soft, papery bark can be used as a wrapping when steaming or roasting foods such as fish, meats, poultry and vegetables. Makes an appealing presentation when foods are lifted and served within the earthy, multicolored bark. Produces a high quality paperbark for the bushfoods industry. Australia. N79{PL}, N79{DF}, N79M, N84, P5, R15M, S92

*Melaleuca quinquenervia* - *Broad-leaved paperbark* {S}. The bark was traditionally used for wrapping fish and large animals when cooking over outdoor fires. Produces a high quality paperbark for the native bushfoods industry. The blossoms and leaves can be used to make a tasty tea. Australia. CHERIKOFF; N79{PL}, N79{DF}, N79M, N84, 032M{DF}, 033, 093, 094, P5, P17M, Q32, R15M, R33M, S92

*Metrosideros excelsa* - *New Zealand Christmas tree*, *Pohutukawa* {S}. The flowers are the source of a highly valued, gourmet honey that is water-white in color and has a unique salty flavor. It granulates coarsely in a few days. New Zealand. CRANE 1975; G66, H71, 78{PL}, 76E{PL}, N79M, N84, 053M, 093, P5, P17M, Q32, Q41, R88, S92

*Metrosideros polymorpha* - *Ohia lehua* {PD}. Yields a particularly high grade honey with a unique, spicy flavor and a creamy consistency that is perfect for spreading. Hawaii. PELLETT; H15T, H80M

*Metrosideros tomentosa* - \**Metrosideros excelsa*

*Metrosideros umbellata* - *Rata* {PD}. The flowers are the source of a water-white honey with a delicate, distinctive flavor and fine, silky granulation. New Zealand. CRANE 1975; C3M, H15T, N84{S}

*Tristania conferta* - *Lophostemon confertus*

#### LILIACEAE

*Aloe arborescens* - *Candelabra aloe* {S}. The flowers are sucked for their sweet nectar. Southern Africa. KUNKEL; H4{PL}, I28{PL}, N84, Q38, R88, S28M, T25M

*Aloe barbadensis* - *Aloe vera* {PL}. The mucilaginous gel of the leaves is sometimes used as an ingredient of commercial juices and jellies. Aloe vera juice is a popular supplemental beverage among those following a natural foods diet. It is occasionally mixed with fruit juices or herbal extracts. Aloe extracts add a bitter flavor to commercial beverages and candy. Also one of the ingredients of *Swedish bitters*, a famous tonic formula developed by Dr. Samst, a Swedish physician and popularized by Maria Treben. Seeds are also eaten. Cultivated. LEUNG, TANAKA, TREBEN; B84, C43M, C67M, D87D{PD}, E13G{PR}, E31{ED}, E61, F35M, G18, G47C{PD}, H52, I19M{PD}, 157, J66, J82{PD}, K22, M75M{PD}, N7D{PD}, N19M, etc.

*Aloe ferox* - *Cape aloe* {S}. Flowers are sucked for their sweet nectar. Leaves are soaked and cooked as a vegetable or preserved in syrup flavored with ginger, lemon juice, and the very young shoots of fig trees. South Africa. FCX, E, TATE [Re]; AOM{PL}, A69, H52{PL}, I28{PL}, N84, Q38, Q41, R88, S28M, T25M

*Aloe greatheadii* - {S}. The flowers buds are considered a delicacy, but should be boiled in three changes of water before use. They are often flavored with dried leaves of cowpea and pumpkin. Tropical Africa. KUNKEL, TREDGOLD; AOM{PL}, N84, Q41, R88

*Aloe littoralis* - {S}. Flowers are used as a spinach-like potherb. The juicy leaves are said to be tasty both raw or boiled. Southwest Africa. FOX, E; A69, H52{PL}, N84, Q41, R88, S28M

*Aloe marlothii* - *Mountain aloe* {S}. The flowers are sucked for their sweet nectar. Southern Africa. FOX, F.; A0M{PL}, A69, B84{PL}, F85, G91M{PL}, H52{PL}, N84, Q38, Q41, R88, S28M, T25M

*Aloe vera* - *Aloe barbadensis*

*Aloe zebrina* - {PL}. Flowers and flower buds are eaten. In Angola, the flowers are boiled, pressed, and made into cakes. The sweet nectar of the flowers is consumed. The juicy leaves are used as a masticatory. Southern Africa. FOX, E, REYNOLDS, G.; AOM, B84, H52, N84{S}

*Arthropodium milleflorum* - *Pale vanilla-lily* {S}. The slender white tubers are eaten, and are considered an excellent substitute for potatoes. Australia. CHERIKOFF, CRIBB; R15M

*Asphodeline lutea* - *Asphodel*, *Jacob's rod* {S}. The ancient Greeks and Romans roasted the roots like potatoes and ate them with salt and oil, or mashed them with figs. The flowers are eaten, and are said to have a delicious, sweet flavor. Mediterranean region. HEDRICK 1919; A51M{PL}, A61, A61{PL}, B28{PL}, D11T{PL}, F80, N84, 053M, Q24, R49{PL}

*Calochortus gunnisonii* - *Gunnison mariposa* {S}. Fresh bulbs are eaten raw with salt and taste like a raw potato. When fried or baked they have a crisp nut-like texture and a pleasing flavor. Dried, they are pounded into a flour for making porridge or mush. Flower buds are eaten raw in salads. The seeds are ground and eaten. Western North America. HARRINGTON, H., KINDSCHER, UPHOF; L13, N84

*Calochortus nuttallii* - *Nuttall's mariposa-lily*, *Sego lily* {S}. The bulbs are excellent eaten raw, boiled or fried. Their flavor is greatly improved by steaming them in fire pits, or by roasting them over a smoky fire. Flowers and flower buds make a tasty addition to a tossed salad. The whole plant can be used as a potherb. Seeds are ground into meal. Western North America. CLARKE, GIBBONS 1979 [Pre], KIRK, MEDSGER; D35G, D82, 147, J25M, L13, N84

*Camassia esculenta* - \**Camassia leichtlinii*

*Camassia leichtlinii* - *Leichtlin's camass*, *Wild hyacinth* {S}. The bulbs are eaten raw, boiled, baked in pits, fried, used in pies, or dried for future use. They were boiled down to a molasses which was used on festival occasions by various Indian tribes. North America. CLARKE, HEDRICK 1919, KINDSCHER; A2, B0{PL}, C95, E15, E33M{PL}, F88M, G47M, H70M{PL}, J39M, 053M, 093, Q24

*Camassia quamash* - *Quamash*, *Blue camass* {S}. Bulbs are eaten raw, boiled, baked, fried, or used in camass pie. The Indian method of steaming and roasting in pits produces brown or blackish bulbs that are rich in sugar content. They were sometimes boiled down to a syrup, or pounded into cakes which could be sun-dried for future use. Western North America. GIBBONS 1979, HARRINGTON, H., HART, MEDSGER; A2, E15, E33{PL}, F44, F80, H37M{PL}, 147, 174{PL}, 053M, Q24, R47

*Camassia scilloides* - \**Camassia leichtlinii*

*Chlorogalum pomeridianum* - *Soap plant*, *Amole*, *Wild potato* {PL}. The bulb is roasted or baked, then peeled and eaten, or peeled first, and then boiled and eaten. Young shoots are slowly baked or steamed to provide nourishing greens. Tender, young leaves may be eaten raw. Southwestern North America. KIRK, MEDSGER; D95, F80{S}, G59M{S}, G60, 198M, I98M{S}, J75, L90J, N84{S}, R49

*Clintonia borealis* - *Corn-lily*, *Cow-tongue* {PL}. Very young, unrolling leaves are extensively used as a potherb by country people in parts of Maine. They also make a palatable salad, with a slightly sweetish, cucumber-like flavor. North America. FERNALD,

GIBBONS 1979; D75M, E33M, F85{S}, I31{S}, 144, L59P, N84{S}

*Eremurus spectabilis* - *Desert candle* {S}. Young leaves and shoots are eaten as a vegetable. They are said to have an agreeable flavor reminiscent of spinach and purslane. Sold in May and June at local markets of Turkey, Crimea, Kurdistan and the Caucasus. In Turkey, the leaves are also added to *herbal cheese*. Eurasia. HEDRICK 1919, OZCELIK, OZTURK; N74, N84, P10

*Erythronium albidum* - *White trout-lily* {PL}. The young leaves are crisp, tender, mild, and tasty eaten raw. Flower stalks, flower buds, and the white, bell-shaped flowers can be eaten raw or cooked. Boiled bulbs are considered to be delicious. North America. GIBBONS 1979; A51M, A61, BO, E33M, M82, N7T, N9M, N9M{S}, N84, R52

*Erythronium americanum* - *Yellow adder's-tongue*, *Trout-lily* {PL}. Bulbs are eaten raw, boiled, or roasted. They have a crisp, chewy, very pleasant taste. Flower stalks, flower buds, and flowers are edible raw or cooked. Leaves may be eaten raw in salads. North America. FERNALD, GIBBONS 1979, HARRINGTON, H.; A51M, BO, B9M, D75M, E33M, G47M{S}, H49, 144, M82, N7T, N9M, N9M{S}, N84, R52

*Erythronium dens-canis* - *Dog's-tooth violet* {PL}. Roots are eaten, often with reindeer's or cow's milk in Mongolia and Siberia. Also the source of a starch used in vermicelli and cakes. Leaves are eaten boiled. Eurasia. HEDRICK 1919, UPHOF; E33, H37M, K33M, N74{S}, N84{S}, 053M{S}, 057, Q24, R52, R83

*Erythronium dens-canis* var. *japonica* - *Erythronium japonicum*

*Erythronium japonicum* - *Katakuri* {S}. The bulbs are the source of a starch, *katakuri-ko*, used in dumplings, confectionery, fritters, to thicken soup, or in dietetic food. Preferred over other starches for use in sauces which must thicken but not jell upon cooling. Most starch currently sold as *katakuri-ko* is actually potato starch, due to the scarcity of this plant. Japan, Korea. SHURTLEFF 1975, TANAKA; N74, N84, 046, 057{PL}, R83{PL}

*Fritillaria camtschatscensis* - *Rice-of-the-earth*, *Kamchatka lily*, *Chocolate lily* {PL}. Bulbs are eaten raw, boiled, roasted, or are dried for winter use. In Kamchatka, the natives make puddings by mixing them with the berries of *Empetrum nigrum*. Also the source of a flour or starch used for bread, or put in soups. Northern temperate region. HEDRICK 1919, HELLER, LOVELOCK, TANAKA, TURNER 1979, UPHOF; F85{S}, F88M{S}, H37M, 174, K49Q{S}, N74{S}, N84, 057, R52, R83

*Fritillaria verticillata* - *Baimo* {PL}. Young plants, petals, and flower buds are parboiled and used in soups, seasoned potherbs, or cooked with soy sauce. The bulbs are eaten fried or candied. China, cultivated. TANAKA; N84{S}, 057, R52

*Hemerocallis dumortieri* - *Narrow dwarf day-lily*, *Hime-kanzo* {PL}. Flower buds may be fried when fresh, or dried and used in soups or chopped with tea. Young shoots are also edible. Eastern Asia. TANAKA; C11J, J5M, J48

*Hemerocallis flava* - *Hemerocallis lilio-asphodelus*

*Hemerocallis fulva* - *Tawny day-lily*, *Shina-kanzo* {PL}. Young shoots are eaten steamed, boiled, or sauteed in oil or butter. Flower buds are used in salads, boiled, pickled, or stir-fried. Flowers are dipped in batter and fried tempura style, or added to omelettes. Dried flowers, called *golden needles*, *gum-soy*, or *gum-jum*, are used in soups and stews. Bulbs are boiled and creamed, baked, eaten raw, mashed, or made into fritters. Eurasia, naturalized in North America. CHANG, W. [Re], GIBBONS 1962, HALPIN [Cul], HARRINGTON, H. [Cu, Pre], TANAKA, VON WELANETZ; A7{DF}, A91, BO, C27G{DE}, D65, E33M, F67, G28, 144, 178, M16, M65M, M92, N7T



- Hemerocallis fulva* 'Kwanso' - *Double tawny day-lily*, *Yabukanzo* {PL}. A starch is extracted from the bulb. Young leaves, shoots, and flowers are used as vegetables. TANAKA; B77, C9, F67, H29M, M82
- Hemerocallis lilio-asphodelus* - *Yellow day-lily*, *Lemon lily*, *Wasure-gusa* {PL}. Flowers and flower buds may be dipped in a batter of egg, milk, flour, and seasoning and browned like fritters in oil or butter. The fleshy roots, boiled in salted water, taste like a blend of sweet corn and salsify. Dried flowers give flavor to soups, stir-fries, and noodle dishes. Young shoots are eaten raw, or cooked like asparagus. China, cultivated. FERNALD, GESSERT; B77, C11J, C11J{S}, D95, F67, F85{S}, H37M, J5M, M16, M98, N84{S}, Q24{S}, R49
- Hemerocallis minor* - *Grassleaf day-lily*, *Hosoba-kisuge* {PL}. Young leaves and shoots are boiled and eaten. The flowers are eaten as a relish with meat, or dried and used in soups and stir-fries. The bulbs may be baked, steamed, roasted, or stir-fried. Japan, China. GESSERT, HEDRICK 1919, TANAKA; B28, C11J, H37M, N84{S}, S69
- Hosta longipes* - *Iwa-giboshi*, *Pibich'u* {PL}. The sourish leaves are cooked and eaten. In Korea they are used for *namul*, a side dish commonly seasoned with soy sauce and toasted sesame oil. Eastern Asia. PEMBERTON, TANAKA; J37M
- Leopoldia comosa* - *Tassel hyacinth*, *Cippolini*, *Volvi*, *Lampascione* {S}. The bulbs are eaten boiled with oil and vinegar, pickled, or added to omelettes. Cooked bulbs, preserved in oil, are used in antipasto or as a relish. Their slightly bitter flavor is appreciated by certain ethnic groups, especially Greeks and Italians, who believe they are diuretic and help stimulate the appetite. Preserved bulbs are common in ethnic markets of larger cities in North America. Fresh bulbs are less frequently available. Those from wild plants are preferred over cultivated types. Mediterranean region, cultivated. BIANCHINI, GRAY, P. [Cul], GRIGSON, S., KREMEZI 1993 [Re], UPHOF; D24, H19M{PR}, H19M{PD}, H37M{PL}, K33M{PL}, L99{PR}, L99{PD}, N84, 053M
- Lilium auratum* - *Goldband lily*, *Yama-yuri*, *Mountain lily* {PL}. The mucilaginous bulb is eaten boiled, sweetened, powdered and added to dumplings, or used in a savory Japanese egg custard known as *chawan-mushi*. It has a mild, sweet, somewhat nutty flavor and a soft, slightly mealy texture. Japan, cultivated. ALTSCHUL, HEDRICK 1919, TANAKA, TSUJI [Re]; A61{S}, J5M, M37M, M98, N84{S}, R83
- Lilium brownii* - *Hong Kong lily*, *Pai-ho*, *Paak-hop*, *Bok-hop* {PL}. The bulbs are eaten baked, or grated, when they may be added to soup to thicken it. Fresh bulbs contain protein, starch, and a small amount of cane sugar which gives them a pleasant taste. The starch is extracted and sold as *pai-ho-fen* or *lily-root flour*. Dried white bulb segments, called *one hundred unities*, are used to flavor soups and red-cooked dishes. According to Altschul, the fruits are edible. Bulbs are sometimes found in San Francisco's Chinatown. China. ALTSCHUL, CHANG, W. [Re], HERKLOTS, PORTERFIELD, UPHOF, TAN [Re], VON WELANETZ; C27G{DF}, E13G{PR}, H25M{PR}, H36{DF}, 174, L21T{DF}, L90GJPD, N40{PR}
- Lilium lancifolium* - *Tiger lily*, *Chia-peh-ho*, *Oni-yuri* {PL}. Bulbs are eaten boiled, pickled, or employed as a source of starch. When properly cooked they are highly esteemed and somewhat resemble the parsnip in flavor. The flowers, both fresh and dried, are eaten in soups, salads, omelettes, and rice dishes. China-Japan, cultivated. BRYAN [Cu, Re], HAWKES [Re], HERKLOTS, LEGGATT [Re], MACNICOL, PORTERFIELD [Nu], TANAKA; A61{S}, D24, E75, F67, J75, K63G, M37M, M82, M92, N51, N84{S}
- Lilium longiflorum* - *White trumpet-lily*, *Regal lily*, *Teppo-yuri* {PL}. The mild, slightly sweet bulbs are peeled, parboiled, and used as a delicacy in *chawan-mushi* and *ganmo* treasure balls. A starch is extracted from the bulb. Stems, leaves, and flowers are also edible. China-Japan, cultivated. SHURTLEFF 1975, TANAKA; A61{S}, H4, M77, N84{S}, Q40, R83
- Lilium maculatum* - *Elegant lily*, *Thunberg lily* {PL}. The flowers and flower buds are eaten as vegetables or dried for later use. They are considered a great delicacy in China and Japan. The Ainu ate the bulbs with rice or millets. Eastern Asia. LOVELOCK, TANAKA, UPHOF; N84
- Lilium superbum* - *American turkscap-lily* {PL}. Fleshy bulbs are cooked and eaten or are used for thickening soup. Eastern North America. HEDRICK 1919, MEDSGER, PETERSON, L.; A70, D47M{S}, E33M, E63M, H49, L31{S}, J40, N7T, N84{S}
- Lilium tigrinum* -+ *Ulium lancifolium*
- Muscari botryoides* - *Italian grape-hyacinth* {PL}. The flowers and flower buds can be pickled in vinegar. Mediterranean region, naturalized in North America. CROWHURST 1973 [Re], MACNICOL; D24, E11, E33, H37M, I99M, K33M, N84{S}, R83
- Muscari comosum* -+ *Leopoldia comosa*
- Muscari neglectum* - *Musk hyacinth*, *Nutmeg hyacinth* {PL}. The flowers, when sprinkled over pureed rhubarb, add a wonderful scented flavor. Bulbs are also eaten. Mediterranean region. HEDRICK 1919, LEGGATT [Re]; E33, H37M, K33M, M37M, N84{S}, 053M{S}, R32
- Muscari racemosum* -+ *Muscari neglectum*
- Nothoscordum fragrans* - *Nothoscordum inodorum*
- Nothoscordum inodorum* - *False garlic* {S}. The plant has been used like garlic to season smoked sausage. South America. HEDRICK 1919; A61{PL}, F85
- Ophiopogon japonicus* - *Mondo grass*, *Mai men dong* {PL}. The roots are occasionally eaten, after the bitterness has been removed. Also used in Chinese tonic wines and formulas, often combined with ginseng and other ginseng-like herbs. Eastern Asia. BENSKEY, FLAWS 1994, TANAKA, TIERRA; A19, B41, C9, C36, E2M{DF}, F51, F53M, G19P{DF}, H36{DF}, I74{S}, L21T{DF}, M7M, M16, M77M, N7D{DF}
- Ornithogalum narbonense* - *Salepotu* {S}. The bulbs are added to ice cream and other dairy foods, in the manner of salep. Mediterranean region. OZTURK; H4{PL}, N84, Q41
- Ornithogalum pyrenaicum* - *Prussian asparagus*, *Bath asparagus*, *French asparagus* {S}. Young, unexpanded inflorescence is cooked and served as an asparagus-like vegetable. Still collected and sold around Bristol and Bath, England. Western Europe. GRIEVE, LOVELOCK, MABEY; C95, N84, 048, 053M, Q24
- Ornithogalum umbellatum* - *Star-of-Bethlehem* {PL}. Flowers have been eaten baked in bread. The bulbs are sometimes eaten, however some authors report that they are poisonous to grazing animals. Eurasia, naturalized in North America. FERNALD, HEDRICK 1919; E33, E33M, F51, H37M, K33M, N84{S}, 053M{S}, Q24{S}, R53M
- Phormium tenax* - *New Zealand flax* {S}. The flowers produce a honey-like nectar that is very wholesome eating. A long hollow grass-stalk or straw can be used to suck the pure nectar from the calyx. New Zealand. COLENSO, NATUSCH; C9M, E61{PL}, H4, H71, N84, 053M, 093, P5, Q32, S43M
- Polygonatum biflorum* - *Small Solomon\*s-seal* {PL}. The young, tender shoots make an excellent vegetable when boiled and served like asparagus. Rhizomes can be sliced crosswise and fried in bacon fat, or boiled in alkaline water, washed and peeled, and then re-boiled. Also the source of a starch. Eastern North America. GIBBONS 1979, HEDRICK 1919, MEDSGER; B28, B77, C9, D75M, I11M, J43{S}, L90J, N7T, N9M, N9M{S}, N84{S}
- Polygonatum multiflorum* *Polygonatum biflorum*

*Polygonatum odoratum* - *Yu zhu* {S}. Young shoots are parboiled and eaten like asparagus or added to soups. Rhizomes are eaten raw or cooked. Also used in Chinese tonic soups and porridges—often combined with lotus seeds, dried longan, sweet and bitter almonds, and *Dioscorea opposita*. Widely used by Buddhist priests. Eurasia. FLAWS 1995, TAN [Re], TANAKA; B28{PL}, G19P{DF}, H36{DF}, N84, 053M, Q24, R52{PL}

*Smilacina racemosa* - *False Solomon's-seal, Treacle berry* {PL}. Young shoots are eaten like asparagus. The juicy fruits are bitter-sweet, suggesting bitter molasses. They can be eaten raw, cooked, or made into jellies and sauces. Caution is recommended, as they can be cathartic. Cooking them removes much of the purgative element. Rootstocks are soaked in lye, parboiled, and eaten like potatoes or pickled. North America. FERNALD, FREITUS [Re], HEDRICK 1919, KIRK; B77, C9, E33M, F88M{S}, G89,144, J39M, M77M, N7T, N9M, N9M{S}, 053M{S}

*Streptopus amplexifolius* - *Clasping-leaved twisted-stalk, Liver berry, Wild cucumber, Watermelon berry* (S). The juicy, cucumber-flavored berries may be eaten raw, cooked in soups and stews, or made into jelly. Reported to be slightly cathartic in some localities only. Roots are sometimes used in salads for their cucumber flavor. Young shoots are eaten raw in salads or cooked like asparagus. They also have a cucumber-like flavor. North America. ANGIER [Re], GIBBONS 1979, HELLER, KIRK, NORTON; A15MJP{D}, E15, 147, K49Q, N84, 053M, Q24

*Streptopus roseus* - *Bose mandarin, Scootberry* {PL}. Young leaves and shoots are added to salads to impart a cucumber flavor. Fruits are also edible, but are cathartic if eaten in large quantities. North America. HENDRICKSON, PETERSON, L.; E15{S}, 144, L59P, N7T, N9M, N9M{S}, N84{S}, 046{S}

*Tulipa x sp.* - *Tulip* {PL}. The flowers, which are said to have the flavor of peas or beans, are eaten or used as an attractive edible garnish. They are often stuffed with chicken or tuna salad, cottage cheese, fruit sorbets, mousses, minced vegetables, and other fillings. Cultivated. BARASH [Re], MORSE [Re], REILLY; D24, J20, K33M

#### CULTIVARS

**Flaming Purissima:** Attractive new hybrid of *Purissima*. Strong stems support delicate blond petals brushed with rose at the edges, with stronger rose flushes on the inner petals. Adapted in Zones 3 to 8. M37M

**Purissima:** (White Emperor) Large, single-flowered hybrid of the *Fosteriana* Group, one of the best types for use in the kitchen. Fragrant white blooms with yellow centers on strong stems. Blooms in mid to late spring. Grows about 18 inches tall. REILLY; H37M

*Uvularia sessilifolia* - *Bellwort, Wild oats* {PL}. Young shoots, while still tender enough to be broken off with the fingernail, are cooked and served like asparagus. Rootstocks are said to be cooked or used in diet drinks. Eastern North America. FERNALD, GIBBONS 1979; C13T, D75M, E33M, E63M, 144, J48, J75, M16

*Veltheimia bracteata* - *Winter red-hot-poker* {PL}. The flowers are eaten like spinach. Southern and Eastern Africa. HEDRICK 1919, KUNKEL; D19M, H37M, 174, N84{S}, R33M{S}, S28M{S}

#### LIMNANTHACEAE

*Limnanthes douglasii* - *Meadow-foam* {S}. The flowers are the source of a light-colored, thin-bodied honey with a distinct flavor reminiscent of vanilla. Western North America. D11M, G53M, M84{PD}, N61, N84, 053M, Q34, R32, S55, TIM

#### LIMNOCHARITACEAE

*Limnorcharis flava* - *Yellow velvetleaf, Berek* {PL}. The young leaves with their succulent petioles, the flower stalks, and the young inflorescences are steamed like endive or spinach, put in soups, or mixed with other vegetables and grated coconut. In Thailand, they

are blanched or grilled and served with chile sauce or *larp*—sour minced meat salad. Tropics. JACQUAT, OCHSE, OOMEN; C74, H30, M15, M73M, N84{S}

#### LINACEAE

*Linum lewisii* - *Prairie flax, Rocky Mountain flax* {S}. The seeds are cooked and eaten, both for their high nutritive value and for the agreeable flavor which they add to other foods. North America. KINDSCHER, MEDSGER; F44, F63M, F80, G47M, G59M, H80,115M, J5M{PL}, J88, L89, M47M, N7M, N11M, N23

*Linum perenne* - *Wild flax, Blue flax* {S}. Roasted seeds are dried, ground, and eaten. They have a high oil content and can also be used to flavor other foods. Due to their cyanide content they should not be eaten raw, but are safe after cooking. North America. KIRK; C67M{PL}, C95, D92M, E5T, F80, J82, K22{PL}, K85{PL}, N71M, 053M

*Linum perenne ssp. lewisii* - *Linum lewisii*

*Linum usitatissimum* - *Flax, Linseed* {S}. Seeds are eaten in breads and cereals, sprouted and added to salads, brewed into an herbal tea, or used to fortify smoothies and nut milks. They can be used as an egg substitute in making muffins, cakes and scones. Also the source of a high omega-3 edible oil, which has a light nutty flavor if consumed when fresh and not rancid. In Ethiopia, the seeds are mixed with water and honey to form a refreshing beverage and are roasted and ground to a paste that is spread on bread. Roasted seeds are also used as a coffee substitute. Unripe fruits are used in chutneys. In Transylvania, the leaves are eaten as a vegetable with sour cream and lemon. Eurasia, cultivated. COLE, C. 1990 [Re], COLE, C. 1993 [Re], ERASMUS, LANG, LOGSDON 1977 [Cu], MARCIN, MESFIN [Re], RITTER, SASS [Re], SCHERY, TANAKA; A25G{DF}, B31{DF}, D87D{PD}, D92M, E56{DF}, F80, F97M{DF}, F97M{PD}, I66{PD}, J73, J82, K22{PL}, L3J, 053M. (see also Sprouting Seeds, page 524)

#### CULTIVARS

**Essene:** Edible grain and oil seed type. High in alpha-linolenic acid, an essential dietary fatty acid. Grows well together with lentils. G47

**Foster:** Golden-yellow seeds with a mild flavor. Specifically bred for oil and culinary purposes. Can be used as a sesame seed substitute. The stalks are used for making high-grade paper. Does not perform as well on commercial farms as most brown-seeded types. B49, C95, F73D, L77D, N84

**Omega:** Golden tan seeds with a relatively mild, nutty flavor. High in omega-3 oil (linolenic acid), a fatty acid essential for human metabolism. Whole seeds are used in baked goods, juices, cereals and smoothies. Yields and performance are equal to brown-seeded cultivars. Resistant to flax rust. Developed at North Dakota State University. E5T, F23M{DF}, F37T{PL}, J82, L94M, N24M, N84

#### MAGNOLIACEAE

*Liriodendron tulipifera* - *Tulip tree* {PL}. Eastern North America. The flowers yield a dark brown, heavy bodied honey with a delicious quince-like flavor. In Canada, the root has been added to spruce beer to correct the bitterness and give a lemon flavor. CRANE 1975, HEDRICK 1919; A82, C9M{S}, C11M, C38, D17{PD}, D56MJS, E33M, E87, G66{S}, G72, H49,19M, K28, K38{S}, K63G{S}, M69M, NO, N7T, etc.

*Magnolia denudata* - *Yulan, Haku-mokuren* {S}. The flower-buds, after the calyx has been removed, are pickled and used for flavoring rice. They are also employed for scenting tea. China. CHOW, HEDRICK 1919; E63{PL}, E87{PL}, G66, H4{PL}, I77M{PL}, K38, NO, N1M{PL}, N37M{PL}, N84, 093, P49, R78

*Magnolia grandiflora* - *Bull bay* {S}. The flowers are pickled in some parts of England, and are considered exquisite in flavor. Also said to be used as a spice and condiment. Eastern North America, cultivated. HEDRICK 1919, LEGGATT, TANAKA; A79M,

B32{PL}, C9{PL}, C9M, D95{PL}, E63{PL}, H4{PL}, H49{PL}, K38, N0{PL}, N84, 053M

*Magnolia hypoleuca* - *Hd-no-ki*, *Japanese umbrella magnolia* {S}. Young leaves and flower-buds are boiled and eaten as a vegetable. Older leaves are powdered and sprinkled on food as a flavoring. Whole dried leaves are placed on a charcoal brazier or barbecue, filled with miso, leeks, daikon, and shiitake, and broiled. The delightful aroma of the leaves permeates the miso mixture, called *hoba miso*, which is then served with rice or rice patties. Eastern Asia. SHURTLEFF 1976 [Re], TANAKA; B96{PL}, H4{PL}, 177M{PL}, K63G, N84, R78

*Magnolia kobus* - *Kobushi*, *Hsin-i* {S}. Flowers and flower-buds are boiled and eaten. The leaves are eaten or used as a substitute for tea. Older ones are powdered and sprinkled on food as a flavoring. Japan. TANAKA; D95{PL}, E63{PL}, H4{PL}, K38, K63G, N0{PL}, N71M, N84, 053M, 093, P49, R78

*Magnolia virginiana* - *Sweet bay*, *Laurel magnolia* {PL}. Leaves are used to give flavor to roasts and gravies. Also used to brew an herbal tea. North America. MARCIN, MEDSGER; B9M, B32, C9, D95, E63, E87, H4, K63G{S}, NO, N1M, N37M, N84{S}

*Magnolia yulan* - *Magnolia denudata*

*Michelia alba* - *Yi-lan*, *Ginko-boku* {PL}. Flowers are used for scenting tea. China. TANAKA; H4,183M, N84{S}, P38, P38{S}

*Michelia champaca* - *Champaca* {S}. The aromatic, bitter bark is sometimes used to adulterate cinnamon. Fruits are said to be edible. Tropical Asia. HEDRICK 1919, TANAKA; A79M, D26G, D56M, F85, H4{PL}, 183M{PL}, N84, 053M, 093, P5, P38, Q12, Q18, Q46

*Michelia figo* - *Banana shrub* {PL}. Leaves are used for scenting tea. China. TANAKA; B96, D95, E63, G66{S}, G96, H4,183M, N84, R77

#### MALPIGHIACEAE

*Bunchosia argentea* - *Cirueta del monte*, *Peanut butter fruit* {PL}. The fruits are about the size of a quail egg, reddish-orange in color, not very juicy, but with concentrated sugars much like a dried fig or an American persimmon. They are usually eaten out of hand or made into milk shakes. Venezuela. CLIFT; E8M, E29, N84{S}, P5{S}, P38

*Bunchosia armeniaca* - *Cirueta verde* {S}. Round, light green to orange fruits have cream-colored, very sweet, rather cloying pulp that is eaten out of hand or made into preserves. Northern South America. MARTIN 1987, POPENOE, W. 1924; N84

*Byrsonima crassifolia* - *Nance*, *Golden spoon* {S}. The yellow, cherry-sized fruits are eaten raw, cooked as a dessert, used in jams, sherbets, soups, carbonated beverages, stuffings for meats, or fermented into an alcohol beverage, *chicha*. The *chicha* is often frozen on a stick or distilled into a rum-like liquor called *crema de nance*. In Costa Rica, nances preserved in *guaro* (cane liquor) are very popular. An edible fat is extracted from the fruits with boiling water. Mexico to Paraguay, cultivated. DE CERDAS [Re], DUKE, KENNARD, MARKS [Re], MORTON 1987a, WILLIAMS, L.; D57{PL}, F85, G5M{PD}, N84, P38, S97M

*Byrsonima spicata* - *Maricao* {S}. Fruits are edible. The juicy pulp is too acid for eating out of hand but can be used to make jelly or jam. Tropical America. KENNARD; N84, P38

*Malpighia coccigera* - *Singapore holly* {PL}. The fruits are eaten fresh or used in tarts, jellies, and marmalades West Indies, cultivated. KUNKEL, TANAKA; E48, F85{S}, G20, G96, N7J, N84

*Malpighia glabra* - \**Malpighia puniceifolia*

*Malpighia puniceifolia* - *Acerola*, *Barbados cherry*, *West Indian cherry* {PL}. Bright-red, somewhat acid fruits are eaten raw, stewed, or made into juice, sauces, syrups, jellies, jams, wines, or

purees. The sauce or puree can be used as a topping for cakes, puddings, ice cream, or sliced bananas. Fresh juice is used in gelatin desserts, fruit punches, or sherbets. The vitamin C content of the fruits is very high and they are widely used in the preparation of vitamin tablets and other nutritional supplements. Caribbean region. GARNER [Pro], KENNARD, MORTON 1987a [Cu], MOSCOSO, RICHARDSON, M. [Pre, Re], WALSH [Re]; A26{S}, A79M{S}, D57, E29, F85{S}, 112,177G, N7D{DE}\ N84{S}, P38, Q46{S}

CULTIVARS {GR}

**Fairchild:** Tiny leaves and a compact, weeping growth habit; frilly deep-pink flowers in spring and summer, followed by bright red edible berries. Excellent for bonsai or small hanging baskets. G20

**Florida Sweet:** Fruit large, 1 1/4 inches in diameter; skin thick; flesh very juicy, flavor apple-like, semi-sweet; vitamin C content high (1500 to 2000 mg per 100 mg juice). Tree erect, with open-type growth and outstanding yields. Originated in Homestead, Florida by die Florida Sub-Tropical Experiment Station. BROOKS 1972, MORTON 1987a; U27T{SC}

**Manoa Sweet:** Orange-red fruit of the sweet type. Preferred for eating out erf hand. Tree upright, spreading, very productive. Originated in Honolulu, Hawaii by Henry Y. Nakasone, University of Hawaii. Introduced in 1963. BROOKS 1972; E8M, G20,183M, J22

#### MALVACEAE

*Abelmoschus esculentus* - *Okra*, *Gumbo*, *Lady\*s finger* {PD}. Young fruits are eaten steamed, boiled, pickled, sauteed, deep fried, and braised. Fresh, dried or powdered, they are used to thicken soups, stews, and sauces. Seeds are eaten boiled, pickled, ground into meal for bread, made into *tofu* or *tempeh*, or used as a coffee substitute. Also the source of an edible oil. The leaves, flower buds, flowers, and calyces can be cooked as greens. Leaves are dried, crushed into a powder, and stored for future use. Tropical Asia, cultivated. DIRAR 1993, HALPIN [Cu, Cul], HEDRICK 1919, MARTIN 1982 [Nu], SCHNEIDER 1986 [Pre, Re], SHURTLEFF 1979, WILSON, E.G. [Pre, Re]; 134J. (for cultivars see Okra, page 435)

*Abelmoschus ficulneus* - *Inland roselle* {S}. Stems and roots are roasted. The seeds are often used in sweetmeats, and are employed in Arabia for scenting coffee. Widespread. KUNKEL, TANAIL, WATT; N84

*Abelmoschus manihot* - *Sunset hibiscus* {S}. Young leaves may be eaten raw, steamed, boiled, or added to soups. On account of their sweet taste and mucilaginous quality they are often eaten with papaya leaves in order to remove die bitter taste of the latter. In Tonga, they substitute for taro leaves in wrapping meat for the popular earth oven baked dish called *lu*. Flower buds are also eaten. Eastern Asia, cultivated. MAY, R. [Nu, Re], OCHSE, TANAKA, WHISTLER, W.; F24D, F73D, F80, F85, H29{PL}, 191, K53, L94, N37M{PL}, N84, Q24

*Abelmoschus moschatus* - *Musk mallow*, *Ambrette* {S}. Young leaves and shoots are eaten in soups. The leaves are also used to clarify sugar. Unripe pods, called *musk okra*, are eaten as a cooked vegetable. Seeds are used as a flavoring for breads, liqueurs and stews, to scent coffee, and are chewed to sweeten the breath. Also an ingredient of *ras el turnout*. Source of an essential oil used to flavor baked goods, ice cieam, candy, soft drinks, vermouh and bitters. Roots are edible. Southern Asia, cultivated. BOUQUET, CRIBB, LEUNG, MORTON 1976, TANAKA, WOLFERT 1973; C92, E9IG, F73D, F85, M82{PL}, N7D{DF}, N84, 093, P5, Q12

*Abutilon asiaticum* - \**Abutilon guineense*

*Abutilon guineense* - *Country mallow*, *Indian mallow* {S}. The flowers can be eaten raw. Leaves are eaten like marsh mallow. The edible seeds are rich in protein and fat. Also the source of an edible oil, comparable to soya and cotton seed oil. Old World Tropics. HEDRICK 1919, TANAKA, UPHOF; F85, N84

*Abutilon indicum*-*Abutilon guineense*

*Abutilon megapotamicum* - *Brazilian mallow* {PL}. The flowers are eaten as a vegetable. Brazil. LOVELOCK; G96, H4,I8, M7M, N37M, N84{S}, R77

*Alcea rosea* - *Hollyhock* {S}. Young leaves are used in Egyptian cookery. Flower petals and cooked flower buds are eaten in salads. Petals are also used to brew a refreshing tea. The roots yield a nutritious starch. Cultivated. GESSERT, HEDRICK 1919, LARK-COM 1984, LEGGATT, MACNICOL [Re], MARCIN; C95, E7M, E24, J25M, J82, K22{PL}, K49M, K66, N19M{PL}, 053M, 089

*Alcea rosea* 'Nigra' - *Black hollyhock* {S}. The purplish-black petals are used as a natural coloring for wines and herbal teas. When added to teas it imparts an attractive, deep rose-purple color. GRIEVE, ZEVEN; A61, A61{PL}, C9{PL}, F80, J82, J99D, K22{PL}, K66, L90M, M98{PL}, N84, 053M, Q24, Q34, S55

*Althaea officinalis* - *Marsh mallow* {PL}. Roots are boiled, sliced, and fried with onions. A decoction of the root may be used as a substitute for egg whites in meringue or chiffon pies. Also made into a tea or mixed with sugar, arabic gum, and egg whites to form a confection. Leaves are eaten as a potherb. Flowers are used for tea and were the base of a famous confection, *pate de ginauve*. Europe, cultivated. GIBBONS 1966b [Pre, Re], HEDRICK 1919, MACNICOL [Re], UPHOF; A49D{DF}, C43M, C81M, E5T{S}, E61, F80{S}, G84{DF}, I39{S}, I81T{PR}, I81T {DF}, J76, K85, 053M{S}, R47{S}

## CULTIVARS {S}

**Erfurter:** Improved, extra hardy cultivar. Has a high content of active mucilaginous substances. Tall, ornamental plant with velvety leaves; pink flowers with purple-red anthers. G6

*Althaea rosea*-*Alcea rosea*

*Azanza garckeana* - *Rhodesian tree hibiscus*, *Snot apple* {S}. The sweet, mucilaginous pulp of the fruit is eaten or sucked like chewing gum, usually before it is quite ripe. Dried fruits are used for jellies. Southern Tropical Africa. FOX, F., KUNKEL, TREDGOLD; M17{PL}, N84

*Callirhoe involucrata* - *Purple poppy-mallow* {PL}. The sweet, starchy root, having somewhat the flavor of a sweet potato, is cooked and eaten. The mucilaginous leaves have a pleasant flavor and are good for thickening soup. North America. HEDRICK 1919, KINDSCHER; C13T, F44M, G89M, H70M, H70M{S}, I11{S}, J25M, J25M{S}, J48, L91M{S}, N11M{S}

*Gossypium arboreum* - *Tree cotton* {S}. The seeds contain a large amount of oil, used as a substitute for olive oil. Leaves are also edible. Paleotropics, cultivated. MARTIN 1975, TANAKA; C95, M7M{PL}, N84

*Gossypium barbadense* - *Sea-island cotton* {S}. Seed oil is used in salads, canned foods, or manufactured into margarine. The seeds are also ground into a flour used in bakery products. Leaves are probably edible. Tropical South America, cultivated. KUNKEL, TANAKA; F73D, F85, N84

*Gossypium herbaceum* - *Short-staple American cotton* {S}. Seeds are the source of *cotton seed oil*, used as a salad or cooking oil, in margarine, vegetable shortenings, and canned fish. Often used in Egyptian cuisine. Presscakes from the seeds can be used for making *temphe*. The seeds are eaten roasted or used as a coffee substitute. The leaves are eaten. Cultivated. HEDRICK 1919, MARTIN 1975, ORTIZ 1992, SHURTLEFF 1979, TANAKA, UPHOF; D92M, E7M, F37T{PL}, F68T, F85, F86G, GO{PD}, J82, K53, M7M{PL}, N84, 053M, 093

*Gossypium hirsutum* - *Upland cotton* {S}. The seed oil is used as a salad oil or in the manufacture of margarine. Seeds are used as food after the toxic substance gossypol has been removed, or in the case of glandless cultivars they are consumed without this prepara-

tion. Immature fruits are also edible. North America, cultivated. ALCORN, TANAKA; B38, D87G{PL}, F73D, F85,181M, J73, L55J, M34M, N84, 053M

## CULTIVARS

**Hooi Short-Stapled:** 100 days. Rare, prehistoric cultivar with attractive white flowers. Productive. Selected over the centuries for northeastern Arizona's extreme conditions. Ceremonial and oilseed use. Grows well in low or high desert areas. 116, L3J, N84

**Sacaton Aboriginal:** Grown by the Pimans for food and fiber until 1900. Maintained for many years by the Field Station in Sacaton, Arizona. Traditionally planted "when the mesquite began to leaf out". Related to Hopi Short-Stapled. 116, N84

*Gossypium hirsutum* Nonglanduliferous Group - *Glandless cotton* {S}. Cotton that is free of the pigment glands that contain the toxic substance gossypol. The high protein (40%) kernels have a nutty flavor when roasted and can be eaten out of hand, boiled and used like rice in casseroles or soups, milled into flour for baking, or ground into a spread similar to peanut butter called *cotton nut butter*. A coagulated cotton seed protein curd, called *Tamucurd*, has also been developed and can be used as a cream cheese substitute or a link-sausage type meat substitute product. BLANKENSHIP [Nu], LUSAS [Nu].

## CULTIVARS

**Tamcot GCNH:** A glandless, multi-adversity resistant cultivar developed at the Texas Agricultural Experiment Station. Produces high quality seed for processing into end products. Yields and earliness of Tamcot GCNH are equal to that of glandular cultivars under many conditions. ANONYMOUS 1988; L89G{OR}

*Hibiscus abelmoschus*-*Abelmoschus moschatus*

*Hibiscus acetosella* - *False roselle*, *Asam susur*, *Som kop* {S}. Young leaves and shoots are eaten raw, steamed, or in soups and stews. They may be cooked with other foods to give them a sour, sorrel-like flavor. Tropical Africa. FOX, F., MARTIN 1975, MORTON 1987a, OCHSE; D33, E48{PL}, F85

## CULTIVARS

**Red Shield:** Stalks and leaves are vivid burgundy-red. Deeply lobed leaves have a metallic sheen. Purple-red flowers, 2 1/2 inches in diameter. Vigorous plant, to 5 feet tall, ideal for hedges or accents. May be grown as an annual, blooming ten months from seed. F80, N84

*Hibiscus bifurcatus* - *Vinagreira*, *Flor de paisto* {S}. The slightly acid leaves are cooked and eaten as a vegetable in some parts of Brazil. In Guatemala, the mucilaginous sap is said to have been used to clarify sugar syrup. Tropical America. UPHOF, WILLIAMS, L.; N84

*Hibiscus cannabinus* - *Kenaf*, *Hemp-leaved hibiscus*, *Ambari*, *Ambadi* {S}. Young leaves are used as a potherb, put in soups, or added to a mixture called *kwado*, made of *Parkia* pulp and condiments. The seeds, which yield an edible oil, are roasted and eaten, made into a type of cake, or fermented into *datou*. Flowers are edible. Tropical Asia, cultivated. BURKILL, CAMPBELL-PLATT, FOX, E, TANAKA; A79M, N84, 093, RO

*Hibiscus diversifolius* - *Cape hibiscus* {S}. Young leaf blades are used as a cooked vegetable. The flowers are eaten with groundnuts. Tropical Africa. CRIBB, FOX, F.; E48{PL}, F85, N84, 053M, Q41, P38, R88, S28M

*Hibiscus eetveldianus*-*Hibiscus acetosella**Hibiscus ficulneus*-*Abelmoschus ficulneus*

*Hibiscus heterophyllus* - *Native mella* {PL}. Young leaves, shoots, and flower buds and petals are eaten raw or cooked, having a pleasant acidic flavor. The large, showy flowers are often used as a decorative garnish for cold meats, fish, and salad dishes. Calyces are used in cooking like those of *H. sabdariffa*. Australia. CHERIKOFF, CRIBB, ROBINS [Re]; N79

*Hibiscus manihot* - \**Abelmoschus manihot*

*Hibiscus rosa-sinensis* - *Chinese hibiscus* {PL}. Flowers are eaten raw, steamed, made into a kind of pickle, or used for coloring foods, including preserved fruits, toddy, sliced pineapple, agar-agar jellies, and cooked vegetables. The young leaves are sometimes used as a spinach substitute. Eastern Asia, cultivated. HEDRICK 1919, LEGGATT [Re], TANAKA; E48, G0{DF}, G96, J27, K18M{DF}, N7D{DF}, N84{S}, 093{S}

*Hibiscus sabdariffa* - *Roselle, Jamaica, Florida cranberry, Indian sorrel* {S}. The fleshy calyx is used in salads, jellies, cranberry-like sauces, soups, chutneys, pickles, tarts, puddings, syrups, wine, *nata* (sweet gel), *hulu-mur*, or roasted and made into a coffee substitute. It is made into a refreshing beverage by boiling, sweetening with sugar cane, and flavoring with ginger and rum. Dried calyces are widely used in herbal teas such as *Red Zinger*, to add red color and a tart flavor. The mildly citrus-flavored flowers can be added to ice cream. Young fruits are blanched and eaten with chili sauce. Acid leaves are eaten in salads and curries. Seeds are roasted and ground into flour, then used in oily soups and sauces. In the Sudan, they are fermented into a meat substitute called *furundu*. Tropical Asia, cultivated. BARASH [Re], BENGHIAT [Cu], DIRAR 1993, DUKE, HEDRICK 1919, JACQUAT, LEUNG, MACNICOL [Re], MENNINGER, MORTON 1987a [Cu], ORTIZ 1973 [Re], POLVAY [Re], RICHARDSON, M. [Re], ROBINS [Re], TANAKA; A7{DF}, C4M{PD}, C73P{PD}, C95, C95M{PD}, E14T{DF}, E14T{PD}, G96{PL}, N40{DF}, N84, 032M{PD}, 053M, 093, P5, R47, S55, etc.

*Hibiscus surattensis* - *Mankin-aoi* {S}. Acid leaves are eaten raw in salads, cooked as a potherb, put in curries, or used to flavor meat and fish. The twigs are also used as greens. Tropical Asia and Africa. BROWN, W., BURKILL, TANAKA, UPHOF; F85, P38

*Hibiscus syriacus* - *Rose of Sharon* {S}. Leaves are eaten or used as a tea substitute. Flowers are edible. Eastern Asia, cultivated. HEDRICK 1919, TANAKA; B9M{PL}, C9{PL}, F80, G23{PL}, H4{PL}, H49{PL}, K38, K63G, 053M, 093, P5

*Hibiscus tiliaceus* - *Hau, Mahoe, Cotton tree* {S}. The flowers can be eaten as a potherb or dipped in batter and fried. Leaves are eaten, fermented into a sauce, used as a substrate for the *tempeh* starter culture, or boiled in salted water to form a beverage called *Onge tea*. Tropics, cultivated. BHARGWA, BURKILL, CRIBB, DUKE, MORTON 1977, SHURTLEFF 1979, STEINKRAUS; A28{PL}, A79M, C9M, F85, M7M{PL}, N84, 093, P5, P38, Q32, R33M

*Kosteletzkya virginica* - *Seashore mallow* {S}. Perennial halophyte recommended as a new grain and oilseed crop. The hulled seeds, resembling millet, contain as much as 32 % protein and 22 % oil. Will tolerate 2.0 to 2.5 % salinity during growth. Eastern North America, West Indies. NATIONAL RESEARCH COUNCIL 1990; N84

*Kydia calycina* - *Baranga* {S}. A mucilaginous material obtained from the stems is used for clarifying sugar. Southern Asia. TANAKA, WATT; Q46

*Lavatera trimestris* - *Rose mallow* {S}. Leaves and young plants are eaten raw or cooked. In Japan, they are roasted and then powdered. The flowers are edible, and are said to have a very fine flavor. Mediterranean region, cultivated. TANAKA; D68, D92M, E24, E91G, FI, F24D, F80, F82, G87, H95, 191, J9M, L42, M47M, M49, N11M, N23, etc.

*Malva crispa* - *Malva verticillata*

*Malva neglecta* - *Common mallow, Dwarf mallow* {S}. Tender shoots are eaten as a salad. Leaves are steamed or boiled like spinach, or added to soups. Immature fruits, called *cheeses* or *biscuits*, are eaten raw in salads, pickled, boiled, fried, or added to tomato or chicken soup. A decoction of the roots may be used as an egg white substitute in making meringue pies. Dried leaves are made into a tea. Eurasia, naturalized in North America. GIBBONS 1966b,

HARRINGTON, H., HEDRICK 1919, KIRK, NIETHAMMER, WEAVER 1993; D92M, N71M, N84, 053M

*Malva parviflora* - *Cheese weed* {S}. Leaves are eaten raw or as a potherb. Young fruits are eaten raw in salads, or cooked into many different dishes much like peas. The ground fruits, with a few leaves for color, can be used for a creamed vegetable soup that resembles pea soup. Eurasia, naturalized in North America. CLARKE [Re], TANAKA; L55J, N84

*Malva rotundifolia* - \**Malva neglecta*

*Malva sylvestris* - *Blue mallow, High mallow* {S}. Mucilaginous leaves are eaten as a spinach, put in soups to give them a good, smooth texture, or used as a tea substitute. The flowers are used as a vegetable or garnish. Unripe fruits, called *cheeses*, are eaten as a nibble. Eurasia, naturalized in North America. HEDRICK 1919, LEGGATT [Be], MABEY, MICHAEL, UPHOF; E61{PL}, F15M{PL}, F24D, F80, F85, J82, K2, L90M, N71M, N84, 053M, Q24, R32, R47, S55, etc.

*Malva sylvestris* 'Mauritiana' - *Mauritian mallow, Zeni-aoi* {S}. Leaves can be eaten in salads. The purple flowers yield an excellent natural coloring for drinks and herbal teas. In Japan, the leaves and stems are boiled and eaten. TANAKA; C9{PL}, D11T, D68, D92M, D95{PL}, E7M, E63M{PL}, J82, K63G, M49, M82{PL}, N71M, N84, Q24, Q34, etc.

*Malva verticillata* - *Whorled mallow, Aook* {S}. The young, mucilaginous leaves and shoots are eaten boiled, roasted, or added to soups. One of the earliest domesticated plants of China. About 500 AD, it was an important vegetable with cultivars like purple and white-stemmed, large and small-leaved. Occasionally available fresh in Korean markets. China, naturalized in North America. TANAKA, ZEVEN; Q3

*Malva verticillata* 'Crispa' - *Curled mallow, Castilian mallow* {S}. Leaves are eaten boiled, fried, roasted and dressed with soybean oil, or dried and eaten with soy sauce. They are very elegantly curled and crisped at the edges and are sometimes used for garnishing desserts and other dishes. TANAKA, UPHOF, VILMORIN [Cu]; A2, C95, D92M, E7M, F73D, F85, 139, N7G, N84, 053M

*Modiola caroliniana* - *Mauve, Cheeses* {S}. Cajuns make a refreshing drink by soaking a handful of the leaves in a quart of water for two or more hours. Many drink it every d<sup>o</sup>. Southeastern North America. THEODOROPOULOS; F80, N84

*Sida rhombifolia* - *Teaweed, Broomjue sida* {S}. The leaves are used as a tea substitute in some parts of the Canary Islands and Mexico. As a leafy vegetable they contain about 7.4% protein. Tropics. DUKE, MARTIN 1975, UPHOF; E67T{PL}, F85, N84, P38

*Thespesia populnea* - *Portia tree, Seaside mahoe, Milo* {S}. Young leaves are eaten raw, boiled, or put in soups. Flowers and flower buds may be eaten raw, cooked, or dipped in batter and fried. The fruits are eaten preserved. Tropics. BURKILL, DUKE, KUNKEL, MORTON 1977, TANAKA; A79M, E21D{PL}, F85, N84, 093, P5, P17M, Q12, Q18, Q46

*Urena lobata* - *Pink-flowered burr* {S}. Seeds are used in soups or porridge for the sake of their mucilaginous qualities. The young leaves are eaten as a vegetable or dried and used as an adulterant of patchouli leaves. Tropics. CRIBB, DALZIEL, MARTIN 1975, TANAKA; F85, N84

## MARANTACEAE

*Calathea allouia* - *Leren, Sweet corn-root, Topi-tambo* {PL}. When cooked, the crisp tubers are very agreeable, with a flavor like sweet corn. They are boiled and eaten with a flavored sauce or used as a side-dish. Their unique texture makes them a gourmet item that could compete with popular hors d'oeuvres. Young flower clusters are cooked and eaten. The leaves are used for wrapping tamales and

other foods, to which they impart flavor. A traditional Christmas food in the Dominican Republic. West Indies. CARIAS, DUKE, HAWKES [Cu], HERKLOTS, MARTIN 1976a [Cu, Pre], WILLIAMS, L.; U7P, X79

*Maranta arundinacea* - *Arrowroot*; *West Indian arrowroot* {DF}. Tubers are eaten raw, roasted, grated into a coarse meal, or made into *arrowroot powder*. The highly digestible starch is used in pastries, biscuits, and is preferred to flour in thickening soups, sauces, and gravies. Unlike flour it does not add a mealy taste. When mixed with chocolate and rice flour it forms a digestive food known as *racahout des Arabes*. Tropics, cultivated. BROUK, HERKLOTS, HESS, LEYEL 1987a, ORTIZ 1973 [Re], UPHOF; A7, A41G{PL}, A49D, A52M, B31, F32D, G29, G84, I19M, J11M, K2, K18M, L16, L17, N84, P38{S}, etc.

*Phrynium capitatum* - *Cay Id dong* {S}. In China, the leaves are wrapped around articles of food prior to boiling to impart color and an agreeable flavor. In Vietnam, they are used for wrapping the popular cakes *bank chung* and *bank gid*. They are also added to the liquid in the manufacture of vinegar. Southeast Asia. HEDRICK 1919, TANAKA, VAN DUONG; F85, N84

*Phrynium placentarium*-*Phrynium capitatum*

*Thalia geniculata* - *Swamp lily*, *Auma-mna* {PL}. Young leaves are edible. The rhizomes are baked and eaten or made into a kind of *arrowroot*. South America. TANAKA; A54, C74, F73, F85{S}, G85, H4, K85M

*Thaumatococcus daniellii* - *Sweet prayer-plant*, *Katenge* {S}. The seeds, when chewed, are very sweet and for an hour or so thereafter cause sour foods eaten or drunk to taste very sweet. They are also used for sweetening bread, fruits, palm wine and tea. In Ghana, the leaves are employed as food wrappers. Tropical Africa. ABBIW, BURKILL, DALZIEL, INGLET; F85

#### MARTYNIACEAE

*Ibicella lutea* - *Yellow unicorn-plant* {S}. The plant produces an abundance of fruits which are pickled or made into sweetmeats. Brazil, Argentina. BRETTING, HALPIN, VILMORIN; N84, 042

*Martynia fragrans*-*Proboscidea louisianica* ssp. *fragrans*

*Martynia lutea*-*Ibicella lutea*

*Martynia proboscidea*-*Proboscidea louisianica*

*Proboscidea jussieui*-*Proboscidea louisianica*

*Proboscidea louisianica* -*Devil's claw*, *Unicorn plant* {S}. Young fruits, while still tender enough to be pierced with a fork, can be sliced and added to soups as a thickening. Or they can be parboiled and eaten as a vegetable or pickled in vinegar. The seeds, high in protein, are consumed raw or cooked and also yield an edible oil. North America. GIBBONS 1979, HALPIN [Cu], HARRINGTON, H. [Re], KINDSCHER, KIRK, VILMORIN; C43M, C43M{PL}, E7M, K71, N84, 042, 053M, Q41

*Proboscidea louisianica* ssp. *fragrans* - *Chihuahuan devil's-claw*; *Cuemitos* {S}. The half-ripe seed-pods are cooked and eaten as a vegetable. Soft, immature seeds are eaten raw, roasted, or ground into a paste. The Tarahumara of Mexico boil and eat the fresh leaves as a potherb with beans. Southwestern North America. BRETTING, HEDRICK 1919; F73D, F85,116, N84

*Proboscidea parviflora* - *Una de goto*, *Devil's claw* {S}. Young seeds are eaten fresh for their milky or coconut-like taste. Mature seeds are oily and are being investigated as a source of an edible oil. The young fruits, while still tender, may be cooked and eaten like okra. Southwestern North America. BRETTING; C98M, F85,116, L3J, L55J, N84, R88

#### CULTIVARS

**Paiute:** White-seeded domesticated from the Shivwits Paiute Reservation in Southwest Utah. Adapted to the high semi-desert where it is planted in June. 116, N84

**Pima Bajo:** Originally collected from the fields of Pedro Estrella in Onavas, Sonora, Mexico. Prolific. Attractive lavender-pink flowers. Should be planted during the summer rainy season in low desert areas. 116

**Tohono O'odham White-Seeded:** The seeds can be eaten like sunflower seeds, or pressed for their oil. Beautiful purple flowers followed by 15 inch claws. The black claws are split and woven to produce the black designs on Pima and Papago Indian baskets in Arizona. 116, J25M, K20M, N84

#### MELASTOMACEAE

*Rhexia virginica* - *Meadow beauty*, *Deer grass* {PL}. The leaves have a sweetish and slightly acid flavor and make a pleasant salad, or they can be boiled and served with lemon or vinegar. Tubers can be chopped and added to salads, or eaten as a pleasant nut-like nibble. Eastern North America. CROWHURST 1972, FERNALD, GIBBONS 1979, MEDSGER, PETERSON, L.; A51M, D95, E61, 131 {S}, M77M, N84{S}, Q24{S}

#### MELIACEAE

*Aglaia odorata* - *Chinese perfume-plant*, *Mock lime*, *Juran* {PL}. The fragrant, bright yellow flowers are dried and used for scented tea. Said to be the most exquisitely scented of all flowers, like vanilla but with spicy undertones. Tender leaves are eaten as a vegetable. Southern China. GENDERS 1977, HEDRICK 1919, MORTON 1976; G96, N84

*Azadirachta indica* - *Neem tree* {S}. Leaves and flowers, having a very bitter flavor, are commonly eaten with other foods as a premeal appetite or palate stimulant. A popular Bengali luncheon dish called *shukto* includes neem or other bitter leaves, bitter gourd, eggplants, potatoes, radish, green bananas and spices like turmeric, ginger, and mustard and celery seed pastes. In Laos, the young leaves are eaten with water-buffalo meat salad. Neem honey is popular in parts of Asia where it commands premium prices. Sap from the branches and roots is fermented and drunk. Dried leaves and flowers are sometimes available in Indian markets. Southern Asia. ACHAYA, BANERJI [Re], BURKILL, DEVI [Re], IRVINE 1961, NATIONAL RESEARCH COUNCIL 1992, PONGPANGAN, SING, REEJHSINGHANI 1973 [Re], VON MAYDELL; A79M, E21D{PL}, E29{PL}, F85, I12{DF}, I83M{PL}, K18M{DF}, N84, P5, P17M, P38, Q12, Q46

*Cedrela sinensis*-*Toona sinensis*

*Lansium domesticum* - *Langsat*, *Lanzone* {S}. Fruits are juicy, aromatic, subacid, and are considered one of the best fruits of the Malay region. They are eaten out of hand, candied, preserved in syrup, or made into wine. Southeast Asia. ALMEYDA 1977 [Cu], GARNER [Pro], MORTON 1987a, POPENOE, W. 1920; E8M{PL}, K8{PL}, N84, 019, 093

#### CULTIVARS {GR}

**Conception:** Large, cream-yellow fruit, 1 1/2 inches in diameter; sweet pulp of excellent quality. Tree a heavy producer, bears fruit in clusters like grapes. Named after the Conception Mountains in the Philippines. Introduced into Florida in the 1950's by William F. Whitman. WHITMAN; U27T{SC}

**Duko:** (Doekoe) Fruit round, from 1 to 2 inches in diameter, with a thicker, darker-colored skin more leathery than that of the langsat. Produced in clusters of two to five fruits. Tree robust, symmetrical; crown wide; foliage dense. K8

*Melia azadirachta* - \**Azadirachta indica*

*Owenia acidula* - *Emu apple* {S}. The edible fruits are round, red, hard-fleshed, with deep red pulp that is intensely acid. It could

possibly be used for drinks, juices, or jellies. One recommendation is that the fruit be buried for several days before eating. Australia. CRIBB, SIMMONS 1972 [Cu]; N84, P5, R15M, S92

*Owenia reticulata* - *Desert walnut* {S}. Seed kernels have a pleasant taste, but so much force is needed to extract them from their hard shells, that only fragments are obtained for eating. They are usually roasted and eaten. The tree yields a sap-like liquid called *mamta*, somewhat reminiscent of *golden syrup*, which takes on a salty flavor upon crystallizing. Australia. HERIVEL, MENNINGER; N84, R15M, S92

*Sandoricum indicum*-*Sandoricum koetjape*

*Sandoricum koetjape* - *Santol*, *Kechap* {S}. The whitish, translucent, subacid pulp of the fruit is eaten fresh, with spices, dried, candied, cooked with fish, canned in syrup, used in jams, jellies, and marmalades, or fermented into an alcoholic beverage. Canned fruits and marmalade can be found in some Oriental markets. Tropical Asia, cultivated. MORTON 1987a, POPENOE, W. 1924, TANAKA; F85, M17{PL}, 019, Q93

CULTIVARS {GR}

**Bangkok:** Large, golden to yellow-brown fruit of superior eating quality; weight 9 to 10 ounces; about 4 seeds per fruit. Sold in local markets. Originated in Thailand. Introduced into Florida by William F. Whitman as the Manila cultivar. CORONEL 1983, WHITMAN; E8M, K8

**Chompoo:** A large-fruited type from Asia. Large, ornamental tree with trifoliate leaves that turn red before shedding. E8M

*Toona sinensis* - *Chanchin* {S}. Young leaves are boiled and eaten with rice, cooked with soy sauce, or used as a tea substitute. In Northern China, the young buds are blanched in nurseries and eaten as a vegetable. The fruits are also edible. China. ALTSCHUL, TANAKA; E87{PL}, G66,174{PL}, I77M{PL}, J61M{PL}, K38, K63G, N84, 053M, 093, P5, Q12, Q18, Q46

MELIANTHACEAE

*Melanthus major* - *Honey flower* {S}. The honey-like nectar of the flowers is collected and eaten. South Africa. HEDRICK 1919, SCHERY; E87{PL}, N84, 053M, 093, S28M

*Melanthus minor* - *Dwarf honey-flower* {S}. Flowers are very rich in nectar which is collected and eaten. South Africa. TANAKA; N84, 093, S28M

MENISPERMACEAE

*Dioscoreophyllum cumminsii* - *Serendipity berry*, *Ito-igbin* {S}. The intensely sweet, mucilaginous pulp of the fruit is considered the sweetest known naturally occurring substance (up to 3,000 times sweeter than sucrose). Has been recommended as a non-carbohydrate sugar substitute. Fruits keep for several weeks at room temperature. The small, yam-like tubers are eaten in southern Nigeria. Tropical Africa. HOLLOWAY [Pro], INGLET; F85

*Sphenocentrum jollyanum* - {S}. The roots are acid and bitter when first eaten, but are reported to create a sweet sensation when non-sweet foods are eaten thereafter. Fruits are also eaten, having a mango-like flavor. West Tropical Africa. DALZIEL, INGLET, IRVINE 1961, UPHOF; F85

*Stephania hernandifolia* - *Loi tien*, *La moi*, *Kua tom luet* {S}. A kind of jelly is prepared from the squeezed leaves. Southeast Asia. TANAKA; F85

*Tiliacora triandra* - *Yanang*, *Too yanang*, *Akar kunyit-kunyit* {PD}. The leaves are pureed and employed for dissipating bitterness in the preparation of spicy young bamboo shoots, eaten with rice in Thailand and Laos. Also used in soups and as a food coloring. Available in oriental markets—fresh, fresh-frozen or canned. Indochina, Malaya. JACQUAT, PONGPANGAN, SING [Re]; L90G

*Tinospora cordifolia* - *Heart-leaved moonseed*, *Kanda amrta* {S}. The herb forms one of the ingredients of *Amrit Kalash*, a popular Ayurvedic tonic formula. In Hindu mythology, *amrta* referred to a heavenly 'elixir' which saved the celestial people from senescence and kept them eternally young. Tropical Asia. SIVARAJAN; H14{PD}, N84

MENYANTHACEAE

*Menyanthes trifoliata* - *Buckbean*, *Bogbean* {PL}. The bitter leaves are used commercially in Sweden as a substitute for hops in brewing beer. Dries leaves are brewed into tea. Roots are employed for making *missen bread* (famine bread), or used as a masticatory. Northern temperate region. BREMNESS, FERNALD, HEDRICK 1919, HELLER; C74, H30,190M, K34, M15, M72, M73, M73M, N3M, N84{S}, 053M{S}

*Nymphoides cristata* - *Nymphoides indica*

*Nymphoides indica* - *Water snowflake*, *Yin-lien-hua*, *Gagabuta* {PL}. Young leaves, stems, flower buds, and fruits are eaten boiled or used in curries. Old World Tropics. BURKILL, TANAKA; C74, G85, H4, H30,190M, K34, K85M, M15, M73M, N3M, P38

*Nymphoides peltata* - *Floating heart*, *Asaza* {PL}. The young leaves and flower buds are used as potherbs. Eurasia. TANAKA; A54, G85, H4, H30,190M, K34, M15, M73, N3M

MESEMBRYANTHEMACEAE

*Carpobrotus aequilaterus* - *Pig's face*, *Sea fig* {S}. The leaves are baked and eaten. Juicy fruits are sometimes eaten, and are said to remotely suggest the flavor of strawberry. American and Australian coasts. HEDRICK 1919, UPHOF, WICKSON; N84, S92

*Carpobrotus deliciosus* - *Sweet Hottentot-fig* {S}. Succulent fruits are eaten fresh, as a garnish for fruit salads, dried and eaten like candy, or made into jams and preserves. South Africa. TATE; N84, S28M

*Carpobrotus edulis* - *Hottentot fig* {S}. The mucilaginous, sweetly acid fruits are eaten raw, dried, cooked, pickled, or made into chutneys and preserves. Succulent leaves are used in salads, or as a substitute for the pickled cucumber. South Africa, cultivated. CLARKE, FOX, E, HEDRICK 1919, JOHNS, KIRK, SIMMONS 1972 [Cu]; JO, N84, 053M, 093, R88, S28M

*Mesembryanthemum aequilaterale* - *Carpobrotus aequilaterus*

*Mesembryanthemum crystallinum* - *Ice plant*, *Ficoide glaciale* {S}. The acid, succulent, somewhat salty leaves are eaten raw in salads, boiled as a potherb, made into pickles like cucumbers, or used as a garnish. Macaronesia, Mediterranean region, cultivated. CLARKE [Re], HEDRICK 1919, LARKCOM 1984 [Re], VILMORIN [Cu]; F73D, F85,133,181M, N84, P59M, Q41, R88

*Mesembryanthemum edule* - *Carpobrotus edulis*

*Mesembryanthemum stellatum* - *Trichodiadema stellatum*

*Mestoklema tuberosum* - {PL}. The roots contain a ferment used for brewing beer and a yeast substitute for bread making. South Africa. FOX,E; H52, N84{S}

*Trichodiadema stellatum* - *Kieriemoor* {S}. In some parts of South Africa the plant is used for making beer. Also used as a yeast substitute for making bread. Southern Africa. UPHOF; H52{PL}, 133, N84, R88

MIMOSACEAE

*Acacia aneura* - *Mulga acacia* {S}. The seeds are ground, cooked, and eaten by the Aborigines of Australia. The bark exudes an edible gum. A sweet, red *leip* that forms on the leaves and branches is eaten. A large succulent gall produced by the tree, known as *mulga apple*, is said to quench the thirst. Australia. CHERIKOFF [Re], CRIBB, O'CONNELL, ROBINS [Cul, Re], UPHOF; A67M{PD},

B76M{DF}, C9M, F80, F85, *H7I, JO*, 032M{DF}, 033, 093, P5, P17M, *Q32, Q46, R15M, R33M, S92*, etc.

*Acacia arabica - Acacia nilotica*

*Acacia berlandieri* - *Uvalde honey plant, Huajilla* {S}. The flowers produce large quantities of nectar which is the source of a light-colored, mild-flavored honey of very fine quality. Southwestern North America. PELLETT; C9M, N84

*Acacia catechu* - *Cutch tree* {S}. *Cutch, katha*, or *khar*, a gum obtained by boiling chips of heartwood, is an indispensable ingredient of *paan*, or betel-leaf chew material. Southern Asia. BURKILL, TANAKA, WATT; A79M, F85, G73, N84, 093, Q12, Q18, Q46

*Acacia concinna* - *Soap pod* {S}. The acid leaves are eaten or use as a substitute for tamarinds in chutneys. In Laos, they are used in soups and for marinating fish before drying them. Fruits are roasted and eaten, or used as a sour flavoring for meat dishes. Flowers are used as a vegetable. India. ALTSCHUL, HEDRICK 1919, SING, VON REIS, WATT; F85, N84, Q46

*Acacia coriacea* - *Wiry acacia, Njirrima* {S}. The unripe green seeds are steamed and eaten like garden peas. They are favored over seeds of other species because of their large size. Mature seeds are parched or roasted and milled into meal. Australia. CHERIKOFF, O'CONNELL; N79M, N84, P5, P17M, R15M, R33M, R47, S92

*Acacia dealbata* - *Silver wattle, Mimosa* {S}. The flowers are the source of *mimosa absolute* used commercially for flavoring baked goods, beverages, candy, dairy foods and puddings. Also the source of a gum arabic. Australia. BURDOCK, UPHOF; A79M, C9M, D56M, D95{PL}, F80, *G66, K38, 033, 093, PIG, P5, Q12, Q18, Q32, Q46, R15M*, etc.

*Acacia decurrens van dealbata - Acacia dealbata*

*Acacia farnesiana* - *Cassie, Sweet acacia* {S}. Leaves may be used as a substitute for tamarind in flavoring chutneys. Sprouted seeds are reportedly consumed. The pods are roasted and eaten. Tropical America, cultivated. CRIBB, HEDRICK 1919, TANAKA; B94, E7M, F80, H4{PL}, I83M{PL}, N84, P5, Q18, *Q32, Q46, R15M, R33M*

*Acacia giraffae* - *Camel-thorn* {S}. The trunks are the source of an edible gum, called *Cape gum*. Seeds are used as a substitute for coffee. Southwest Africa. KUNKEL, TANAKA; A79M, D56M, F80, <766, M17{PL}, N40M, 053M

*Acacia greggii* - *Texas mimosa, Catclaw-acacia, Cat's paw* {S}. Pods are eaten raw, boiled, or pounded into a coarse meal and make into porridge or cakes. The dried seeds are said to make a good bean-substitute when added to ham dishes. They have a high protein and oil content. Southwestern North America. CLARKE [Re], KIRK, YANOVSKY; B94, C9M, C98, C98M, *E66M, F63M, G60{PL}, H4{PL}, I98M, I98M{PL}, L3J, L55J, N84, Q46*

*Acacia horrida - \*Acacia karroo*

*Acacia karroo* - *Doomboom* {S}. The stems produce a good, edible gum, called *Cape gum*. Seeds are used as a substitute for coffee. Southern Africa. FCX, F., UPHOF; *JO, N84, 053M, Q15G, Q41, S28M*

*Acacia leucophloea* - *Ruteeja gum, Safed* {S}. Young pods are used as a vegetable. Seeds are ground and mixed with flour. The ground bark is used to flavor a spirit brewed from sugar cane and palm juice. Southern Asia. HEDRICK 1919, TANAKA, WATT; A79M, N84, Q46

*Acacia myrtifolia* - *Myrtle wattle* {S}. The leaves have been used as a substitute for hops in beer making. Australia. CRIBB; *JO, N79M, N84, 093, P5, P17M, Q32, Q41, R15M, R33M, S92*

*Acacia nilotica* - *Egyptian mimosa, Egyptian thorn* {S}. Source of *Babul gum* or *gum arabic*, eaten mixed with sesame seeds, fried in ghee, or used in the preparation of candied flowers, almond paste,

and other sweetmeats. A perfumed water of Morocco is made by inverting a jug over gum arabic fumes, then filling the jug with water. Seeds are roasted and used as a condiment, or mixed with dates and fermented into an alcoholic beverage. Tender young pods and leaves are used as vegetables. The flowers are made into fritters. A type of wine known as *sak* is made from the bark. Tropical Africa to Southwest Asia. CAMPBELL-PLATT, HEDRICK 1919, MACNICOL, MARTIN 1975, TANAKA, UPHOF, WOLFERT 1973 [Cul]; A79M, F85, I81M, K38, N84, 093, P17M, Q12, Q18, Q46

*Acacia pendula* - *Weeping myall* {S}. The tree exudes a large quantity of superior, transparent gum. Australia. TANAKA; C9M, F80, I83M{PL}, N79M, N84, P5, P17M, *Q15G, Q32, R15M, R33M, S92*

*Acacia podalyriaefolia* - *Queensland silver-wattle* {S}. Flowers may be mixed in a light batter and fried to make small fritters which go very well served with sugar and whipped cream. Australia. CRIBB; *A41M, A79M, C9M, H7I, N84, 033, 053M, 093, 094, P5, Q32, Q41, R15M, R33M, S92*, etc.

*Acacia retinodes* - *Wirilda* {S}. The seeds are eaten, and are recommended for the bushfoods industry because of their delicious flavor. Produces good quality flour which can be used to make breads, cakes, pastries and desserts. Australia. CRIBB, ROBINS; N79{PL}, N79{DF}, N79M, N84, 033, P5, P17M, *Q32, R15M, R33M, S92*

*Acacia Senegal* - *Gum acacia, Gombier blanc* {S}. Source of a resin gum called *gum arabic* or *kordofan*, used in sweetmeats, jellies, crystallized flowers, and other confections. Said to be superior in quality to gum arabic from all other species of *Acacia*. Highly soluble in water, giving solutions with up to 50% gum content. Produces up to 90% of the gum arabic in commerce. North Africa to India. ORTIZ 1992, SCHERY, UPHOF, VON MAYDELL; A7{DF}, A79M, D56M, E14T{DF}, G73, I81M, J82, *L34{DF}, N84, P17M, Q12, Q18, Q45M, Q46*

*Acacia seyal* - *Sittim wood, Seyal acacia* {S}. Stems are the source of a gum traded in the Sudan under the name *Talh*. Although of inferior quality it constitutes up to 10% of the annually exported gum arabic. *Talh* gum is also mixed with the pulp of *Balanites aegyptiaca* to form a syrup. Tropical Africa. UPHOF, VON MAYDELL; W59M, Z19

*Acacia sophorae* - *Coast wattle* {S}. The ripening pods are roasted and the seeds inside removed and eaten. Valued by bushfoods enthusiasts for their delicious flavor. Also ground into a rich, nutty flour that is excellent sprinkled on salads and sandwiches. Australia. CHERIKOFF, CRIBB, ROBINS; C95, N79M, N84, P5, P17M, *Q32, R15M, R33M, S92*

*Acacia spectabilis* - *Mudgee wattle* {S}. The flowers are stripped from their stems and eaten. More distinctive in flavor than *A. oshanessii* and *A. podalyriaefolia*. They can be steeped in liqueur brandy and sugar, coated with batter and deep-fried. Australia. CRIBB; F85, N79M, N84, 093, 094, P5, P17M, *Q32, R15M, R33M, S92*

*Acacia suaveolens* - *Sweet-scented wattle* {S}. The immature seeds were steamed and eaten by the Aborigines. Aromatic leaves are used as a tea substitute. Australia. CHERIKOFF, HEDRICK 1919; F80, N79M, N84, 093, P5, P17M, *Q32, R15M, R33M, S92*

*Acacia tortilis* - *Israeli babool, Umbrella thorn* {S}. The tree is said to produce a superior *gum arabic* or *gomme rouge*. Drier Tropical Africa, Arabia. HEDRICK 1919, UPHOF; A79M, <766, I81M, M7M{PL}, N79M, N84, Q12, *Q15G, Q18, Q41, Q46, S28M, S92*

*Acacia victoriae* - *Elegant wattle* {S}. The delicious seeds are eaten or parched and made into a highly nutritious flour. Produces a high-quality, dark, rich flour with overtones of coffee and chicory. It can be added to breads, biscuits, pasta, ice cream, made into syrup, or used as a coffee substitute sometimes called *wattleccino*.



One of the principal species planted in Australia for the bushfoods industry. Australia. O'CONNELL, ROBINS [Cul, Re]; A67M{PQ}, B76M{DF}, D56M, G66, N40M, N79{PL}, N79{DF}, N79{PD}, N79M, O32M{DF}, 094, P5, P17M, Q15G, Q32, Q46, R15M, R33M, R47, S92, etc.

*Adenanthera pavonina* - *Red sandalwood, Coral pea* {S}. Seeds are eaten raw, or roasted and shelled and eaten with rice, tasting like soy beans. The husked kernels contain 25% of their weight of oil, with a protein content of 39%. Young leaves are cooked and used as a vegetable. Tropical Asia, cultivated. MENNINGER, PONG-PANGAN; A79M, E21D{PL}, F85, N40M, N84, P5, P17M, Q12, Q46

*Albizia julibrissin* - *Mimosa* {S}. Young leaves are used as a potherb. Dried ones are used as a tea substitute. Flowers are eaten as a vegetable or crystallized. Cultivated. HEDRICK 1919, KUNKEL, MACNICOL; C9M, C36{PL}, D95{PL}, E87{PL}, F80, 133, I83M{PL}, K38, A169M{PL}, N37M{PL}, N84, O53M, S92

*Albizia odoratissima* - *Fragrant albizia* {S}. Bark is used in the manufacture of a fermented sugar-cane wine, called *basi*, consumed in the Philippines. Tropical Asia. BROWN, W., STEINKRAUS, UPHOF; F85, Q12, Q18, Q46

*Inga dulcis* - *Pithecellobium dulce*

*Inga edulis* - *Ice-cream bean, Inga-cipo, Guavo-bejuco* {PL}. Fruits contain several large seeds surrounded by white, translucent, jelly-like pulp of a sweet, perfumed taste, much liked by Ecuadorians of all classes. Types with a slight cinnamon flavor are known. Tropical America, cultivated. POPENOE, W. 1924, WILLAN; D57, N84{S}, O19{S}, Q49M

*Inga feuillei* - *Pacay, Guama* {S}. The white, sugar-rich, frothy pulp of the fruit is mostly eaten as a snack in Peru and Ecuador, where it has been esteemed since the time of the Incas. Andean South America, cultivated. FRIED, NATIONAL RESEARCH COUNCIL 1989, UPHOF; J29M, L55J, N84, P38

*Inga laurina* - *Guama, Sackysac inga, Cuajiniquil* {S}. The sweet, white, slightly aromatic aril that surrounds the seeds is eaten out of hand. Seeds are edible, having somewhat the flavor of almonds. Tropical America. ALTSCHUL, KENNARD, PEREZ-ARBELAEZ; YOM, Y2

*Inga micheliana* - *Cushin* {S}. The leaves are used in Coban to wrap tamales, to which they impart a purple color. Central America. WILLIAMS, L.; YOM

*Inga paterno* - *Paterno, Ice-cream bean* {S}. Sweet, white pulp around the seeds is eaten raw and is much appreciated. The immature seeds are blanched, salted, and used in salads or desserts. They are occasionally available bottled in vinegar at Latin American markets. Central America. TANAKA, WILLAN, WILLIAMS, L.; F85, P38

*Inga preussii* - *Guajiniquil* {S}. The deep green pods are occasionally consumed as a vegetable, after prolonged boiling. The soft, velvety, succulent aril is eaten raw. Central America. TANAKA; F85

*Inga spectabilis* - *Guavo real, Guavo de Castilla* {S}. Sometimes cultivated for the pods which contain a sweet, white, juicy aril surrounding the black seeds. Central America, cultivated. HEDRICK 1919, PEREZ-ARBELAEZ; N84, P38

*Inga* sp. - *Ice-cream bean* {PL}. The white fruit pulp, or aril, is sweet, juicy, aromatic, somewhat like cotton candy, and is usually eaten out of hand. E21D, H53M, I83M, P38{S}

*Leucaena esculenta* - *Guaje, Guaje rojo* {S}. The immature, green seeds are stripped from the pods and eaten raw, roasted, dried, as a side-dish with salt, in soups, stews and salads, with tortillas, or ground and added to chili sauces. They have a unique, lingering, garlic-like flavor, much appreciated by some. Dried and salted seeds

are known as *guajesquite*. Pods turn red and open easily when the seeds are eady to eat. Young pods, leaves and flower buds are used as greens. *Polochocho*, galls which frequently develop on leaves and pods, are consumed raw, roasted or boiled. Mexico. CASAS 1996, HEDRICK 1919, KRAIG [Re], MARTIN 1975, THEODOROPOULOS; C95

*Leucaena glauca* - *Leucaena latisiliqua*

*Leucaena latisiliqua* - *Ipil-ipil, Jumbie bean, Lead tree, Green guaje* {S}. Young leaves, pods, and flower buds are eaten raw, steamed, in soups, with rice, or mixed with chilis and other spices. Unripe seeds are mixed with grated coconut and fish or meat, wrapped in banana leaves, and cooked. Mature but not dry seeds are eaten raw or cooked, as a delicacy. Dried seeds are used as a coffee substitute, or fermented into *tempeh lamtoro* and *dageh lamtoro*. Source of an edible gum used in sauces. Tropics, cultivated. CRIBB, MORTON 1976, OCHSE, SHURTLEFF 1979, TANAKA, VON MAYDELL; A12G, A41M, A79M, E21D{PL}, F85, I83M{PL}, N84, 093, P5, Q12, Q15G, Q46, R33M, R50

CULTIVARS

**Low-Mimosene:** The leaves of most clones contain mimosene, an unusual amino acid, which can be harmful if eaten in large quantities. Low-mimosene cultivars can be eaten with some caution. NATIONAL RESEARCH COUNCIL 1979; R47

*Leucaena leucocephala* - *Leucaena latisiliqua*

*Leucaena* sp. - *Guaje costeno, Coastal guaje* {S}. Pods are eaten when very young and tender. The immature seeds are stripped from the pods and eaten alone or with tortillas. Has a milder flavor than *L. esculenta* which is preferred by some. Oaxaca, Mexico. THEODOROPOULOS; F80, N84

*Mimosa pudica* - *Sensitive plant* {S}. The delicately fragrant flowers can be crystallized or used for the preparation of distilled flower water. Tropics, cultivated. CROWHURST 1973; C85M, C89M{PL}, C92, E38, G57M, H21, I67M, I81M, L59, M7M{PL}, Q18, Q32

*Neptunia aquatica* - *Neptunia oleracea*

*Neptunia oleracea* - *Water mimosa, Rau nhut, Phak krachet* {PL}. The floating leaves and stems are crisp and juicy and are eaten raw in salads, as a potherb with *nam phrik kapi*, fried, or served with vermicelli and peanut curry. Also used in sour vegetable salads and a hot and sour soup called *kaerg som*. Young seedpods are also cooked and eaten. Grown in tanks in Thailand and Vietnam and sold in markets. Tropics. HEDRICK 1919, JACQUAT, LOHAUNCHIT [Re], NATIONAL RESEARCH COUNCIL 1976, TANAKA, UPHOF; C74, G85, H30, I90M, J7M, K34, M15, N84{S}

*Parkia africana* - *Parkia biglobosa*

*Parkia biglandulosa* - {S}. Seeds are eaten roasted, used as a flavoring for other foods, or made into a sort of coffee. They can also be fermented into a strongly scented, cheese-like substance that is used as a seasoning. Seedlings are also consumed. Malaysia. KUNKEL, MENNINGER; A79M, F85, 093, Q12, Q18, Q46

*Parkia biglobosa* - *Monkey cutlass, Nutta* {S}. Pods have a sweetish farinaceous pulp that can be eaten fresh or made into sweetmeats and drinks. The pulp also yields a flour much used in parts of Africa. The seeds are fermented into an odoriferous paste, called *kinda, soubmara, or netetou*, which is preserved and used as a food or seasoner. A coffee substitute, called *café du Sudan*, is prepared from the parched seeds. West Tropical Africa. DALZIEL, MENNINGER, ODARTY [Re], TANAKA, UPHOF, VON MAYDELL; T66M, Y40

*Parkia filicoidea* - *West African locust bean* {S}. Seeds are boiled and fermented into *dawadawa*, a strong smelling, blackish cheese-like paste used as food and for seasoning certain vegetable stews. Its odor is destroyed by frying or roasting. The dry, soft pulp of the

fruit is eaten as a snack or ground to a yellow meal. Powdered seeds are used for flavoring soup and rice dishes, or mixed with water to form a refreshing gruel. West Tropical Africa. DALZIEL, HESSELTINE, MENNINGER, TANAKA, WILSON, E.G.; F85

*Parkia javanica* - *Kedawung, Kedaung* {S}. Young seeds are roasted and eaten as a side-dish, or added to fish and meat-dishes. Pods are used as a condiment. Indonesia-Philippines. KUNKEL, OCHSE; F85, 093, Q12, Q18, Q46

*Parkia roxburghii* -+ *Parkia javanica*

*Parkia speciosa* - *Nitta tree, Peteh, Sa-taw bean* {S}. Seeds are eaten raw, boiled, roasted or added to soups, having a rather strong garlic-like flavor that lingers for hours. Dried seeds are peeled and fried in oil. The light yellow, pear-shaped receptacles of the inflorescences are cut into slices and eaten raw. Young, tender pods are sliced and eaten with poultry, fish or stir-fried vegetable dishes. The young leaves are consumed raw. Available in Asian markets, usually packed in brine and labelled *peteh asin*. Malaysia, Indonesia. BURKILL, GRIGSON, J. 1986 [Re], JACQUAT, OCHSE, OWEN [Cul], PASSMORE [RE], SHURTLEFF 1979, TANAKA, UPHOF; A45{£D}, F85

*Pithecellobium dulce* - *Manila tamarind, Madras thorn, Guamachil* {S}. The sweet, pulpy aril surrounding the seeds is eaten out of hand, boiled, or made into a refreshing beverage. Seeds are eaten raw or in curries. They also yield an edible oil. Tropical America, cultivated. BURKILL, SINGH, S., TANAKA, UPHOF; A12G, E21D{PL}, F85, G66, N79M, N84, 093, P5, P17M, Q12, Q18, Q32, Q46, R50

#### CULTIYARS

**Blanco:** White-fleshed selection. Not as sweet as the Roja strain. C95

**Roja:** Red-fleshed selection. Much sweeter than the Blanco strain. C95

*Pithecellobium flexicaule* - *Texas ebony* {S}. Seeds are toasted and eaten. Young pods are consumed as a cooked vegetable. The thick seedcoat is used as a substitute for coffee. Southwestern North America. UPHOF; C9M, F80, F85, J86{PL}, L55J, N84

*Pithecellobium lobatum* - *Jengkol, Ngapi-nut* {S}. Seeds are eaten raw, boiled, salted, or cooked with coconut milk or oil. Young leaves, flowers, and fruits are eaten. A delicacy, called *emping*, is made by pounding the cotyledons one by one into the shape of cakes which are then sun dried. The *emping* is fried in coconut oil, sprinkled with salt, and eaten at the rice table. Seeds are the source of a starch. Southeast Asia, cultivated. MENNINGER, OCHSE, TANAKA, UPHOF; F85

*Prosopis chilensis* - *Kiawe, Algarroba, Mesquite* {S}. The pods contain a sweet, pulpy, nutritious material. They are ground whole and made into bread, cakes, mush, and porridge. Also used for a sweet drink, *atole*, or fermented into a beer. Seeds are also edible. South America, naturalized in North America. KUNKEL, YANOVSKY; C9M, D95{PL}, F53M{PL}, F85, H71, H78{PL}, J86{PL}, K46{PL}, K63G

*Prosopis glandulosa* - *Honeypod, Honey mesquite* {PL}. The green pods, often called *mesquite beans*, containing a sweet pulp, are cooked and eaten as a delicacy or made into jelly. Dried pods are ground into a meal and used in breads, cakes, crackers, muffins, pancakes, etc. Also the source of a gum resembling gum arabic. One of the most important honey sources in the Southwest, the honey being light amber, mild in flavor, and of good quality. Mesquite wood is popular for smoking foods, especially in the Southwest. It adds a strong, distinct flavor and bums hotter and faster than other hardwoods but is not recommended for use with light foods such as veal, fish, poultry or vegetables. Also used for smoking the red-ripe Jalapeno peppers known as *Chipotle*. Southwestern North America. BJORKMAN, BYRNE-DODGE, MEDSGER, MESSINA, NIETHAMMER [RE], PELLETT, TANAKA; C21M{PD}, D95, E56{PD}, E65P{PD}, G60, G66{S}, H4, H90G{PD}, J31{PD},

J21H{ED}, J86{PL}, L15M{ED}, L55J{S}, M85{PD}, N84{S}, etc.

*Prosopis juliflora* - *Mesquite, Kiawe* {S}. Pods are eaten raw, roasted, chewed, or ground into a meal. Ground meal is mixed with water to form a refreshing beverage, which is drunk immediately, made into pudding, or allowed to ferment into a sort of beer. Ripe seeds may be soaked overnight and baked with molasses and salt pork, like kidney beans. The sweet flowers are eaten raw, roasted, or made into tea. They also yield a gourmet white honey with a delicious, delicate yet rich flavor and a smooth, creamy texture. Trunks exude a sweet gum used in candy making. The wood is used as a smoke flavoring. Drier Tropical America. CLARKE [Re], GIBBONS 1979, HARRINGTON, H., HEDRICK 1919, NABHAN 1984a, NIETHAMMER [Nu, Re], UPHOF, WILDER; A69, A79M, C9M, D56M, G66, I16{ED}, I98M{PL}, K17J{ED}, K63G, L3J, L3J{£D}, L16{ED}, M57M{ffi}, N84, 093, Q12, Q18, Q46, R50, etc.

*Prosopis pubescens* - *Screw bean, Tornillo* {S}. Pods are eaten raw, roasted, ground into a meal for cakes, made into an alcoholic beverage, or boiled down to an excellent sweet syrup or molasses. Southwestern North America. KIRK, MEDSGER, UPHOF; B94, C9M, C98M, C98, F80,133, N84, 093

*Prosopis spicigera* - *Jhand* {S}. The mealy, sweetish pulp that surrounds the seeds of unripe pods is eaten raw, dried and preserved, or boiled with vegetables, salt, and butter. Mature pods are eaten as a fruit. Young leaves and a gum obtained from young plants are also edible. Southern Asia. BHANDARI, HEDRICK 1919; F85, Q18

*Tetrapleura tetraptera* - *Arida* {S}. The fruit, rich in sugar, is used in soups, sauces, and other foods after it is ground or roasted. The pulp is soaked in palm wine to strengthen or flavor it. Tropical Africa. DALZIEL, TANAKA; F85

#### MOLLUGINACEAE

*Mollugo verticillata* - *Carpet weed, Indian chickweed* {S}. The entire plant can be cooked and eaten as a potherb, or added to vegetable soups during the last minutes of cooking. Tropical America, naturalized in North America. CROWHURST 1972, FERNALD, KIRK; M34M, N84

#### MONIMIACEAE

*Peumus boldus* - *Boldo* {S}. The sweet, aromatic, fruits are eaten. Leaves and bark are used as condiments. Chile. KUNKEL, TANAKA; J82, K63G, N84, 053M

#### MORACEAE

*Artocarpus altilis* - *Breadfruit, Fruta depan* {PL}. The unripe fruit is eaten as a starchy vegetable either boiled, baked, roasted, fried, steamed, mashed, creamed, pureed, or turned into soups, puddings, cakes, and pies. Jamaicans sometimes stuff them with salted codfish and akee. Ripe fruits are somewhat sweet, and are occasionally eaten raw or fermented into a cheese-like food *popoi*, resembling Hawaiian *poi*. Dried fruits are made into flour. The male inflorescence is eaten as a vegetable or used in the preparation of a sweetmeat. Southeast Asia, cultivated. BENGHIAT [Cul, Re], DEGNER,DUKE, GIBBONS 1967, HAWKES [Re], MASSAL, MAY, R. [Nu, Re], MORTON 1987a [Cu], ORTIZ 1973 [Re], POPENOE, W. 1920 [Cu, Pro], ROSENGARTEN, SCHNEIDER 1986 [Pre, Re], WILSON, E.G. [Re]; B60M{PR}, R50

#### CULTIYARS {SC}

**Puero:** Large, spherical or elongated fruit; rind yellow-green with small brown spots, very rough, spiiy, thin; pulp light yellow, smooth, of excellent flavor. Cooks quickly. Highly esteemed Tahitian cultivar, considered one of the very best. MORTON 1987a; U27T

*Artocarpus altilis* 'Seminifera' - *Seeded breadfruit, Breadnut* {S}. The nutritious seeds, called *pan de pepita*, are boiled, fried or roasted and have a flavor somewhat reminiscent of chestnuts. They are commonly peeled before being eaten. Occasionally found in

Spanish markets of Nov York and other large North American cities. Cultivated. BENNETT [Nu], KENNARD, MASSAL, MENNINGER, POPENOE, W. 1920, ROSENGARTEN; F85, I77G{PL}, N84

*Artocarpus anisophyllus* - *Entawak* {S}. The oblong, spiiy, golden-brown fruit is usually eaten out of hand. It has delicious, bright-orange flesh, firmer in texture and less sweet than that of *A. sericarpus*. Sometimes cultivated in its native area. Malaysia, Indonesia. TANKARD; 019

*Artocarpus champeden* - *Artocarpus integer*

*Artocarpus communis* - *Artocarpus altilis*

*Artocarpus elasticus* - *Terap, Tekalong, Mendi* {S}. The sweet, white pulp of the fruit is eaten. Ripe seeds are roasted and eaten. Source of a latex used as a chewing gum base, known as *Gumihan Gum*. Indonesia, Malaysia. MENNINGER, TANAKA, TANKARD, UPHOF; N84, 019

*Artocarpus gomezianus* - *Tapang* {S}. Small fruits with deep crimson flesh that are too sour to be eaten raw but can be used for making jams and jellies. Unripe fruits are pickled and eaten with rice. Malaysia. BURKILL, TANAKA; F85

*Artocarpus heterophyllus* - *Jackfruit* {S}. The ripe, malodorous fruits are eaten raw, fried in curries, preserved in syrup, dried, cooked in milk, or made into an alcoholic beverage. Very young fruits and leaf-shoots are eaten in soups and stews. Seeds are boiled, fried, ground into flour and made into biscuits, or roasted like chestnuts. The young male inflorescences are eaten mixed with chilis, fish paste, sugar, salt, etc. Rind of the fruit yields a lair jelly. Southern Asia, cultivated. DUKE, KIRCHNER [Re], MORTON 1987a [Cu], OCHSE, POPENOE, W. 1920 [Cu, Pro], RICHARDSON, M. [Pre, Re], STEINKRAUS; A7{DF}, E13G{DF}, E21D{PL}, E29{PL}\ F85, H53M{PL}, I77G{PL}, I83M{PL}, J22{PL}, N40{DF}, N84, 019, P38, Q12, Q46, Q93{PL}, etc.

CULTIVARS {GR}

**Black Gold:** Large fruits with a delicious flavor. The edible pulp in one fruit may weigh over 16 pounds. Vigorous tree with deep green leaves. The leaves are of such a deep color, they appear almost black, hence the name. Originated in Australia. JOHNSTON, E.; J22

**Dana Rasimi:** Vigorous growing cultivar from Thailand. Large fruits with thick, pinkish flesh; sweet and crisp; quality very high. Recently introduced into Hawaii where it is becoming popular with home orchardists. JOHNSTON, E.; E8M

**NSill** An excellent cultivar widely grown in Southeast Asia. Medium to large fruit of unsurpassed quality. Deep yellow-orange flesh, crisp, sweet and flavorful. Consistent, heavy bearing tree; precocious. Originated in Malaysia. Introduced into Florida by William F. Whitman and Dr. Robert McNaughton. JOHNSTON, E., WHITMAN; E8M

**Singapore:** (Ceylon) Medium-sized fruit with small, fibrous carpels which are very sweet. Produces a summer crop in June and July and a second crop from October to December. Remarkably precocious, producing fruits in 18 months to 2 1/2 years from transplanting. Introduced into India from Sri Lanka. MORTON 1987a; E8M

*Artocarpus hypargyraeus* - *Kwai-muk* {PL}. When ripe, the pulp of the fruit is orange-red to red, and has an agreeable, subacid to acid flavor. It is eaten out of hand, or may be preserved in syrup or dried. Southern China. MORTON 1987a; E29, N84{S}

*Artocarpus integer* - *Champedak* {S}. The pulp of the ripe fruits is golden-yellow, rather slimy, strongly odoriferous, almost like that of the durian. It is eaten fresh, fried together with flour, or mixed into *dodol*, a kind of pudding. Unripe fruits are used as a cooked vegetable or may be added to soups. The ripe seeds are roasted and eaten as a delicacy. Leaves are also edible. Southeast Asia. MAR-

TIN 1975, MORION 1987a, OCHSE, RIFAI, TINGGAL; F85, M17{PL}, N84, 019

*Artocarpus integrifolia* -> *Artocarpus heterophyllus*

*Artocarpus lakoocha* - *Lakoocha, Monkey jack* {S}. Fruits have a pleasant, sub-acid flavor, and are occasionally eaten raw but are mostly used in curries or chutneys. The male inflorescence, acid and astringent, is pickled. The flat, broad seeds are edible. Bark is chewed as a substitute for betel nut. Southern Asia. HEDRICK 1919, KUNKEL, MACMILLAN, MORTON 1987a, UPHOF; F85, N84, 019, P38, Q12, Q46

*Artocarpus odoratissimus* - *Marang, Tarap* {S}. The ripe fruits are fleshy, aromatic, sweet and juicy, similar to the jackfruit but of much better quality. Usually eaten as a dessert fruit, and considered the finest fruit in Brunei. Unripe fruits are eaten as a boiled vegetable. Seeds are roasted or boiled and eaten. The rind of the fruit is said to be edible. Philippines to Indonesia. KUNKEL, POPENOE, W. 1920, TANAKA, TINGGAL, UPHOF; E8M{PL}, N84, 019, R78M

*Artocarpus polyphema* - *Artocarpus integer*

*Artocarpus sarawakensis* - *Pingan* {S}. The orange-brown fruits are eaten. They are sweet, juicy, fiberless and melting like the marang, but the segments are smaller. The flavor is excellent, comparable to the pedalai. Borneo. TANKARD; 019

*Artocarpus sericarpus* - *Pedalai* {S}. A round, bright orange fruit, similar to the marang inside but has a superior flavor, firmer flesh, slightly larger segments and less aroma. The sweet creamy flesh is easy to eat, with the segments clinging to the central core when the skin is removed. Seeds are considered to be among the tastiest of the *Artocarpus* species. They may be boiled, roasted or fried. Borneo, Philippines. ALTSCHUL, TANKARD; E8M{PL}, 019

*Artocarpus* sp. - *Utu* {S}. The fruit resembles a small, golden-brown jackfruit. Cream-colored flesh is "eat-all", with no waste. The flavor is neither sweet nor sour, but tangy and very pleasing, reminiscent of yogurt. Can be used in the same manner as breadfruit. The large, hard-shelled seeds can be roasted and eaten. Borneo. 019

*Artocarpus* x sp. (*A. heterophyllus* x *A. integer*) - *Champejak* {GR}. Artificial hybrid. Jackfruit x champedak. The hybrid fruits are eaten, having a shape like the jackfruit and with sweet, thick, soft arils that are easily detached from the fruit like those of the champedak. Developed in Malaysia. E8M, P38{SC}, R78M{S}

*Brosimum alicastrum* - *Ramon breadnut, Mayan breadnut* {PL}. Seeds are eaten raw, boiled and mashed like potatoes, made into juice and marmalades, or roasted, when they develop a nutty, cacao-like flavor. Ground seeds are made into a *masa* to mix with com for making *torillas*, added to milk and sugar to make a nutritious and tasty milk shake, mixed with honey, or steeped in boiling water to make a coffee-like beverage. The latex from the trunk is mixed with chicle or drunk like cow's milk. Central America. NATIONAL RESEARCH COUNCIL 1975a, PETERS [Nu], ROSENGARTEN; E29, F85{S}, 112, N84

*Cudrania tricuspidata* - *Chinese che, Cudrang, Silkworm thorn* {PL}. The fruits are similar to a mulberry and turn a dull maroon color when mature. While still firm they are relatively tasteless. When soft ripe, like a persimmon, they are sub-acid to sweet and may be quite delicious. Eastern Asia. DARROW, HENDRICKSON, UPHOF; A79M{S}, G17, H4,149M, 174,183M, N84{S}

CULTIVARS {GR}

**Female:** Large, flavorful fruit; ripens in late summer to fall. Small, thorny tree; bears heavy crops annually. Requires a male tree for fruit production. F43M

**Male:** Small, thorny tree. Used primarily as a pollinator for female trees. Occasionally produces a few small fruits. F43M

**Seedless:** Completely seedless strain discovered in Greenwood, Virginia. Small, rounded, reddish fruits; juicy and sweet when ripe, with a very pleasant fig-like flavor. Ripens in the fall. Bears heavy crops without requiring a pollinator tree. Ornamental as well as edible. D37

*Ficus auriculata* - *Roxburg fig, Timla* {S}. Fruits are eaten raw, in curries, or made into jam. When pollinated with a small stick dipped in olive oil, they are said to grow to four inches in diameter. Tropical Asia. BURKILL, FAIRCHILD 1930, HEDRICK 1919, KUNKEL, PARMAR, C.; H4{PL}, I83M{PL}, N84, 093, Q41

*Ficus awkeotsang* -> *Ficus pumila* var *awkeotsang*

*Ficus capensis* - *Cape fig, Brown cluster-fig* {S}. The fruits are sweet and are usually eaten out of hand or made into jam, pudding and preserves. Young aerial shoots are eaten as a vegetable. Bark is chewed with cola nuts for the alleviation of thirst. Tropical Africa. DALZIEL, FOX, F., KUNKEL, TREDGOLD; M17{PL}, N84, 093, Q41, S28M

*Ficus carica* - *Fig* {PL}. Fruits are eaten raw, dried, preserved, brewed into wine, dried and ground into a coffee substitute, candied, processed into jams, paste, syrup, used in cookies, bread, brownies, pastries, pies, etc. Often baked after having been stuffed with walnuts or almonds and small pieces of citron. Small, hard, unripe figs are sometimes used for making preserves. In ancient Greece, the pickled leaves served as wrappers for dishes resembling modern *dolmas*. A famous anise-flavored brandy of Morocco called *mahya*, brewed by the Jews of the High Atlas Mountains, is made from figs. In Turkey, the leaves are used for grilling fish and fowl such as sea bass and quail, the leaves imparting a subtle and pleasant flavor and aroma to the foods. The famous sausages of Majorca, such as *sobrasada* and *butifarra*, derive part of their flavor from the fresh and dried figs fed to the Majorcan black pig, a strain of Iberian pig. The latex is used to coagulate milk for making cheese and junket. Cultivated. ALGAR [Re], BIANCHINI, BRYAN [Cu, Re], CARTER, DALBV, KREMEZI 1994 [Re], MORTON 1987a, UPHOF, WOLFERT 1973 [Cui]; E9{E0}, G66{S}, G96, 157, N84{S}. (for cultivars see Fig, page 366)

*Ficus glabrata* - *Ficus insipida*

*Ficus glomerata* - *Ficus racemosa*

*Ficus hirta* - *Dieng-soh-rompian, Boowah kontol monjet* {S}. Very young top-shoots are eaten raw, as a side-dish with rice. The ripe, yellow or red fruits have a sweet taste and are relished by the natives, especially children. Tropical Asia. OCHSE; F85

*Ficus infectoria* - \* *Ficus lacor*

*Ficus insipida* - *Caxinguba, Amate* {S}. The tree yields a latex, called *fiucin* or *leche de oje*, used commercially in meat tenderizers, edible collagen films, sausage casings, in chillproofing beer, and in curdling milk for making cheese. Despite the name, in some areas the large fruits are reported as being very good to eat. Tropical America. LEUNG, WILLIAMS, L.; F85

*Ficus lacor* - *Kachimal, Ako, Fhak hueat* {S}. Young shoots and sour leaves are eaten raw or cooked. In southern Thailand, they are added to curries, especially coconut milk and salted fish curry. The reddish-pink fruits are eaten raw or mixed with fresh raw vegetables. Tropical Asia. HEDRICK 1919, JACQUAT, LEUNG, PONG-PANGAN; Q18

*Ficus palmata* - *Fagwara* {PL}. The sweet, juicy, succulent fruits are eaten. They are said to be on a par with the common cultivated fig in flavor, however they are rather small. Suitable for drinks (squash), jam and jelly or for drying. Unripe figs and young leafy shoots are boiled, fried and used as a green vegetable in the spring. Sold at local markets in the Himalayas. In Saudi Arabia, the latex is added to milk when making yogurt. North Africa to India. ALT-SCHUL, GHAZANFAR, HEDRICK 1919, PARMAR, C.; I83M, Q46{S}

*Ficus pseudopalma* - *Philippine fig* {S}. The young leaves are delicious eaten raw in salads or cooked as a potherb. Fruits are also edible. Philippines. KUNKEL, MARTIN 1975; T73M

*Ficus pumila* - *Creeping fig, Mu-lien, Hsueh-li, Mu-man-tu* {PL}. In China, the fruit is picked ripe and placed in a porous bag to squeeze the juice out. This juice is then cooked and cooled into a gelatinous jelly, called *pai-liang-fen*, which is cubed, mixed with water, syrup and flavorings and consumed as a refreshing beverage. Available canned as *grass jelly* or *ai-yu jelly* in ethnic stores. Eastern Asia. HSU, LEE, G., ROUTHIER 1989 [Cul], TANAKA, VON WELANETZ; A45{PD}, B41, F53M, G19M{PD}, G96, H4, I8, K22, L21T{DF}, L90G{PD}, M7M, M82, N7J, N84{S}

*Ficus pumila* var. *awkeotsang* - *Chinese jello-vine, Ai-yu-tzu* {S}. The fruit is sometimes eaten out of hand, but usually it is processed into an edible jelly or drink, in much the same manner as the species. Eastern Asia. TANAKA; F85

*Ficus racemosa* - *Cluster fig, Gular* {S}. Ripe fruits are eaten fresh, dried and ground into flour and taken with sugar and milk, or used for preparing a cold jelly. The powder from roasted fruits forms a valuable breakfast food. Unripe fruits are pickled or used in soups. Young shoots are eaten raw or cooked. Tropical Asia to Australia. CRIBB, HEDRICK 1919, OCHSE, TANAKA; F85, N84, P5, Q12, Q18, Q41, Q46

*Ficus roxburghii* - *Ficus auriculata*

*Ficus sur* - *Ficus capensis*

*Ficus sycomorus* - *Sycamore fig, Pharaoh's fig* {S}. The sweet, aromatic fruits have been eaten since the days of the ancient Egyptians. In parts of Africa they are eaten with millet or made into an alcoholic beverage. The leaves are eaten in soups or peanut dishes. Gashing of the immature fruits is an ancient technique that hastens their ripening. The latex is used as a vegetable rennet. Northern Africa to Southwest Asia. GALIL, HEDRICK 1919, MOLDENKE, UPHOF, VONMAYDELL; M17{PL}, N84, S28M

*Morus alba* - *White mulberry* {S}. Fruits are eaten raw, in pies, tarts, jellies, drinks, or brewed into a wine. In Turkey, they are made into a syrup known as *dut pekmezi*. *Morat* is an ancient mead-like drink made from mulberry juice and honey. Dried fruits are a delicious snack, or they can be used like dried figs or raisins in puddings, cookies, and muffins. Young shoots are sometimes eaten with rice and condiments, put in stews, or used as a substitute for tea. Mulberries are combined with elderflowers and other herbs to produce a delicious *kombucha* drink having champagne-like qualities. Mulberry wood is used for aging *balsamic vinegar*. Also the source of an edible manna. China, cultivated. DONKIN, GAYRE, GIBBONS 1962 [Re], KASPER, OZTURK, SIMMONS 1972 [Cu], TANAKA, TIETZ; C9M, E47M{DF}, F88{DF}, G47B{DF}\G47B{PD}, G73, H4{PL}, 147, K38, K46{PL}, K63G, NO{PL}, N84, 053M, P38{PL}, Q12, Q46. (for cultivars see Mulberry, page 428)

*Morus alba* var. *indica* - *Indian mulberry, Ainu mulberry* {S}. In Bombay, the dark red fruits are sold in the bazaars for making compotes and tarts. The leaves are also edible. Tropical Asia. HEDRICK 1919, MACMILLAN, TANAKA; P38

*Morus australis* - *Korean mulberry* {S}. The sweet, juicy, dark red fruit is eaten raw or brewed into a wine. Eastern Asia. HENDRICKSON, TANAKA; F85, D95{PL}, N84

*Morus indica* - *Morus alba* var *indica*

*Morus laevigata* - *Himalayan mulberry, Tut* {S}. The long, cylindrical, sweetish fruit is eaten raw and is also excellent when stewed with sugar. Southern Asia. HEDRICK 1919, TANAKA; P38, Q46

*Morus nigra* - *Black mulberry, Persian mulberry* {S}. The fruits are eaten raw, dried, made into jams, compotes, puddings, pies, syrups, sauces, or mixed with honey or mead to form refreshing

drinks. Dried fruits can be ground into a flour. Asia Minor, cultivated. BRYAN [Cu, Re], HACKETT, JOHNS [Cul]; D77M{PL}, G73, H4{PL}, I49M{PL}, K38, K63G, L50M{PD}, N84, 053M, P38, P49. (for cultivars see Mulberry, page 428)

*Morus rubra* - *Red mulberry* {S}. Ripe fruits are eaten fresh with cream and sugar, or made into pies, jams, jellies, marmalades, juices, muffins, fruit-cakes, etc. Dried fruits are ground and mixed with almond and other nuts to form a delicious confection. Young shoots and unfolding leaves are eaten raw or boiled and served with butter and salt. North America. ANGIER, FERNALD, GIBBONS 1962 [Re], MEDSGER, TURNER 1979 [Re]; D95{PL}, G66, G73, H4{PL}, H14M{PL}, I49M{PD}, K38, K63G, N84. (for cultivars see Mulberry, page 428)

*Streblus asper* - *Dieng-soh-khydang, Khorua* {S}. The yellow, aromatic fruit is eaten. Juice from the stem is used to curdle milk. Tropical Asia. MACMILLAN, TANAKA; Q46

*Treculia africana* - *African breadfruit* {S}. Seeds are boiled or roasted, peeled, and eaten as a dessert nut, or fried in oil. They are also ground to a meal, cooked, and used in soups or nut milks. An edible oil is sometimes extracted from them. Tropical Africa. DALZIEL, DANFORTH, MENNINGER, TANAKA; N84

#### MORINGACEAE

*Moringa oleifera* - *Horseradish tree, Drumstick, Malunggay* {S}. The long, bean-like pods are used in soups and curries or made into pickles. Young, mustard-flavored leaves, twigs, and flowers are eaten raw in salads, cooked as potherbs, or put in soups and curries. Immature seeds are eaten like peas. Mature seeds, when roasted or fried, are said to resemble peanuts. They also yield *ben oil*, used in salads and cooking. The pungent root is used as a substitute for horseradish. Young, tender seedlings make an excellent cooked green vegetable. A reddish gum produced by the bark, called *ben gum*, is used as a seasoning. Leaves contain 7-10% protein. Tropical Asia, cultivated. DUKE, GELLE [Re], GRIGSON, J. 1986 [Re], HAWKES [Re], HEDRICK 1919, MARTIN 1975, MENNINGER, MORTON 1976, OCHSE, REEJHSINGHANI 1975 [Re], VON MAYDELL; A26, A79M, C9M, C95, D33, D57{PL}, F68T, F85, I12{PL}, 174{PL}, N84, 093, P5, Q12, Q46, etc.

##### CULTIVARS

**Hybrid:** An improved hybrid type developed in India. R50

*Moringa ovalifolia* - *Phantom tree* {S}. Highly prized in Africa for its horseradish-like root, and its edible leaves and fruits. Southern Africa. FOX, R; 133, 147M{PL}, N84, S28M

*Moringa pterygosperma* - *Moringa oleifera*

*Moringa stenopetala* - *African horseradish tree* {S}. The young leaves are eaten as a vegetable. They are somewhat larger than those of *M. oleifera*, and reportedly milder in flavor when eaten raw. Eastern Africa. KUNKEL; H29

#### MUSACEAE

*Ensete edule* - *Ensete ventricosum*

*Ensete ventricosum* - *Abyssinian banana, Inset* {S}. The chopped and grated pulp of the corms and leaf sheaths is fermented and used as a flour in making *kocho* bread. One hundred percent *kocho* flour or a mixture of *kocho* and other cereal flours may be used. *Kocho* is usually eaten with cheese, kale, ground meat, chickpea or bean sauce, and seasoned with spiced butter or it can be used to make *injera* or *talla*. The endosperm of the seeds is consumed as food. Tropical Africa. MESFIN [Re], SIMMONDS 1966, STEINKRAUS, UPHOF; A41G{PL}, A79M, C9M, F53M{PL}, H71, 128{PL}, 157{PL}, I77G{PL}, I83M{PL}, L91M, N84, 053M, 093

*Musa acuminata* - *Pisang jacki, Kole* {PL}. The seedy fruits are occasionally eaten. Male inflorescences are roasted and eaten in a spicy dish known as *getjok*. Young shoots are cut finely and added to sauces. The leaves are occasionally used for wrapping food. One of

the parents of the common edible banana, *M. x paradisiaca*. It is considered more important in this respect than *M. balbisiana*, with most of the commercial clones derived from this species. Tropical Asia. BROUK, OCHSE, SIMMONDS 1966, UPHOF; E55M, I77G, N84{S}

*Musa balbisiana* - *Pisang batu, Pisang klunuk* {PL}. The fruits are occasionally eaten fresh, but are not popular due to their seediness. Young fruits are used like green papaya in salads and pickles. Male flower clusters are an ingredient of *tom kaa kai*, a chicken curry dish made with galangal and coconut milk. The inner part of the stem is also eaten in curries. Leaves are used as wrapping for rice dishes or desserts. Juice from the ripe fruits is mixed with sugar and fermented into vinegar. One of the parent species of the common edible banana, *M. x paradisiaca*. Tropical Asia. JACQUAT, OCHSE, OWEN [Re], SIMMONDS 1966, UPHOF; E55M, I77G, N84{S}

*Musa ensete* - *Ensete ventricosum*

*Musa x paradisiaca* - *Banana, Plantain* {S}. Unripe fruits are steamed, boiled, dried, baked, fried, made into meal, flour, *juju*, *dumboy*, chips, or parched and used as a coffee substitute. Ripe fruits are eaten out of hand, or used in ice cream, bread, muffins, cream pies, jams, sweetmeats, etc. Mashed bananas can be used as a fat substitute in baking. The leaves are widely used for wrapping food, especially glutinous rice dishes. They impart a distinctive flavor and a greenish color. Ashes of the plant may be used as a salt substitute. Male flower-heads are eaten in curries or cooked with coconut milk. Individual flowers are prepared separately in curries or with palm oil. In Jamaica, the peel of the fruit is added to *mannish water*, a type of goat's head stew. The inner part of the stem is eaten boiled or made into flour and starch. In Burma, where they call it *ngapyawoo*, it's an essential ingredient of *mohingar*—the national soup of fish and noodles. The pulp is fermented into vinegar, beer and wine. Blanched shoots which sprout from the base of the plant are roasted and eaten. The nectar of the flowers is consumed. Cultivated. DUKE, MORTON 1987a, OCHSE, ORTIZ 1973 [Re], PASSMORE, REYNOLDS, R, PASSMORE, ROUTHIER 1989 [Re], SIMMONDS 1966, STEINKRAUS, TAIK [Re], UPHOF, WALSH [Cul, Re], WOODRUFF [Re]; C56G{PD}, D4{£D}, E13G{DF}, G47F{PR}, G92{DF}, I28{PL}, L62M{PL}, N40{DF}, 053M, 093, Q41. (for cultivars see Banana, page 294)

*Musa sapientum* - *Musa x paradisiaca*

*Musa troglodytarum* - *Fe'i banana*. Origin unknown, possibly a natural hybrid. Very ripe fruits are eaten raw, or more commonly they are baked or boiled. The yellow flesh discolors the urine of those who eat it. In New Caledonia, bunches are buried in mud to hasten the ripening process. Polynesia, cultivated. MASSAL, SIMMONDS 1966; (for sources see Banana, page 294)

*Musa ventricosa* - *Ensete ventricosum*

#### MYRICACEAE

*Comptonia asplenifolia* - *Comptonia peregrina*

*Comptonia peregrina* - *Sweet fern* {PL}. The aromatic leaves, both fresh and dried, are made into a palatable tea. Menomini Indians of Wisconsin used them as a seasoning. Young fruits are eaten as a pleasant nibble. Eastern North America. ANGIER [Pre], FERNALD, GIBBONS 1979, MEDSGER, UPHOF; A74, B9M, E33M, E63, H8, I49M, J39M, M77M, M92, N37M

*Myrica cerifera* - *Wax-myrtle, Southern bayberry* {PL}. Aromatic leaves and berries make an attractive and agreeable substitute for bay leaves in flavoring soups, stews, roasted meats, and seafood. The leaves are also brewed into a robust tea. Fruits are eaten fresh, preserved, or fermented into wine. North America. FERNALD, GIBBONS 1979, TANAKA; B32, D92M{S}, F73, G66{S}, H4, H14M, I47{S}, K63G{S}, K85, N37M, N84{S}

*Myrica gale* - *Sweet gale, Bog myrtle* {DF}. Aromatic fruits and leaves are used to flavor broth, soups, stews, and meats. Dried leaves make a delicate and palatable tea. The herb is sometimes put

in beer and ale to add flavor and increase foaming In Yorkshire, England this type of brew is known as *Gale beer*. Northern temperate region. FERNALD, HEDRICK 1919, MABEY [Re], MICHAEL [Re], MORTON 1976, UPHOF; A20M, B55M, D95{PL}, E68, F65, K63G{S}, L36M, N84{S}, R53M{S}, S55{S}

*Myrica heterophylla* - *Evergreen bayberry* {PL}. The leaves and nutlets are used as substitutes for bay leaves in flavoring soups and other foods. North America. FERNALD; N37M

*Myrica nagi*-*Myrica rubra*

*Myrica pensylvanica* - *Northern bayberry* {PL}. Dried leaves are used to season crab-boil, stock, broth, soup, stew, or chowder. The leaves, which impart a delicate aroma and subtle flavor are removed before serving. Eastern North America. GIBBONS 1964; A50, B9M, C9, C47, D92M{S}, D95, H4, H49, 14, K22, K38{S}, K63G{S}, K85, M77, N84{S}, 053M{S}, etc.

*Myrica rubra* - *Chinese bayberry*, *Yang-mei*, *Kaiphal* {S}. The agreeable, subacid, deep red fruits are eaten fresh, cooked, preserved, or made into a refreshing drink or a kind of liqueur. Seed kernels are also said to be edible. Recommended for improvement by selection and breeding. Eastern Asia. HEDRICK 1919, PARMAR, C., TANAKA, UPHOF; D92M, G66, I74{PL}, K38, K63G, M7M, N84, P5, R47

MYRISTICACEAE

*Myristica argentea* - *Papua nutmeg*, *Macassar nutmeg*, *Gewz* {DF}. Both the oval, reddish-brown seed kernels and the orange aril or mace are used as spices. Slightly less aromatic and with a less refined flavor than true nutmeg and mace. Often used in Ethiopian cooking, especially for *zigni*-spiced ground beef dishes. Principal source of the wild nutmegs which enter into commerce. New Guinea. GRIEVE, MESFIN [Re], MORTON 1976, UPHOF; H51

*Myristica fragrans* - *Nutmeg* {S}. Seeds are the source of nutmeg, used to flavor custards, eggnog, sauces, cakes, puddings and pies. *Mace*, the dried aril, seasons soups, sauces, curries, fruit salads, cakes, pickles and baked goods. Powdered mace, sprinkled on cooked cabbage, masks the sulfide odor. Both nutmeg and mace are indispensable ingredients of *ras el hanout*. The flesh of the fruit is cut into slices and eaten as a delicacy with *sambal* (hot-pepper sauce), pickled, candied, preserved, or made into nutmeg-flavored jams, jellies and syrups. Indonesia, cultivated. CUSUMANO [Cul, Re], KENNARD, MENNINGER, MORTON 1976, OCHSE, ROOT 1980\ UPHOF, WOLFERT 1973; A7{PD}, C4M{PD}, F85, 18M{DF}, J22{PL}, L17{DF}, L55G{PD}

*Virola surinamensis* - *Ucuaba-branca* {S}. The seeds are the source of an edible fat. Tropical America. ALTSCHUL; G73

MYRSINACEAE

*Embelia ribes* - *Memory Improver*, *Butterfly pea*, *Areuj kathembang* {S}. Young leaves and branchlets are eaten raw as a side-dish with rice, usually mixed with other greens. The sour leaves are used as a substitute for tamarind in soups and vegetable dishes. Ripe fruits have a sour-sweet flavor and are eaten as a delicacy. Both the leaves and fruits are used to prepare a sweet, refreshing drink. Dried fruits are used as an adulterant of black pepper. Young stems are chewed as a delicacy. Also a major ingredient of *Amrit Kalash*. India to Indonesia. OCHSE, UPHOF; F85, H14{PD}, N84

*Myrsine africana* - *African boxwood* {S}. Fruits are eaten or used as an adulterant of black pepper. Tropical Africa. KUNKEL, TANAKA; B41{PL}, E53M, G66, N37M{PL}, N84, 093, Q46, S28M

MYRTACEAE

*Acca sellowiana* - \**Feijoa sellowiana*

*Acmena smithii* - \**Eugenia smithii*

*Austromyrtus dulcis* - *Midyim*, *Midgen berry* {S}. Small, pale lilac or almost white fruits that can be eaten out of hand or added to fruit salads and dessert garnishes. They have very soft skin, small seeds, and soft pulp with a sweet, mildly aromatic, somewhat ginger-like flavor. Considered one of the best native fruits of Australia. Australia. CHERKOFF, CRIBB, ROBINS; F85, N79{PL}, N84, P38, R15M

*Britoa acida* - \**Psidium acutangulum*

*Britoa sellowiana* - *Psidium acutangulum*

*Campomanesia lineatifolia* - *Guabiraba* {S}. The aromatic yellow fruits are eaten, and are considered one of the best of the genus. They have soft, fleshy pulp with a very agreeable subacid flavor. Very good eaten out of hand or used for juice, ice cream, jellies and marmalade. Recommended for increased cultivation. South America, cultivated. DUKE, WILLAN, ZEVEN; N84, P38, R78M

*Cleistocalyx operculatus* - *Rai jaman* {S}. In Tonkin, the leaves are used for making tea. They are often mixed with the leaves of *Sageretia theezans*. The fruits, resembling small black cherries, are also edible. Tropical Asia. BURKILL, HEDRICK 1919, UPHOF; N84

*Eugenia aggregata* - *Cherry of the Rio Grande* {PL}. When ripe, the fruits are reddish-purple, juicy, firm in texture, and pleasantly subacid. They are very good eaten out of hand or can be used for jams and jellies. In addition to producing desirable fruit, the tree is quite ornamental and deserves to be more widely grown. Brazil. DRYSDALE, MARTIN 1987, MAXWELL, RODALE; A41G, D57, G2M, H53M, 112, 177G, I83M, J29M{S}, N84{S}, P38{S}, S97M

*Eugenia apiculata* - *Myrceugenella apiculata*

*Eugenia aromatica* - *Syzygium aromaticum*

*Eugenia brasiliensis* - *Eugenia dombeyi*

*Eugenia cabelludo* - *Cabelludo* {S}. The edible fruits resemble large gooseberries in appearance. When fully ripe they are yellow, nearly one inch in diameter, downy externally, and with flesh that is juicy, subacid, and pleasant in flavor. Also has value as an ornamental plant. Brazil. POPENOE, W. 1920, TANAKA; X88M

*Eugenia carissoides* - *Eugenia reinwardtiana*

*Eugenia cumini* - *Syzygium cumini*

*Eugenia dombeyi* - *Grumichama*, *Brazil cherry* {PL}. Fruits are deep crimson, the size of a cherry, with soft, melting flesh of a mild subacid flavor reminiscent of a Bigg cherry. They are excellent to eat out of hand or may be used in jams, jellies and pies. Brazil, cultivated. GARNER [Pro], KENNARD, MORTON 1987a, POPENOE, W. 1920 [Cu], RICHARDSON, M. [Re], STURROCK; A79M{S}, D57, E29, F85{S}, G2M, G73{S}, 177G, I83M, K8{S}, N84{S}, 019{S}, P38{S}, Q93, S97M

*Eugenia jambos* - \**Syzygium jambos*

*Eugenia klotzschiana* - *Per a do campo* {S}. The pear-shaped, golden yellow fruits are used for jellies. They have soft, juicy, acid flesh, and are highly aromatic in odor and flavor. Occasionally cultivated. Brazil. POPENOE, W. 1920, UPHOF; T73M

*Eugenia luehmannii* - \**Syzygium luehmannii*

*Eugenia luschnathiana* - \**Phyllocalyx luschnathianus*

*Eugenia malaccensis* - *Syzygium malaccense*

*Eugenia moorei* - *Syzygium moorei*

*Eugenia myrtifolia* - *Syzygium paniculatum*

*Eugenia operculata* - *Cleistocalyx operculatus*

*Eugenia polycephala* -+ *Syzygium polycephalum*

*Eugenia reinwardtiana* - *Cedar Bay cherry*, *Australian beach cherry*, *Agashiru* {S}. The edible fruits are red, pear-shaped, aromatic, and have a pleasant tart flavor. Australia. Tropical Asia. TANAKA; E29{PL}, I12{PL}, J29M, N84, P38

*Eugenia smithii* - *Lilly pilly* {S}. The fruits are sometimes eaten although they are not highly regarded. Grown mostly for its decorative and adaptive qualities. It has been suggested that this species could be hybridized with other species that have better fruit. Australia. CRIBB, JOHNS; F85, N79M, N84, 093, 094, P5, P17M, P38, Q32, R33M

#### CULTIVARS

**Purple:** A form that bears purple or violet fruit, instead of the more typical white or pinkish white types. N79M, N84, P5

*Eugenia stipitata* - *Guaba brasiliensis*, *Pichi*, *Araca-boi* {S}. The yellow fruits are eaten, being among the largest of the genus, often 2 1/2 to 3 1/2 inches wide—up to 4 3/4 inches when cultivated. Fruit pulp is pale yellow, soft and delicate, sour, very aromatic, and has excellent juicing characteristics. Also makes an excellent dessert when mixed with whipped cream or frozen dessert toppings. Loses flavor and aroma when cooked and is best quick-boiled for jam. Amazonian region. HOWELL, MORTON 1987a, WILLAN; A79M, N84, 019, R78M

*Eugenia uniflora* - *Surinam cherry*, *Brazilian cherry*, *Pitanga da praia* {S}. Ripe fruits are ribbed, crimson to purplish-black in color, and have juicy, aromatic, sub-acid flesh that is considered the best of the Eugeniads. They are delicious eaten out of hand or can be made into jams, jellies, pies, compote, sherbet, drinks, and syrup. Unripe fruits are used in relishes and chutneys. Red colored fruits make a light red wine while the black fruits lose their color on fermenting and make a clear white wine. The aromatic leaves are used as a substitute for tea. Tropical America, cultivated. GARNER [Pro], MORTON 1987a, POPENOE, W. 1920 [Cu, Pro], RICHARDSON, M., RILEY 1971, STURROCK, UPHOF; A41G{PL}, A79M, D57{PL}, E29{PL}, F85, 174, J22{PL}, N84, P5, P38, Q93{PL}, R78M

#### CULTIVARS {GR}

**Black:** Large, black fruit, 1 inch or more in diameter. Delicious, nectarine-like flavor. A lighter producer, with fewer crops per year than California cultivars. Originated in Florida. G2M, M17

**Chamba:** Large, plump, rounded fruits; 1 inch or more in diameter; skin bright orange-red; flesh very juicy, not tart but sweet with a distinct, refreshing flavor. Small, bushy tree. Originated in Kona, Hawaii. D57{OR}, 174

**Lolita:** (Westree 317) Small black fruit, averages 1 inch in diameter; flesh moderately sweet; excellent, rich flavor. Recommended for fresh eating, jams, salads, jellies and ice cream flavoring. Tree usually bears two crops, one in January and another in June. Originated in Carlsbad, California by Nelson E. Westree. Introduced in 1957. BROOKS 1972; E8M, I83M

**Lorver:** Large fruit, 1 inch or more in diameter. Tree larger than Lolita and other California cultivars, can reach the size of a small tree. Produces fewer crops per year. Originated in Florida. 174

**Nacha:** (Westree 194) Large fruit, up to 1 1/2 inches in diameter; skin brilliant red, attractive; flesh firm but tender, juicy, sprightly subacid, sugar content moderate. Tree vigorous and productive, usually bears in June and January. Originated in Carlsbad, California by Nelson E. Westree. I83M

**New Zill Black:** An improved type that originated in Florida. Medium to large; purplish-black fruit. Very sweet, cherry-like flavor. I77G

**Vermillion:** Large, reddish fruit, 1 inch or more in diameter. Delicious, nectarine-like flavor. Vigorous shrub, under good condi-

tions can reach the size of a small tree. Originated in Florida. E8M, 174, I83M

**Westree 369:** (Tina) Medium-sized, very dark purple-black fruit; excellent flavor reminiscent of blackberry. Tree extremely heavy bearing; precocious, bears as early as 3 years of age; produces well in dry weather. Will bear continuously under optimal conditions. Originated in Carlsbad, California by Nelson E. Westree. Introduced in 1971. I83M

*Eugenia uvalha* - *Uvalha* {S}. A small, yellow or orange, thin-skinned fruit that is used principally for making refreshing drinks. The flesh is soft, juicy and acid, with an intense and agreeable aroma. Brazil. POPENOE, W. 1920; J29M, N84, S97M{PL}

*Eugenia victoriana* - *Guayabilla* {S}. The bright, glossy orange fruits are eaten or made into delicious juice and jams. They have a tart, aromatic flavor somewhat reminiscent of passionfruit. Makes jams and preserves without added pectin. One of the largest fruits in the genus with a diameter of three inches or more. South America. A79M, G73, G73{PL}, N84, R78M

*Feijoa sellowiana* - *Feijoa*, *Pineapple guava* {PL}. Ripe fruits have the flavor of pineapple and strawberry and a delightful, penetrating aroma that can scent a room. They are best eaten out of hand but can also be used in pies, cakes, puddings, jams, jellies, ice cream, mousses, etc. The flower petals are very sweet and spicy and can be nibbled or added to fruit salads. They should be harvested after they have begun to soften. Brazil, cultivated. CLARKE, CUSUMANO [Cul, Re], MORTON 1987a [Cu], POPENOE, W. 1920 [Cu, Pro], SCHNEIDER 1986 [Cul, Re]; C9M{S}, D3M{PR}, E13G{PR}, E29, G5M{PD}, H4, K38{S}, L91M{S}, M16, NO, N37M, N40{PR}, 053M{S}. (for cultivars see Feijoa, page 365)

*Luma apiculata* - *Myrceugenella apiculata*

*Mitranthes sartoriana* - *Pichiche*, *Arrayan* {S}. Often cultivated for its juicy fruits that are said to have a rich, spicy, subacid flavor. They are eaten fresh or after having been dried. Also the source of a refreshing beverage. Mexico. UPHOF; N84, P38

*Myrceugenella apiculata* - *Luma* {PL}. Ripe fruits are deep purple to black and have soft, translucent white flesh. The flavor is aromatic, mildly sweet, somewhat like eucalyptus, the better fruits being much like *Ugni molinae*. Texture may vary from succulent and juicy to nearly dry. They are eaten out of hand. Chile, Argentina. HEDRICK 1919, RILEY 1982, SIMMONS 1972; D95, F53M, N73, N84{S}

*Myrciaria cauliflora* - *Plinia cauttiflora*

*Myrciaria dubia* -+ *Myrciaria paraensis*

*Myrciaria floribunda* - *Rumberry*, *Guava berry* {S}. The dark red to black fruits are used as the basis of a strong wine and a liqueur that were formerly exported from St. Thomas to Denmark. They have sweet, aromatic pulp and are also eaten fresh or made into jams and tarts. West Indies, Tropical South America. MORTON 1987a, UPHOF; N84

*Myrciaria glomerata* - *Yellow jaboticaba*, *Cabeluda* {S}. The small, yellow fruits have sweet pulp and are eaten out of hand. Brazil. E8M, E29{PL}, N84, P38

*Myrciaria jaboticaba* -> *Plinia jaboticaba*

*Myrciaria paraensis* - *Camu-camu* {PD}. The fruits are maroon or purple-black when ripe, soft and juicy, and either acid or sweet in flavor. Half-ripe fruits contain high levels of ascorbic acid and the juice is frozen or bottled and exported to the United States for the production of vitamin C tablets for the natural foods market. In Iquitos, Peru a popular carbonated beverage is prepared from the juice. Brazil. MORTON 1987a, WILLAN; E14T, N84{S}

*Myrtus apiculata* -\* *Myrceugenella apiculata*

*Myrtus communis* - *Myrtle* {PL}. Dried fruits, leaves, and flower buds are used for flavoring meats\* poultry, sauces, liqueurs, and syrups. Widely used in Sardinia, Corsica and Crete. In Corsica, the myrtle liqueur called *myrthe* flavors *pate de merles*. The sprigs were formerly added to wine to increase its potency. An essential oil, distilled from the leaves and twigs, is used as a condiment, especially when mixed with other spices. In Italy, the flower buds are eaten. The wood is used as a smoke flavoring. Mediterranean region, cultivated. GRAY, P. [Cul], MORTON 1976, PLOTKIN, ROOT 1980b, SIMMONS 1972 [Cu], TANAKA, WOLFERT 1994b [Cul]; A79M{S}, C9M{S}, C67M, D92M{S}, G96,157, /57{ES}, K22, K85, L91M{S}, M53, M82, N84{S}, 053M{S}

CULTIVARS {GR}

*Triloba*: (Sacred Myrtle) A form with three leaves at every joint instead of two. Esteemed by Jews for use in religious ceremonies and for decorating at the Feast of Tabernacles. SIMMONS 1972; M82

*Myrtus molinae* - *Ugni molinae*

*Myrtus mucronata* - *Ugni molinae*

*Myrtus ugni* - *Ugni molinae*

*Phyllocladus luscinioides* - *Pitomba, Uvalha do campo* {PL}. When ripe, the fruits are bright orange-yellow, thin-skinned, and have soft, melting, juicy flesh with a highly aromatic, slightly acid flavor. They are good eaten fresh and are said to make an excellent jelly. In Brazil, they are also used in preserves and carbonated beverages. Brazil. GARNER [Pro], MORTON 1987a, POPENOE, W. 1920, STURROCK; D57, E29, G2M, I77G, M17, N84{S}, P38{S}

*Pimenta acris* - *Pimenta racemosa*

*Pimenta dioica* - *Allspice, Pimento* {PL}. Dried fruits, with the aroma and flavor of nutmeg, cloves, and cinnamon, are used to flavor pickles, sauces, ketchup, sausages, soups, ice cream, etc. Mexican Indians used them for flavoring chocolate. They are an essential ingredient of the rubs and marinades used in seasoning Jamaican  *jerked foods*, which are also flavored by the smoke of pimento wood fires. The leaves may be used as a condiment, steeped into tea, or used for smoking when the wood is unavailable. *Pimento dram* is a traditional Jamaican liqueur made by steeping allspice berries in rum. An essential oil, obtained from the leaves, seasons meat products, baked goods\* candy, and chewing gum. Tropical America, cultivated. ALCORN, BENGHIAT [Cul, Re], GRIEVE, MORTON 1976, ROOT 1980b [Cul], TANAKA, UPHOF, WALSH [Cul, Re]; A49D{DF}, A79M{S}, D92M{S}, E14T{DF}, F85{S}, H53M, 112, I77G, I83M, J3{PD}, J27, M17, M82, N84{S}, 093{S}

*Pimenta racemosa* - *West Indian bay, Bay-rum tree* {PD}. The bark and fruits are used as condiments. In the Caribbean, they are used in *blaff* fresh caught fish plunged into broth. In the food industry, the leaf oil, oleoresin, and extract are used to flavor soups, meats, and condiments. Caribbean region, cultivated. MACMILLAN, MORTON 1976, ORTIZ 1973, TANAKA, VON WELANETZ; E14T, L34, N84{S}

*Plinia cauliflora* - *Jaboticaba* {PL}. The thick-skinned fruits are purplish, grape-like, and have translucent, juicy pulp and a pleasant vinous flavor. They are primarily eaten out of hand but are also made into juice, jellies, jams, wine, and syrups. In taste and appearance they are remarkably similar to some cultivars of the muscadine grape. In Brazil, jaboticaba jam may be marketed as *Brazilian grape jelly*. Tropical South America, cultivated. GARNER [Pro], IDONE, MORTON 1987a [Cu], POPENOE, W. 1920, RICHARDSON, M. [Re], STURROCK; A79M{S}, B60M{PR}, D57{PL}, E8M, E29{PL}, F85{S}, 112, I77G, I83M, J22, N84{S}, 019{S}, 093{S}, P38{S}, Q93, etc.

CULTIVARS {SC}

*Paulista*: Large to very large fruit; skin thick and leathery; flesh juicy, subacid to sweet, quality very good; ripens relatively late; resistant to rust. Tree strong growing, highly productive though it

bears a single crop. Introduced into California in 1904. MORTON 1987a; T49M

*Plinia jaboticaba* - *Jaboticaba de Sao Paulo* {S}. A highly esteemed fruit in Brazil where it is eaten fresh, or used in jellies, wines and cordials. Closely related to *P. cauliflora*, it often furnishes many of the fruits sold as jaboticabas in the markets of Rio de Janeiro. Brazil. GARNER [Pro], POPENOE, W. 1920, UPHOF; P38

*Pseudanemomium umbellifera* - *Monos plum* {PL}. Small yellow fruits with juicy, sweet pulp that is eaten out of hand. Puerto Rico. KUNKEL; E29, N84

*Psidium acutangulum* - *Araga pem, Pard guava* {S}. The sulfur-yellow, apple sized fruits are eaten. They have creamy, tart-sweet flesh with a pleasant, aromatic flavor reminiscent of bananas and lemon. Very good for eating fresh; excellent sliced and served with honey or a sweet sauce, or made into jelly and juice. Occasionally cultivated. South America. HEDRICK 1919, MORTON 1987a, POPENOE, W. 1920, UPHOF, WILLAN; J29M, N84, P38, R78M

*Psidium angulatum* - *Psidium acutangulum*

*Psidium araca* - *Psidium guineense*

*Psidium cattleianum* - *Psidium Uttorale*

*Psidium friedrichsthalimim* - *Costa Rican guava, Cos* {S}. The sulphur-yellow fruits have soft, white flesh that is highly acid and lacks the musky aroma and flavor that characterizes some of the other guavas. Flavor of the shell is somewhat like the pear and is excellent for making pies. The white pulp is used to make jams, jellies, and lemonade-like drinks. In Costa Rica, the fruit is eaten fresh with a pinch of salt. Pectin content of the fruits is high and they make a good firm jelly, even when ripe. Central America, cultivated. DE CERDAS [Re], GARNER [Pro], MORTON 1987a, POPENOE, W. 1920, SIMMONS 1972, STURROCK, WILLIAMS, L.; A79M, E29{PL}, F85, G73, G73{PL}, N84, R78M, S97M

*Psidium guajava* - *Guava, Lemon guava* {S}. Aromatic fruits are eaten raw, stewed, baked, dried, sliced with cream, or made into jellies, preserves, pies, shortcakes, drinks, chutneys, etc. A thick jam, called *goiabada* or *guava cheese*, is of commercial value in Brazil, Florida and Cuba. In Goa, a type of guava cheese called *perada* is flavored with liquid from boiled guava seeds. *Cascos de guayaba*, the stewed fruitshells, are a much esteemed dessert in the West Indies. Roots are said to be used in soups. The seeds are the source of an edible oil. In Hawaii, the wood is used for smoking fish and meats. Tropical America, cultivated. DUKE, GARNER [Pro], JOSSELYN [Re], MENNINGER, MISRA [Re], MORTON 1987a [Cu], POPENOE, W. 1920 [Cu, Pro], RICHARDSON, M. [Re], SCHNEIDER 1986 [Cul, Re], STURROCK, UPHOF; A7{DF}, A79M, B60M{PR}, E29{PL}, L54{PR}, L54{PE}, N84, P5, P17M, P38, Q46, R47. (for cultivars see Guava, page 385)

*Psidium guineense* - *Brazilian guava, Araca, Guisaro* {S}. The small, greenish-yellow fruits are subacid to acid in flavor and lack the strong musky aroma of *P. guajava*. Ripe fruits are said to have a slight strawberry flavor and to make a distinctive, light pink jelly that is superior to that made from other guavas. Otherwise the fruits can be baked, stewed, or made into paste. Has been crossed with the common guava to produce dwarf, hairy, heavy-bearing hybrids. Tropical South America, cultivated. GARNER [Pro], MORTON 1987a, POPENOE, W. 1920, STURROCK, WILLIAMS, L.; A79M, F85, G73, G73{PL}, N84, P38, R78M

*Psidium littorale* - *Yellow strawberry guava, Chinese strawberry guava* {PL}. The sulphur-yellow fruits are larger, sweeter, and more delicate in flavor than the red strawberry guava. Many people prefer them for eating out of hand and they are also excellent for blending with high-acid fruits of low pectin content for jelly making. Tropical South America, cultivated. POPENOE, W. 1920, STURROCK, UPHOF; C9M{S}, D57, E29, F85{S}, G49, H71{S},



I83M, N84{S}, P38{S}, Q93

*Psidium littorale* var. *longipes* - *Red strawberry guava*, *Cattley guava* {S}. Ripe fruits are subacid, aromatic, with somewhat the flavor of strawberries, and are eaten fresh or made into jellies, custards, ices, jams, sauces, shortcakes, wines, and refreshing drinks. The flavor is more pronounced than that of the yellow strawberry guava but lacks the muskiness of the common guava. Tropical South America, cultivated. CLARKE, GIBBONS 1967 [Re], MORTON 1987a, POPENOE, W. 1920, STURROCK, UPHOF; C9M, D57, E29{PL}, G49{PL}, I83M{PL}, N84, 053M, P38, Q49M{PL}

## CULTIVARS {SC}

John Rilev: Large, round fruit, 1 1/2 inches in diameter; skin dark red, pebbled; flesh cherry red, flavor excellent; seeds small, innocuous, numerous; ripens over an exceptionally long period, June to January. Tree bushy, slow growing; very hairy, no damage noted at repeated exposures of 26° F. Originated in Los Altos, California by Gary Meltzer. T49M

*Psidium microphyllum* - *Puerto Rican guava*, *Guayaba agria* {S}. The small, yellow, aromatic fruits are relatively tart and are mostly used for making jelly, especially in Puerto Rico. West Indies. KENNARD, UPHOF; U27T

*Psidium molle* - \* *Psidium guineense*

*Psidium pyriferum* - *Psidium guajava*

*Psidium sartorianum* - *Mitranthes sartoriana*

*Rhodomyrtus tomentosa* - *Downy rose-myrtle*, *Ceylon hill-cherry*, *Hill gooseberry* {S}. The small, purple fruits may be eaten out of hand and are said to make excellent pies. In India and Ceylon they are made into a jelly, which in flavor somewhat resembles apple-jelly, and a jam called *theonti*. Also valuable as an ornamental shrub with rose-pink flowers that turn purple as they age. Southeast Asia, cultivated. MACMILLAN, MAXWELL, POPENOE, W. 1920, STURROCK, UPHOF; A6, F85, I74{PL}, N84, P5, Q93{PL}, R47

*Syzygium aqueum* - *Water apple*, *Watery rose apple* {PL}. Fruits are mildly fragrant, sometimes crisp and juicy, and usually of sweetish but faint flavor. They are eaten raw to quench the thirst, or made into a syrup. Superior types are sometimes sliced raw into salads. Tropical Asia, cultivated. BROWN, W., GARNER [Pro], MORTON 1987a, UPHOF, WESTER; D57, K8, K8{S}, N84{S}, Q93

*Syzygium aromaticum* - *Clove* {S}. Flower buds are dried and used as seasoning for ham, sausages, baked apples, mincemeat, *Friesian Clove* cheese, pies, preserves, pickles, sweet *vermouth*, etc. In India, they are sometimes chewed after meals. Also the source of an oil and extract important in the food industry for flavoring beverages, gelatine desserts, chewing gum, bakery products, ice cream, candies, and sauces. The fruit pulp is eaten. Dried flowers are also chewed. Indonesia, cultivated. BURKILL, CAMPBELL-PLATT, DE SOUNIN [Cul], DEVI, KUNKEL, MACNICOL [Re], MORTON 1976, ROBINSON, R. 1995, TANAKA; E8M{PL}, F85, K8{PL}, N84

*Syzygium australe* - *Scrub cherry*, *Creek lilly pilly* {S}. The crisp, juicy, refreshing fruits are eaten fresh, added to fruit salads, made into preserves, jellies and syrups, or baked in pies, cobblers, tarts and puddings. Australia. CHERIKOFF, ROBINS [Cul, Re]; N79{PL}, 094, P38

*Syzygium coolminianum* - *Blue lilly pilly*, *Scented satinash* {S}. The rounded, purple-blue fruits are eaten and are said to be among the best of the Australian species. They contain a single, small seed which often rattles in the central cavity when the fruit is ripe. They are eaten raw or made into jelly. Australia. CHERIKOFF, CRIBB, JOHNS, ROBINS; N79{PL}, N79M

*Syzygium cordatum* - *Water berry* {S}. The purple-black, pleasantly acid fruits are eaten raw, made into refreshing drinks, jam and jelly, or fermented into an alcoholic beverage. Southern Africa. FOX, R, SIMMONS 1972, TREGOLD; N84, S28M

*Syzygium cumini* - *Java plum*, *Jambolan*, *Duhat* {S}. Fruits are purple, olive-shaped, somewhat astringent, and may be eaten raw or made into jam, sherbet, jelly, juice, tarts, puddings, preserves, liquors, and a mild-flavored vinegar. The astringency is sometimes removed before cooking by soaking in salt water. In the Philippines, the powdered bark is used in the preparation of *basi*, a wine made from sugar cane juice. Tropical Asia, cultivated. GARNER [Pro], KENNARD, MORTON 1987a [Cu], POPENOE, W. 1920, RICHARDSON, M. [Re], STEINKRAUS; A41G{PL}, C95, D57{PL}, F85, I74{PL}, I83M{PL}, J29M, N84, 093, 094, Q46

*Syzygium guineense* - *Water pear*, *Water berry* {PL}. Very ripe fruits, red to purple-black in color, are palatable and are eaten fresh or used for making beverages and vinegar. Tropical Africa. DALZIEL, FOX, E, UPHOF; M17

*Syzygium jambos* - *Rose apple* {PL}. Ripe fruits are crisp, sweet, somewhat juicy, with a delicate rose-water fragrance. They can be eaten out of hand, stewed, candied, stuffed with rice and baked, preserved in syrup, used in marmalades, jellies, confectionery, and sauces, or fermented into wine. When cooked with custards or puddings they impart a rose flavor. The flowers are candied. Tropical Asia, cultivated. GARNER [Pro], HEDRICK 1919, MACNICOL, MORTON 1987a, POPENOE, W. 1920, RICHARDSON, M. [Re], STURROCK, UPHOF; A41G, D57, E29, F85{S}, G73, I77G, I83M, L55J{S}, M17, N84{S}, Q46{S}

*Syzygium luehmannii* - *Riberry*, *Clove lilly pilly* {S}. The red, pear-shaped fruits are often borne in great quantities, and are eaten out of hand or used to make jams, jellies, sauces, vinegars and marmalade. They have a distinctive, clove-like flavor that goes well with emu, kangaroo and wallaty. Also recommended for its highly decorative young foliage which has bright pink tints. Quite popular in the bushfoods industry. Australia. CHERIKOFF, CRIBB, JOHNS, ROBINS [Cul, Re]; N79{PL}, N79{PR}, N79M, 032M{ED}, 094, P5, P38, Q32, R33M

*Syzygium malaccense* - *Mountain apple*, *Malay apple* {PL}. Ripe fruits are crisp and juicy, with a mild, refreshing, subacid flavor. They are often stewed with cloves or combined with other fruits in pies, tarts, custards, salads, cocktails, and fruit punch. When baked, the petals of hibiscus flowers are employed to impart a pink or deep red color. The flowers are preserved in syrup or eaten in salads. Young leaves and shoots, while still red, are eaten raw with rice. Tropical Asia, cultivated. GARNER [Pro], HEDRICK 1919, JOHNS [Cul], KENNARD, MORTON 1987a [Cu], OCHSE, POPENOE, W. 1920, RICHARDSON, M. [Re]; A41G, A79M{S}, D57, E29, F85{S}, I77G, J22, K8, K8{S}, N84{S}

## CULTIVARS {GR}

Kingston: One of the largest of all malay apples, having produced fruit up to 6 inches long and weighing over a pound. Dark-red, juicy fruits of good quality. Introduced into Florida from Jamaica, by William F. Whitman. Now widely grown in the tropics. WHITMAN; E8M

Rookman: Long, medium-sized, very sweet fruit with a texture like that of a peach. Originated in Trinidad where it is grown commercially and sold in the markets. Introduced into Florida by A1 Will. E8M

*Syzygium moorei* - *Robby*, *Durobby* {S}. The large, rounded fruit is cream-colored and can be eaten raw or used to make jelly. Australia. CRIBB; N84, P17M, P38, R33M

*Syzygium oleosum* - *Syzygium coolminianum*

*Syzygium paniculatum* - *Australian brush-cherry* {S}. The juicy, aromatic, rose-purple fruits are often eaten out of hand to quench the thirst or made into jellies. Widely planted in California as an ornamental hedge. Australia. CHERIKOFF, CLARKE [Re], UPHOF;

B41{PL}, C9M, F53M{PL}, F85, H4{PL}, H71, N79M, N84, 093, 094, P5, P17M, Q32, R33M

*Syzygium polyanthum* - *Indonesian bay, Daun salam, Laurel leaf* {DF}. Dried leaves are used as an aromatic flavoring for sauces, soups, rice, tempeh, cookies, and vegetable dishes. The blackened leaves are simmered with the dish, then removed before serving. They can also be ground to a powder for use in marinades or in the making of Indonesian cookies. Ripe fruits are also edible. Available at Indonesian, oriental and specialty stores. Southeast Asia, cultivated. BURKILL, OCHSE, SHURTLEFF 1979 [Re], VON WELANETZ; A7, A45, C34G, L16M

*Syzygium polyecephalum* - *Gowok, Kupa, Kali asem* {S}. The violet-colored young leaves and shoots are eaten raw with rice. Ripe fruits have an agreeable sour flavor and are eaten out of hand or made into jelly and *njak*. Has been recommended for improvement by scientific breeding. Indonesia. EISEMAN [Re], GARNER [Pro], OCHSE, UPHOF; U27T

*Syzygium reinwardtianum* - \* *Eugenia reinwardtiana*

*Syzygium samarangense* - *Samarang rose apple, Wax jambu, Java apple* {PL}. The fruits are pear-shaped, waxy, with flesh that is spongy, dry to juicy, subacid, and very bland in flavor. In Malaya, they are eaten raw with salt, cooked as a sauce, or stewed with true apples. Tropical Asia. GARNER [Pro], MORTON 1987a; A41G, E29, 183M, J17, M17, N84{S}, P38{SC}

#### CULTIVARS {SC}

**Srinark:** (Copper Colored) Large, white-fleshed fruit, usually with a single seed. Pulp crisp in texture; flavor somewhat bland. Grown on a limited commercial scale in Florida, where it is thought to be the best flavored wax jambu. Introduced into Florida from Thailand, by William F. Whitman. WHITMAN; U27T

*Syzygium tomentosum* - *Eugenia cabelludo*

*Ugni molinae* - *Chilean guava, Temo* {PL}. The small, reddish-purple, aromatic fruits are pleasantly flavored and are very good eaten out of hand, added to cereals like blueberries, or made into jams, jellies, and refreshing drinks. Seeds are used as a substitute for coffee. The leaves are used for tea. Chile. GARNER [Pro], HEDRICK 1919, NATIONAL RESEARCH COUNCIL 1989, SIMMONS 1972 [Cu]; F80{S}, I49M, I66T, 174, K22, M82, N84{S}, 053M{S}

#### NAUCLEACEAE

*Nauclea esculenta* - *Nauclea latifolia*

*Nauclea latifolia* - *Negro peach, Pin-cushion fruit* {S}. The sweet, juicy, reddish pulp of the fruit is eaten, and is said to resemble the strawberry in flavor and texture. Flower-heads are eaten as a vegetable. Tropical Africa. HEDRICK 1919, MACMILLAN, UPHOF; F85

*Nauclea orientalis* - *Negoipeach, Gempol* {S}. Young leaves and tender tips are steamed and eaten with rice. The fruit is consumed in Africa. Southeast Asia. OCHSE, TANAKA; F85, N84, 094, R15M

*Sarcocephalus orientalis* -> *Nauclea orientalis*

*Sarcocephalus xanthoxylon* - *Ndea* {S}. The fruit is the size of a peach, with flesh-colored skin, and small black seeds arranged in a circular pattern like those of the kiwi. The edible pulp has somewhat the flavor of a mushy apple, and the texture of a pear. Tropical Africa. DANFORTH; C95, N84

#### NELUMBONACEAE

*Nelumbium speciosum* - *Nelumbo nucifera*

*Nelumbo lutea* - *Water chinquapin, American water-lotus* {PL}. Starchy rhizomes, when baked, are said to resemble sweet potatoes. Half-ripe seeds are delicious raw or cooked, having somewhat the flavor of chestnuts. Mature seeds are eaten parched, baked, boiled,

or ground and used for bread or thickening soups. Young leaf-stalks and unrolling leaves are eaten as a potherb. North America. FERNALD, KINDSCHER, MEDSGER, TURNER 1979 [Pre, Re]; E7M{S}, F73, G26{S}, G47M{S}, G85, H30, I90M, J7M, K34, K85M, M15, M34M{S}, N3M, N11{S}

*Nelumbo nucifera* - *Pink lotus, Chinese lotus, Lin ngau* {PL}. Rhizomes are eaten boiled, pickled, stir-fried, in tempura, or preserved in sugar. Also the source of a starch, *nagaufan*. The stems are a popular festive food among Kashmiri Pandits. Seeds are eaten raw, roasted, boiled, pickled, candied, or used as a coffee substitute. The puffed seeds, known as *makhana*, are made into candy, added to *kheer* (milk pudding), or used as a garnish for *panchamrita* (punch) and carrot *haba*. Young leaves can be used raw in salads or tossed with sesame oil. Dried ones are employed in China for wrapping various foods such as *dim sum*, the leaves imparting an appealing flavor and fragrance. Petals may be floated in soups or used as a garnish. The pollen and stamens are employed for perfuming tea. Tropical Asia to Australia. CHANG, W. [Re], COST 1988 [Cul], CREASY 1982, DEVI [Re], HARRINGTON, G. [Cu, Cul], HEDRICK 1919, HERKLOTS, MACNICOL, MATTOO [Re], ORTIZ 1992, PASSMORE, ROSENGARTEN, ROUTHIER 1989 [Cul, Re], ROUTHIER 1993 [Re], SHURTLEFF 1975 [Re], TANAKA, UPHOF, VAN DUONG, VON WELANETZ [Pre]; A7{DF}, A79M{S}, D3M{PR}, E13G{PR}, E56{DE}, E66T{DE}, G19M{DE}, G85, H91{PD}, K34, K85M, L14G{PD}, M15, N40{PR}, 093{S}, etc.

#### CULTIVARS {S}

**Man He:** 110 days. Medium cultivar. Mainly eaten cooked; after cooking it is glutinous and fragrant; can also be eaten raw. Sow late April for a harvest in late August. Rootstocks have a large number of branches, should not be grow too closely. 054

**Zao Hua:** 90-95 days. A high-quality and extremely early cultivar. Fresh, sweet, crisp and tender; good for eating raw. Sow early to late-April for a harvest at the end of July. Easy to harvest, the rootstocks being distributed in the upper layer of soil. Tolerant to fertile soil. Closer spacing gives higher yields. 054

*Nelumbo pentapetala* - *Nelumbo lutea*

#### NYCTAGINACEAE

*Abronia latifolia* - *Yellow sand verbena* {S}. The long stout roots are eaten by the Chinook Indians. Western North America. MEDSGER, YANOVSKY; A2, E15, F88M, N84

*Bougainvillea brasiliensis* - *Purple bougainvillea* {PL}. In Mexico, the flower bracts are used for making an attractive, violet colored water drink (*agua fresca*) called *agua de buganvilla*. It is said to have a refreshingly delicate taste. Other types of bougainvillea are not suitable for making the drink. Brazil. ZASLAVSKY [Re]; E48, F37T{DF}, GO{DF}, G20, 18

*Mirabilis expansa* - *Mauka, Miso* {PL}. Sun-dried tubers are boiled or fried, and eaten as a vegetable. Traditionally, they are chopped, boiled, and mixed with honey or syrup, toasted grain, tomatoes, and fish. The cooking water makes an especially flavorful drink. Their 7% protein content is an appreciable amount for a root crop. Leaves are eaten in salads. Grows well in cold, harsh climates. Andean South America. NATIONAL RESEARCH COUNCIL 1989, TANAKA; W79

*Mirabilis jalapa* - *Four-o'clock, Marvel of Peru* {S}. A crimson dye, obtained by steeping the flowers in water, is used for coloring cakes and jellies made from seaweeds. The seeds are used to adulterate black pepper. Leaves are occasionally eaten. South America, cultivated. ABBIW, TANAKA, UPHOF; A16, B77M, C44, E7M, F92, G57M, H54, J20, K53, 053M, 089

#### NYMPHAEACEAE

*Castalia tuberosa* - *Nymphaea tuberosa*

*Nuphar advena* - *Common spatterdock* {PL}. Rootstocks are sometimes eaten raw, roasted, or boiled with meat. Seeds can be ground into a flour or meal and used to thicken soups. Eastern North America. HEDRICK 1919, UPHOF; G26, G47M, M34M, Nil, N84

*Nuphar luteum* - *Yellow water-lily* {PL}. Rootstocks are boiled and eaten as a vegetable. Also a source of starch. Seed kernels are parched and eaten with salt and cream or ground into flour for bread making. When parched, they swell considerably but do not crack like popcorn. A refreshing drink is made from the flowers. Leaf stalks are edible. Europe, North America. FERNALD, HEDRICK 1919, MACNICOL; B32, F7J, H30, J7M, N84{S}

*Nymphaea advena* + *Nuphar advena*

*Nymphaea lotus* - *Egyptian lotus*, *White lotus* {S}. Seeds are pickled, put into curries, roasted in heated sand, or ground and mixed with flour to make cakes. Unripe fruits are eaten raw in salads. The flower-stems are eaten raw or cooked. Tubers are consumed raw or roasted. Tropical Africa, Tropical Asia. HEDRICK 1919, PONGPANGAN, TANAKA; F85

*Nymphaea lutea* - *Nuphar luteum*

*Nymphaea odorata* - *Fragrant water-lily* {PL}. Flowerbuds are pickled or eaten as a cooked vegetable. The leaves are used in soups and stews. Tubers are also edible. North America. FERNALD, KUNKEL, TANAKA; B32, C36, F7J, G85, H30, I90M, J7M, K34, K85M, M72, N3M, N84

*Nymphaea stellata* - *Blue lotus of India* {S}. Rhizomes are sometimes eaten raw or roasted. Seeds are parched and eaten. The flowers are also edible. Tropical Africa, Tropical Asia, cultivated. HEDRICK 1919, TANAKA, UPHOF; F85

*Nymphaea tuberosa* - *Tuberous water-lily*, *White water lily* {PL}. Seeds are rich in starch, oil and protein, and can be fried like popcorn or parched and the winnowed kernels ground into flour or creamed like corn. The bitter tubers are occasionally eaten. North America. FERNALD, GIBBONS 1979, PETERSON, L.; G26, G47M, I90M, J43{S}, M34M, M72, Nil, N84

NYPACEAE

*Nypa fruticans* - *Nipapalm* {PL}. Inflorescences are cooked in nipa syrup to produce an energy-giving sweetmeat. Sap is made into sugar, vinegar, or an alcoholic beverage, called *tuba*, *soom*, *tuwak*, or *toddy*. Also used as a coagulant for *cebu*, a buffalo milk cheese. Unripe seeds are eaten raw, preserved in syrup, or used in making sweetmeats. In Malaysia they flavor a commercial ice cream, *Atap Chi*, and enter local ice confections. In the Philippines, nipa vinegar is used to prepare chicken *adobo* and *pacsiw*. Tropical Asia, Australia. CAMPBELL-PLATT, HACKETT, HAMILTON, HEDRICK 1919, MENNINGER, STEINKRAUS, UPHOF; A41G, D87E, K47G{S}, N84{S}, R50

NYSSACEAE

*Nyssa aquatica* - *Water tupelo*, *Water gum* {S}. Fruits are sometimes eaten raw, but mostly they are made into preserves. Source of a white, fine-grained honey with a mild, pleasant flavor. The honey will not granulate if pure. North America. CRANE 1975, FERNALD, MEDSGER, PELLETT; B32{PL}, D95{PL}, F75{PL}, G66, H4{PL}, H14M{PL}, K38, K63G, N37M{PL}, N84, 093, P5, P17M

*Nyssa ogeche* - *Ogeechee lime*, *Sour tupelo*, *Ogeechee plum* {PL}. The large red fruits have an agreeably acid flavor and make very good preserves or refreshing lemonade-like drinks. Eastern North America. FERNALD; D95, H4, H14M, K63G{S}, N37M, N84{S}

*Nyssa sylvatica* - *Tupelo*, *Black gum* {PL}. The bluish fruits have a thin, sharply acid pulp that is pleasant to roll in the mouth as a masticatory. Also used in preserves. Source of a light-colored,

heavy-bodied honey with a unique, mild flavor. The honey will not granulate if unmixed with other honeys and is often blended with honeys that do granulate to retard this process. North America. FERNALD, MEDSGER, PELLETT; B32, B70{PD}, B89M{PD}, C9, C9M{S}, D95, E31{PD}, H4, H14M, H49, H80M{ED}, I66M{PD}, I77M, J16, K38{S}, M69M, N37M, 053M{S}, R47{S}, etc.

OLACACEAE

*Anacolosa luzoniensis* - *Galo* {S}. The thin-shelled nuts are eaten, and are said to have the flavor of a mixture of sweet corn and chestnut. They have good quality and may be eaten raw or cooked. Contains 3.9 to 11.1% protein, 1.8 to 8% fat, and 33.4 to 39.5% carbohydrates. Young fruits are delicious when boiled, while the pulp of mature fruits is also edible cooked. Philippines. CORONEL 1983, CORONEL 1984, MENNINGER, UPHOF; X62

*Ptychopetalum olacoides* - *Muiria puama* {DF}. The stem-wood and root have a long history of use in Brazil as a general food tonic and appetite stimulant. Also becoming popular with natural foods enthusiasts. South America. TYLER; E14T, F37T, F73D, GO, G73, K18M, L34, M15M, N7D

*Scorodocarpus borneensis* - *Woodland onion* {S}. The leaves are used for seasoning, as a substitute for onion or garlic. Seeds are boiled and eaten by natives in Malaya. Fruits are also edible. Malaysia, Indonesia. BURKILL, MENNINGER; F85

*Ximenia americana* - *Wild olive*, *Tallow-wood*, *Seaside plum*, *False sandalwood* {S}. The fruits, resembling yellow plums, have an acid-sweet, aromatic, almond-like flavor, and are eaten raw, pickled, preserved, or made into beer. Flower petals are eaten in soups. Seeds are the source of a non-drying oil, used in India as a substitute for *ghee*. Young leaves are used as a potherb. Roasted kernels are edible, but may be purgative if eaten in quantity. Tropics, Subtropics. HEDRICK 1919, KUNKEL, MENNINGER, MORTON 1977, ROSENGARTEN [Nu], UPHOF; Q46

*Ximenia caffra* - *Sour plum*, *Monkey plum* {S}. The flesh, just under the skin, is refreshingly tart and is eaten raw. Both over-ripe and dried fruits are said to resemble prunes. Juice of the pulp is boiled and mixed with sorghum meal to make a tasty sour porridge. Seeds are eaten and also yield an edible oil. Southern Africa. FOX, E; F85

OLEACEAE

*Chionanthus virginicus* - *Fringe-tree*, *Old man's beard* {PL}. The fruits are said to be pickled like olives. Eastern North America. KUNKEL; A50, C9, C9M{S}, D95, E63, H4, H49, I77M, K38{S}, K63G{S}, M77, N37M, 053M{S}

*Forestiera neo-mexicana* - *Wild olive* {PL}. Although small, it has been suggested that the fruits may be used like the true olive. Southwestern North America. TANAKA; A12M, D95, E67T, F44M, F55M, G66{S}, G89M, I98M, J25M, J25M{S}, L55J{S}, N37M

*Fraxinus angustifolia* - *Narrow-leaf ash*, *Lissan ettir* {S}. In Morocco, the fruits, often called *ash berries*, are added to the famous spice mixture *ras el turnout*—a blend of twenty or more herbs and spices. One of the ingredients of *Maa'ssel* and *Mrouziya*, festive dishes consumed during Aid Seghir, and for some weddings. Mediterranean region. BOUQUET, NORMAN, UPHOF, WOLFERT 1973; F85, G66, K63G, N73{PL}, N84, P5, P17M, P49

*Fraxinus excelsior* - *European ash* {S}. Very young winged fruits, or keys, are pickled in vinegar and used as a condiment for other foods. The leaves are sometimes used as an adulterant for tea. In France, they are occasionally used for making a fermented beverage known as *frenette*. Ash barrels, along with barrels made from cherry, oak, mulberry and chestnut, are used for aging *balsamic vinegar*, each wood contributing a different color and flavor. The wood is used for smoking *schinkenwurst*. Also the source of an edible manna. Europe. BISSELL, DONKIN, HEDRICK 1919,

KASPER, MABEY, MICHAEL [Cul, Re], SKELLY; G66, K38, K63G, N71M, N84, 053M, 093, P5, P17M, P49, Q32, R78

*Fraxinus ornus* - *Manna ash, Flowering ash* {S}. The stems are the source of a sweet, nutritious exudate, or manna, that is occasionally eaten or made into a conserve. Eurasia. ANDREWS, C. 1996, DONKIN, HEDRICK 1919, UPHOF; D95{PL}, G66, I77M{PL}, K38, K63G, N71M, N84, 053M, N73{PL}, P49, Q32, R78

*Fraxinus oxyphylla-Fraxinus angustifotta*

*Jasminum grandiflorum-Jasminum officinale*

*Jasminum humile* - *Raggul cha* {S}. The leaves are used as a condiment. In India, a tea is made from the leaves and bark. Eastern Africa. KUNKEL, VON REIS; F85, G96{PL}, H4, L90J{PL}, N7J{PL}, N84, Q40, Q46

*Jasminum odoratissimum* - *Madeira jasmine* {PL}. Flowers are used for flavoring or scenting tea. Madeira. TANAKA; GO{DF}, H4, N7D{DF}, N37M, R77

*Jasminum officinale* - *Poet's jasmine* {S}. The fragrant flowers are eaten, or used to flavor or scent tea. They are the source of an essential oil that imparts a bittersweet, floral tone to baked goods, ice cream, candy, chewing gum, and *maraschino cherries*. Taiwan. LEGGATT [Re], MACNICOL [Re], MARCIN, MORTON 1976; E14T{DF}, F15M{PL}, L34{DF}, L90J{PL}, M82{PL}, N37M{PL}, 093, Q32, Q40, Q46

*Jasminum officinale* 'Grandiflorum' - *Catalonian jasmine, Tea jasmine, Spanish jasmine* {PL}. Dried flowers are used to scent Chinese tea leaf. TANAKA; D95, G96, H4, L90J, M82, N7J, N84

*Jasminum paniculatum* - *Jasmine, Sieu-hing-hwa* {S}. Flowers are used with those of *J. sambac* for scenting tea, in the proportion of 10 pounds of the former to 30 pounds of the latter, 40 pounds of the mixture being required for 100 pounds of tea. China. GRIEVE, HEDRICK 1919; F85

*Jasminum sambac* - *Arabian jasmine, Pikake, Mali* {PL}. The dried flowers are used for scenting tea leaf, especially Chinese-style *jasmine tea*. *Hyson* green tea is often used as the base tea. They are the source of an aromatic water popular in Thai cookery, especially for making desserts. Also the source of an essential oil that is employed as a flavoring. Southern Asia. DOWN, CHOW, GRIEVE, JACQUAT, LOHA-UNCHIT [Re], MORTON 1976, TANAKA, ZEVEN; A28, B41, C27G{PD}, E48, G20, G96, H4, H36{DF}, H44M{ED}, I83M, J27, L88D{ED}, M82, N7J

*Noronhia emarginata* - *Madagascar olive, Noronha* {S}. The small, olive-like fruit is eaten, and is said to have somewhat the flavor of a fresh lychee. Madagascar. MACMILLAN, UPHOF; F85

*Olea africana* - *Wild olive, Golden-leaved olive* {S}. The fruit is used as a substitute for olives. Leaves are used as a condiment. Also a substitute for tea. Tropical Africa. FOX, F., KUNKEL; F85, G66, N79M, N84, 053M, P5, Q32, S28M

*Olea europaea* - *Olive* {S}. Fruits are usually pickled or cured with water, brine, oil, salt or lye. Those dried in the sun and eaten without curing are called *fachouilles*. Cured fruits are eaten as a relish, stuffed with pimentos or almonds, or used in breads, hors d'oeuvres, soups, salads, *tapenades*, etc. *Olives schiacciate* are olives picked green, crushed, cured in brine or oil, and used as a salad. Olive oil is used in salads and cooking and because of its distinct flavor is considered a condiment. *Mahon*, a cow's milk cheese produced on the island of Minorca, is often coated with olive oil. Martini cocktails are often topped off with a green olive, and a *wet martini* is one that has been mixed with olive pickling liquid, sometimes referred to as *olive juice*. Popcorn flavored with olive oil and nutritional yeast is a popular snack with advocates of natural foods cuisine. The tree is the source of an edible manna. Mediterranean region, cultivated. BIANCHINI, CAMPBELL-PLATT, DONKIN, KLEIN, LANZA 1993, UPHOF; A79M, C9M, D81{PO}, E23M{PD}, F80,

F85J{PD}, G96{PL}, I64M{ED}, J86{PL}, K38, K63G, L91M, M82{PL}, 053M, 093, P5, P17M, Q32, etc. (for cultivars see Olive, page 437)

*Osmanthus americana* - *American olive, Yen-kuei* {PL}. Fragrant flowers are used to flavor or scent tea leaf. The fruit is macerated in brine and eaten like the true olive. North America. TANAKA; B96, H4, H14M, N37M

*Osmanthus fragrans* - *Fragrant olive, Kwei-hua* {PL}. The unripe fruits are preserved in brine like olives. Very fragrant flowers are used by the Chinese to impart a pleasant aroma to *Chulan tea*, wines and liqueurs, and sweets such as lotus seed soup, pastries, and steamed pears. Available in oriental stores preserved in sweetened brine or as a sugary paste called *cassia blossom jam*. Eastern Asia. BREMNESS, COST 1988 [Cul], PASSMORE, TANAKA, UPHOF; B96{PL}, G66{S}, G96, H4, H14M, I83M, L88D{ED}, M82, N37M, N84{S}, P17M{S}

*Syringa microphylla* - *Little-leaf lilac, Sung-lo-cha*{PL} . Flowers are used as a substitute for tea. China. ALTSCHUL; A50

*Syringa vulgaris* - *Lilac* {PL}. Flowers are eaten raw or folded in batter and made into fritters. They can be crystallized by dipping in beaten egg white and then rolling in granulated sugar. Europe. MACNICOL; A91, C9M{S}, C33, C47, D69, F51, H45M, K38{S}, K63G{S}

#### ONAGRACEAE

*Chamaenerion angustifolium* - *Fireweed* {S}. The leaves are eaten raw, boiled, or used as a tea in some parts of Russia, known as *Kaporie tea* or *Kapor tea*. Vigorous new shoots are used as a substitute for asparagus. Young flower stalks may be added to salads. The sweet pith of the large stalks is chewed, used to flavor and thicken soups and stews, or made into ale and vinegar. Source of a light-colored honey of high quality and fine flavor. Eurasia, naturalized in North America. FERNALD, GRIEVE, HARRINGTON, H., HEDRICK 1919, PELLETT, UPHOF; A2, A15M{ED}, C60D{PD}, C82, E15, F44, F80, H47{PD}, H80M{ffi}, 147, J25M, J40, K49Q, M84{BQ}, N9M, N9M{PL}, etc.

*Chamaenerion latifolium* - *Dwarf fireweed, River beauty* {S}. The succulent new shoots and tender, fleshy young leaves are cooked and eaten. Leaves are used as a tea substitute. Preferred by some over common fireweed. Northern temperate region. FERNALD, GIBBONS 1979, HARRINGTON, H., HELLER, KUNKEL, PETERSON, L.; K49Q

*Epilobium angustifolium-Chamaenerion angustifolium*

*Epilobium hirsutum* - *Great hairy willow-herb* {S}. The leaves are used as a substitute for tea, known as *Kaporie tea*. In South Africa, they are sucked for their salty taste. Eurasia. FCK, F., GRIEVE; C74{PL}, N71M, N84, Q24

*Epilobium latifolium-Chamaenerion latifolium*

*Fuchsia excorticata* - *Konini, Kotukutuku* {S}. The purple-black, sub-acid, perfumed fruits are eaten raw, or may be used in pies, tarts, cakes, desserts, and dessert sauces. They have a unique flavor, and like rose hips, should be combined with potato flour or corn starch to temper the slight astringency. New Zealand. BRYAN [Cu, Re], COLENSO, SIMMONS 1972; N84, 053M, S43M

*Fuchsia splendens* - *Platanillo* {S}. The fruits are eaten raw or made into preserves, having a pleasant lemon-like flavor with no noticeable aftertaste. Central America. WILLIAMS, L., TANAKA; N84, R49{PL}

#### CULTIVARS {GR>

**Karl Hartwea:** Reportedly has the most pleasant flavor of any fuchsia fruit. The flavor is mild and somewhat lemon-like, and the fruits can be eaten in quantity. Flowers from mid-summer to autumn. Does well in full sun or deep shade. R49

*Oenothera biennis* - *Evening primrose, German rampion* {S}. The roots are sweet, somewhat resembling salsify or parsnips. They are scraped, sliced, and then eaten boiled, fried, scalloped, au gratin, or added to soups and stews. Young shoots are sometimes added to salads, but more commonly they are used as a potherb. The sweet flowers can be used as a salad or pickle garnish. Oil from the seeds, high in gamma-linolenic acid, is suitable for salad use but is more often taken as a food supplement. Young pods are steamed and eaten. Northern temperate region. ANGIER [Pre, Re], ERASMUS [Nu], FERNALD, GIBBONS 1979, HALL [Re], HITCHCOCK, MURRAY, VILMORIN [Cu]; C81M{PL}, D92M, E14T{PD}, F80, H61M, J43, J76{PL}, M75M{PD}, N9M, N9M{PL}, 053M, R53M

## CULTTVARS

EP 10: Improved type with high gamma-linolenic acid content. Seeds are also less likely to shatter before harvest. Highest linolenic acid levels are obtained when the plant is grown on poor garden soil with low nitrogen content. E28M, J82, L7M

Saguin: Has the highest content of gamma-linolenic acid of all commercially available strains, up to 13%. Selected from EP 10. Introduced by Richters. J82

*Oenothera hookeri* - *Hooker's evening-primrose* {S}. The young, blanched leaves and shoots can be used in salads or boiled as a potherb. Roots are boiled and cooked like parsnips. The young, pod-like fruits can be cooked and eaten. Western North America. HARRINGTON, H., KIRK; C98M, E66M, F59, H95, 198M{PL}, JO, K15, L13, L75, M47M, N7M, 053M

## ONOCLEACEAE

*Matteuccia pensylvanica* - *Ostrich fern* {PL}. The thick, succulent, unrolled fronds, called *fiddleheads* or *croziers*, are salted and boiled, and served on toast with oil, butter, cream, or a cream sauce. Or they may be cut into small pieces, mixed with bread crumbs, milk, and eggs, and baked into a superior escalloped dish. They are available fresh in specialty markets or as canned and frozen products. The crowns can be forced for winter use. Rootstocks are eaten boiled or roasted. Northern temperate region. CUSUMANO [Cul, Re], FERNALD, GIBBONS 1964 [Pie, Re], GUNST [Pre, Re], SCHNEIDER 1986 [Cul, Re], VON ADERKAS; B77, C9, C11T{PR}, D61, D75M, E33M, E63M, F42M{PD}, G5{PR}, H25M{PR}, H73{PR}, I34M{PR}, 144, J42, M98, N9M, N9M{S}, N40{PR}, etc.

*Matteuccia struthiopteris* - \**Matteuccia pensylvanica*

*Onoclea sensibilis* - *Sensitive fern* {PL}. The young *fiddleheads* are sometimes used as a vegetable. Rootstocks have also been used as food. North America, Northeast Asia. MEDSGER, YANOVSKY; C9, C36, D61, D75M, E33M, E63M, F51, 144, J39M, J39M{S}, J48, M42, N7T, N9M, N9M{S}

*Pteretis nodulosa* - \**Matteuccia pensylvanica*

## ORCHIDACEAE

*Aplectrum hyemale* - *Puttyroot, Adam and Eve* {PL}. The corms may be boiled for twenty minutes and served with butter. Eastern North America. PETERSON, L.; A61, E33M, L59P, N7T, N84{S}

*Dactylorhiza maculata* - *Adder's grass, Hen's kames* {PL}. *Salep* is made from the tubers. Eurasia. LOVELOCK, TANAKA; J71, M77, N84

*Epidendrum cochleatum* - *Tree orchis* {PL}. The pseudobulbs are used to provide an edible mucilage like that of okra. Tropical America. LOVELOCK; F75M, 157, N84

*Leptotes bicolor* - {PL}. The fruit is used in some parts of Brazil for flavoring food, especially ice cream. It has a coumarin-like odor and is sweeter than vanilla but less penetrating. Brazil, Paraguay. HEDRICK 1919, UPHOF; F75M, F94, H20, N84

*Orchis maculata* -> *Dactylorhiza maculata*

*Orchis mascula* - *Male orchis* {DF}. The dried root is sometimes cooked and eaten. Also a source of *salep*, *bassorine* or *sahlab*, a fine white to yellowish-white powder used as food. It is usually mixed with milk, honey, nuts, and spices to form a beverage or added to ice cream. In India, it is used in sweetmeats and chocolates. A sweet porridge, known as *racahout*, is made from rice flour, cocoa, acorn flour, sugar, and *salep*. Eurasia. HEDRICK 1919, HESS, KHALIL [Re], MABEY, UPHOF, WATT; F37T, GO, K18M, N84{S}, R53M{S}

*Orchis militaris* - *Soldier orchid* {S}. Tubers are cooked and eaten. They yield the starcify, mucilaginous substance known as *salep*, obtained by macerating the pulp in water. Also used for sweetmeats. Temperate Eurasia. HEDRICK 1919, KUNKEL; N84

*Orchis morio* - *Gandergoose, Green-winged orchis* {S}. The dried root is cooked and eaten. Also furnishes a *salep* of commerce. *Salep* is very nutritive and demulcent. It is boiled with milk and water and flavored with sugar and wine, cloves, cinnamon, and ginger. Eurasia. GRIEVE, HEDRICK 1919; N84

*Tetramicra bicolor* - \**Leptotes bicolor*

*Vanilla fragrans* - \**Vanilla planifolia* Ua

*Vanilla planifolia* - *Vanilla* {PL}. Principle source of vanilla pods or *vanilla beans*, used for flavoring ice cream, confectionery, chocolate, syrups, cakes, puddings, baked goods, soft drinks, yogurt, etc. Also the main flavoring of *Galliano*, an Italian liqueur that contains up to forty herbs and botanicals. *Galliano* is an ingredient of the *Harvey Walbanger* cocktail. *Vanilla sugar*, made by storing vanilla beans in granulated or confectioner's sugar for about one week, is used as a fragrant and flavorful decoration for baked goods, fruit, and other desserts. Tropical America, cultivated. BROWN, G., HERBST, S., MORTON 1976, TANAKA, UPHOF; C43M, E48, F32D{PD}, F37T, F69, F75M, F93G, H20, H49, 112, 157, K2{PD}, K54{ffi}, N7J, N84

*Vanilla pompona* - *West Indian vanilla* {PL}. The short, thick pods, called *vanillon* or *vanilloes*, are used as a substitute for true vanilla in flavoring foods. Caribbean region. MACMILLAN, MORTON 1976; H20, 157

*Vanilla tahitensis* - *Tahitian vanilla* {DF}. Pods are used for flavoring foods. Thought by some to be more delicate, more fragrant and moister than the common vanilla. Grown commercially in Tahiti and Hawaii. Polynesia, cultivated. MORTON 1976; A7, E14T, F32D, F37T, GO, G68, H15T, J66M, L16, L34

## OROBANCHACEAE

*Aeginetia indica* - *Dok din daeng* {S}. A leafless, parasitic herb that grows on the roots of various grasses. It is prepared with sugar and nutmeg and eaten as an antiscorbutic. A purple juice extracted from the flowers colors a Thai sticky rice flour dessert known as *kanom dok din*. Tropical Asia. HEDRICK 1919, JACQUAT; Y17M

## OSMUNDACEAE

*Osmunda cinnamomea* - *Cinnamon fern, Zenmai* {PL}. The young, unexpanded fronds, or *buckhorns*, are eaten as a nibble or cooked in soups. In Japan, they are prepared by simmering with deep-fried tofu in dashi (soup stock) and shoyu (soy sauce). Eastern North America. FERNALD, HOMMA [Re], SHURTLEFF 1975, YANOVSKY; B77, C9, C36, D75M, E33M, F51, G28, H63, 14, 144, 177M, J37M, M42, M77, N7T, N9M, N9M{S}, etc.

*Osmunda claytoniana* - *Interrupted fern* {PL}. Young fronds are eaten. The center of the clump below ground level is the source of a small edible pith called *fern butter*. Northern temperate region. FREY, TANAKA; A61, C9, D75M, E33M, G16, H63, L59P, M42

## OXALIDACEAE

*Biophytum sensitivum* - *Surelle sensitive, Chua me la me* {PL}. The leaves are eaten in Indochina. Southeast Asia. TANAKA; G96, N84

*Oxalis acetosella* - *Sour-grass* {S}. The sour leaves are high in oxalic acid, but small amounts may be used like sorrel in salads, soups, and sauces, or chewed for their mildly tonic and refreshing qualities. Said to be the original leaves and stems used by the French in their *Julienne* soup. Romanian shepherds of the Radna Mountains have used the herb for curdling ewe's milk. Northern temperate region. FERNALD, GRAY, P. [Cul], GUNDA, MABEY, MICHAEL [Re], VILMORIN [Cu]; J75{PL}, N84, 048

*Oxalis corniculata* - *Procrumbent yellow wood-sorrel* {S}. Leaves are eaten raw in salads, cooked as a potherb with milder flavored greens, or used to give a sour flavor to other foods. The fruits are chewed as a refreshing nibble. Cosmopolitan. OCHSE; N84

*Oxalis deppei* - *Deppe's wood-sorrel* {PL}. Young leaves are used like sorrel in salads and soups. The flowers are excellent in a salad, alone or mixed with corn salad. Fleshy roots are boiled and served like asparagus. Mexico, cultivated. BURR, HEDRICK 1919, VILMORIN [Cu]; C81M, D11M, F70, H49, J37M, R49

*Oxalis oregana* - *Redwood sorrel* {PL}. The leaves and stalks may be eaten raw in salads, or a mass of them is allowed to ferment slightly to make a tasty dessert. A sort of rhubarb pie is made from the sour leaf stalks. Western North America. KIRK; B92, D95, E63M, E87, 198M, J75, L26, N84{S}

*Oxalis stricfa* - *Yellow wood-sorrel* {S}. Leaves are consumed raw, cooked as a green vegetable, or chewed to quench the thirst. The seed pods, called *little bananas*, are edible. Flowers and roots are also eaten. North America. KINDSCHER, UPHOF, YANOVSKY; M34M, N84

*Oxalis tuberosa* - *Oca* {PL}. When dried in the sun the edible tubers become wrinkled, dry, floury, and sweet, and the calcium oxalate content is reduced. They are then eaten raw, boiled in soups and stews, or candied like sweet potatoes. Further drying produces *cavi*, which is eaten with honey or sugar cane as a dessert, and *chuha de oca*, a desiccated product that gives a distinctive flavor to stews. The leaves are edible. Andean South America. HERKLOTS, HODGE 1951, MARTIN 1975, NATIONAL RESEARCH COUNCIL 1989, ORGAN; E13G{PR}, F73D, N84, Q49M, R49, R53M CULTIVARS

**Blush:** Cylindrical, distinctly wrinkled tubers. Glossy white to cream colored skin, blushed with pink or purple. Firm white flesh. 174

**Mexican:** Very crisp, juicy, mild-flavored tubers. Attractive wine colored, velvety leaves and rosy flowers. Ornamental as well as useful. 174

**Orange:** Cylindrical, distinctly wrinkled tubers. Glossy orange to yellowish-orange skin. Firm white flesh. 174

**Red:** Cylindrical, distinctly wrinkled tubers. Glossy red to reddish-purple skin. Firm white flesh. E13G{PR}, 174

**White:** Cylindrical, distinctly wrinkled tubers. Glossy white to creamy white skin. Firm white flesh. 174

**Yellow:** Cylindrical, distinctly wrinkled tubers. Glossy yellow to creamy yellow skin. Firm white flesh. 174

*Oxalis violacea* - *Violet wood-sorrel* {PL}. The acid, salty leaves are eaten raw in sandwiches and salads or cooked as a potherb. Flowers make an attractive and tasty garnish for salads. Flower stalks and roots are also eaten. North America. KINDSCHER, MORTON 1976, YANOVSKY; I11M, J39M, L55

## PAEONIACEAE

*Paeonia albiflora* - \**Paeonia lactiflora*

*Paeonia lactiflora* - *Chinese peony, Shao-yao* {S}. Roots are boiled and eaten by the nomads of Northern Asia, who also powder the seeds to mix with their tea. Central to Eastern Asia. HEDRICK 1919; N84, Q24

*Paeonia officinalis* - *Peony, Common peony* {S}. In Europe, the hot seeds were once ground into a spice and used for flavoring ale or accompanying food. They were also used to decorate creams in the manner of sliced almonds, and the Mongolians made a tea from them. The flowers are eaten as a vegetable or used to scent tea. Eurasia. LEYEL 1987b, LOVELOCK, MACNICOL [Re], UPHOF; A61, A61{PL}, B77{PL}, C9{PL}, N84, 053M

*Paeonia suffruticosa* - *Tree peony, Botan, Mu-tan* {S}. Fallen flower petals are parboiled and sweetened for a teatime delicacy or cooked in various dishes. China. TANAKA; B9M{PL}, C9{PL}, K38, K63G, M65M{?L}, N84, 053M, P49, R78

## PANDACEAE

*Panda oleosa* - *Kana* {S}. The oily seeds have a nutty flavor and are occasionally eaten. In Gabon and Cameroon, the oil or crushed seeds are used as a condiment or sauce: West Tropical Africa. DALZIEL, DANFORTH, MENNINGER; Y40

## PANDANACEAE

*Freycinetia banksii* - *Kie-kie* {PL}. The large, fleshy, thick white floral bracts are sugary and are eaten raw or made into jelly. Ripe fruits are also eaten. New Zealand. COLENZO, FULLER, HEDRICK 1919; G96

*Pandanus amaryllifolius* - *Pandan wangi, Daun pandan, Bai toey* {DF}. The fragrant young leaves are cooked and eaten or used as a condiment. Fresh or dried, they add flavor, a distinctive musky odor and natural green color to tofu, jellies, doughs, curries, syrups, sauces, coconut rice, and the Indonesian and Malaysian sweets *chendol* and *nyonya kuey*. They are widely used in Sinhalese yellow rice and Indonesian *nasi kunyit* (glutinous yellow rice), being added to the cooking oil with other spices before the rice and liquid are added to the pot. Also used for wrapping foods, such as the festive Chinese glutinous rice dumplings known as *zongzi*. Southeast Asia. BALASURIYA [Re], COST 1988 [Cul], COTTERELL [Re], SHURTLEFF 1979, STONE, UPHOF, VON WELANETZ; A7, A45, C34G, L16M

*Pandanus fascicularis* - *Kevda, Padang* {S}. Male spadices, popularly called flowers, are the source of *kevda attar*, used for imparting flavor to betel nut (*pan masala*). They also yield *kevda water* or *kevra essence*, which is employed as a flavoring for syrups, soft drinks, Sinhalese curries, *rasgoola*, and an Indian rice dish called *biryani*. India. ATAL, DEVI [Re], DUTTA, VON WELANETZ; F74{PD}, N84, Q46

*Pandanus latifolius* - \**Pandanus amaryllifolius*

*Pandanus odoratissimus* - *Pandanus tectorius*

*Pandanus odoratus* - \**Pandanus amaryllifolius*

*Pandanus tectorius* - *Nicobar breadfruit* {S}. Fleshy pulp of the fruit may be eaten raw, cooked, or made into flour, paste and thin, flat cakes. The flour is mixed with palm syrup or diluted with water to form a popular drink. Tender, white bases of the young leaves are eaten raw or cooked. The terminal bud is consumed like palm cabbage. Aerial roots are cooked and eaten or processed into a beverage. Seeds are consumed after careful preparation. Flowers and pollen are also edible. Malaysia to Polynesia. ALTSCHUL, DEGENER, DUKE, HEDRICK 1919, MASSAL, TANAKA, UPHOF; A41G{PL}, F85, 174{PL}, N84, 093

## PAPAVERACEAE

*Glaucium flavum* - *Horned poppy* {S}. Seeds are the source of a clear yellow oil used in food. Mediterranean region. HEDRICK 1919, UPHOF; C43M, D92M, D95{PL}, E7M, F24D, F68T, F85, L91M, N84, 053M, Q24, S55

*Meconopsis nepalensis* - *Himalayan poppy*, *Satin poppy* {S}. An edible oil is extracted from the seeds. Himalayan region. TANAKA; D92M, F80, L91M, N84, Q24

*Papaver orientale* - *Oriental poppy* {S}. Said to be used as a condiment. Unripe capsules, though very acrid and hot in taste, are reportedly eaten as a delicacy. In Turkey, the seeds and flower parts are eaten. Turkey to Iran. HEDRICK 1919, OZTURK, TANAKA; F35M{PL}, F73D, H63{PL}, I81M, K53, K63G, L21{PL}, M65M{PL}, N23, N84, S55

*Papaver rhoeas* - *Corn poppy*, *Shirley poppy*, *Flanders poppy* {S}. Young leaves are cooked and seasoned like spinach, or used as a flavoring in soups and salads. A syrup prepared from the scarlet flower petals has been employed as an ingredient in soups and gruels. They also yield a red pigment used for coloring, especially wine. The seeds are used in cakes, breads, and rolls or pressed for their oil, an excellent substitute for olive oil. Eurasia, cultivated. BIANCHINI, GESSERT [Cu], GRIEVE, HEDRICK 1919, LARKCOM 1984, MABEY, MACNICOL [Re], UPHOF; A2, E7M, E33, F80, G59M, H80, J82, J88, K53, M47M, N11M, N23, 053M

*Papaver somniferum* - *Breadseed poppy*, *Opium poppy* {S}. Young seedlings are eaten as a vegetable. The seeds, called *maw seeds* in Europe and *khas-khas* in the Middle East, are widely used in breads, cakes, rolls, milky soups, rice dishes, stews, curries, salad dressings, and sweetmeats. When crushed and sweetened, they are used as a filling for crepes, strudels, pastries, etc. *Poppy-seed oil* is used like olive oil in French cooking, where it is known as *olive*. A paste made from poppy-seed oil and roasted, ground poppy seeds is widely used in Turkish cuisine. Mediterranean region to Asia Minor. BURR [Cu], HEDRICK 1919, HANNEMAN, KAPOOR [Nu], MORTON 1976, NORMAN, ORTIZ 1992, PAINTER [Cu], [Re], UPHOF, VON WELANETZ; A2, A49D{DF}, B31{DF}, C95, F68T, I49M{PL}, J11M{DF}, K63G, L3J, L79, L90J{PL}, M32, N84, R53M, S55, etc.

## CULTIVARS

**Carnation:** Heirloom English cultivar with flavorful, nut-brown seeds. Capsule pores open when mature so seeds can be poured out while preserving seed pods for dried arrangements. Hilly, pink petals, some with attractive purple tinges. N7G

**Elka:** White-seeded type with a sweeter, more nut-like flavor than the blue-seeded forms. Combined with Ziar and used as a walnut substitute in the local cuisine. Yields an excellent cooking oil, with 50% more oil than common types. Very large seedheads, 11/2 inches wide and 2 inches high, 75% unvented. Lavender flowers. Originally from Chrenovec in central Slovakia. D68, H15P, L88J

**Hungarian Blue-Seeded:** Capsules large; seeds grayish-blue, numerous. Flowers large, lavender, tulip-like. This is the cultivar commonly grown for its seeds which are used in baking and oil extraction. F35M{PL}, F73D, H15P, I81M, J73, J82, N7G, N84, 053M

**Hutterite:** Copious producer of seeds that are used in breads and cakes. Large, crinkled, pale white flowers with a lavender-banded throat. Best appearance when massed. Dried seed stalks can be used in wreaths and everlasting bouquets. Grows 3 to 4 feet tall. Brought to America by Hutterite immigrants. F73D, K49Z, L88J

**Pepperbox:** Nutty seeds can be added to pastries, breads and rolls. Graceful, 3 to 4 foot tall plants. Semi-double blossoms in shades of vivid red and dark purple. Large urn-shaped seed pods are suitable for dried arrangements. Developed in Holland. D92M, E7M, K66

**Przemko:** New improved breadseed type developed for extremely low morphine content in the dry seed capsule—less than 0.01%.

Easy to grow and very productive. Plants may need staking as seed pods have a tendency to fall over just before harvest. Przemko is Polish for “prize” or “premium”. C53, E28M, G6, L7M, M65, N84

**White Persian:** (White) Seeds white, smaller and milder in flavor than the blue-seeded cultivars. White-seeded forms are preferred in India, Japan and some Scandinavian countries for use in breads, halava, chutneys, cakes and cookies, and for thickening sauces and gravies. BANERJI [Re], DEVI [Re]; A7{DF}, A49D{DF}, C34G{DF}, F68T, F74{DF}, J39, J73, L3J, L16{DF}, N84

**Ziar:** Bluish-black seeds. Bred to eliminate the vents in the large seedhead, thus preventing the seeds from shattering. Combined with Elka and used as a walnut substitute in the local cuisine. White-lavender flowers. Originally from Chrenovec in central Slovakia. Reselected to adapt to the cold climates of Canada and Maine. D68

## PASSIFLORACEAE

*Passiflora alata* - *Maracuja grande* {S}. Large, yellow fruits with an agreeable flavor, much appreciated for making drinks. Peru, Brazil. UPHOF; D57{PL}, L91M, N7J{PL}, N84, 093, P5, P38, R77{PL}

## CULTIVARS {GR}

**Ruby Glow:** Very large flowers, 5 to 6 inches long; deep crimson petals and blue and white striped filaments with an intense sweet fragrance. Tropical looking, 6 inch, glossy green leaves are not bothered by caterpillars. Produces a delicious grapefruit-sized, yellow fruit when cross pollinated. Developed by Ithrick Worley. G20, J27, L90J, N7J

*Passiflora ambigua* - *Granadilla de monte* {PL}. The large, edible fruits are at first sweet, becoming sour after sucking for a while. Mexico to Panama. VON REIS, WILLIAMS, L.; N84

*Passiflora ampullacea* - *Gulin*, *Creampassionfruit* {S}. The tasty fruits are good to eat out of hand. A promising species for commercial cultivation. Hybridizes readily with *P. mollissima*. Ecuador. NATIONAL RESEARCH COUNCIL 1989; L55J, N84, 053M, P5

*Passiflora antioquiensis* - *Banana passionfruit* {S}. Yellow, ellipsoid fruits have an aromatic pulp that is eaten out of hand, or used to prepare refreshing drinks. Similar to *P. mollissima*, but the fruit is juicier and of better eating quality, and the flowers are bright red. Colombia-Ecuador. NATIONAL RESEARCH COUNCIL 1989, UPHOF; L91M, N84, 097{PL}, Q49M{PL}, R77{PL}

*Passiflora caerulea* - *Blue crown passion-flower* {S}. Ripe fruits are eaten raw or made into a refreshing drink. Unripe fruits are boiled and eaten. The flowers can be made into syrup. Brazil-Argentina, cultivated. CROWHURST 1973, KUNKEL, SIMMONS 1972, TANAKA; C92, D11M, F70, F80, G20{PL}, H4{PL}, J27{PL}, J61M{PL}, N7J{PL}, N84, Q32, R88, S92

*Passiflora coccinea* - *Scarlet passionfruit* {S}. The fruit is yellow-mottled and striped, edible. Mostly grown for the showy red and white flowers. Northeastern South America. MARTIN 1970, TANAKA; G96{PL}, H4{PL}, N84, 093, P5

*Passiflora cumbalensis* - *Curuba bogotana*, *Rosy passionfruit* {PL}. The banana-shaped fruits are eaten. They have attractive, bright red skin and aromatic, mildly biting orange flesh. Often added to ice cream, drinks, yoghurt and other food preparations. Sold in local markets and supermarkets. Andean region, cultivated. NATIONAL RESEARCH COUNCIL 1989; L55J{S}, N7J, N84

*Passiflora x decaisneana* (*P. alata* x *P. quadrangularis*) - {PL}. Artificial hybrid. Produces large, tasty fruit when pollinated with *P. caerulea*. It also has attractive, sweetly scented flowers. MARTIN 1970; N7J, N84{S}

*Passiflora edulis* - *Purple passionfruit*, *Purple granadilla* {PL}. When ripe, the aromatic fruits are allowed to wrinkle and develop sweetness, and are then eaten raw, juiced, made into syrup, or used in sauces, custard, cakes, sherbet, pies, fruit soups, candies, ice

cream, etc. A soft drink called *passaia*, and a wine sold as *parchita seco* are made from passionfruit. The seeds yield an edible oil. South America, cultivated. CUSUMANO [Cu, Re], MORTON 1987a, POPENOE, W. 1920 [Cu, Pro], SCHNEIDER 1986 [Re]; A79M{S}, B60M{PR}, C9M{S}, E13G{PR}, E29, F21MIPD}, F80{S}, G5M{DF}, G96, J61M{PD}, K38{S}, L17{PD}, L91M{S}, N40{DF}, 053M{S}, etc.

#### CULTIVARS {GR}

**Alice:** Selected by Clive Simms Nursery from numerous seedling plants. Self-fertile vine with excellent flavored sweet fruit. Selected for free flowering, delicious fruit, and its ability to produce fruit in small pots indoors. J61M

**Black Kniat:** Very fragrant, dark purple-black fruit, the size and shape of a very large egg; flavor excellent. Vigorous, compact vine; self-fertile, very fruitful. Fragrant white and purple flowers. Hand-some glossy foliage. Excellent for containers. Developed by Patrick Worley. N7J

**Crackerjack:** A selected, heavy bearing, large-fruited form with purple-black, rounded fruits, much larger than normal for this species and full of flavorful, juicy pulp. An espalier trained plant in a 12 inch pot can produce up to 50 fruits in a season. Fruits from early autumn through to winter. N84, 097, R77

**Frederick:** (Bountiful Beauty) Large, nearly oval fruit; greenish-purple with a reddish cast; aromatic, slightly tart flavor. Good for eating out of hand, excellent for juicing and sherbets. Extremely vigorous, self-fruitful vine, more compact than *P. edulis* f. *flavicarpa*; very productive, bears from June through frost. Hardy to 25° F. Kahuna x Brazilian Golden. Originated in Lincoln Acres, California by Patrick Worley. D57, F16, G20, G49, 183M, N7J

**Frostv:** Developed by Rick McCain for coastal areas of California. Tolerates lower temperatures and produces fruit in cooler areas. Has survived heavy frosts. Also does well in warm regions. Medium-sized, light purple fruit with a rich flavor. Attractive, sweet-scented, frilly flowers, white with a purple center. N7J

**Nancv Garrison:** Hardy cultivar developed by the University of California. Hardy to about 25° F. A good producer of 2 to 3 inch long purple fruit. Glossy, three-lobed leaves. Two inch long flowers with a white and purple corona. L90J

**Purple Possum:** Large, round, reddish-purple fruit of good quality. Frilled, white and purple flowers. Produces abundant crops. Very susceptible to nematodes and root diseases. Originated near Homestead, Florida by Robert Barnum. E8M, G2M, G20

**Red Panama:** Large, well-filled fruit, about 3 1/2 inches long; quality excellent. Grows well in tropical areas. Hybrid between *P. edulis* and *P. edulis* f. *flavicarpa*. N84{S}, 019{S}, P5{S}

**Red Riveira:** Large, round to elliptical fruit; weight 3 to 6 ounces; skin reddish-purple; flesh bright orange with orange juice in cavities, flavor tart-sweet. Natural hybrid between *P. edulis* and *P. edulis* f. *flavicarpa*. Originated in Kona, Hawaii by Confessor Riveira. D57{OR}

**Red Rover:** Medium to large, roundish fruit; rind an attractive, clear red color; sweet, notably rich flavor with tart overtones. Good for eating out of hand or juicing. Vine very vigorous and productive; compact; self-fertile. Large flowers, white with a dark center. Kahuna x Brazilian Golden. Originated in Lincoln Acres, California by Patrick Worley. I83M, N7J

**Sunnvpush:** Giant black passionfruit grafted to *P. caerulea* to promote a stronger vine. Produces heavier crops on a wider range of soil types. S59

*Passiflora edulis* f. *flavicarpa* - *Yellow passionfruit*; *Maracuja peroba* {S}. Origin unknown, may be a mutation of the purple passionfruit. The fruit is generally larger and the vines are much more vigorous and productive. The pulp and juice are more acid, and there is a higher percentage of juice to pulp than in the purple form.

Grown in somewhat warmer climates. AKAMINE; C9M, D57{PL}, K8, L55J, N7J{PL}, N84, 053M, 093, P5, P17M, P38, Q32, Q41, R88, S92

#### CULTIVARS

**Golden Giant:** (Yellow Giant) A large yellow-fruited cultivar that originated in Australia. N84, P5

*Passiflora incarnata* - *Maypop*, *Apricot vine* {PL}. Ripe fruits are eaten out of hand, or made into jellies, jams, wines, sherbets, and refreshing drinks. The leaves are said to be delicious as a cooked green or eaten raw in a salad. Flowers are eaten as a vegetable or made into syrup. Southeastern North America. FERNALD, GIBBONS 1979 [Re], MACNICOL [Re], MEDSGER, SIMMONS 1972 [Cu], SMITH, J.; H4, I11M, I49M, 174, L55, L90J, M16, N7J, N84{S}

*Passiflora laurifolia* - *Water lemon*, *Jamaica honeysuckle*, *Belle-apple*, *Sweet cup* {S}. The orange-yellow fruits have a fragrant, juicy, agreeably subacid pulp that is eaten fresh or processed into a refreshing beverage. One way of enjoying it is to make a hole in one end of the fruit and suck out the pulp and seeds. Tropical America, naturalized in Hawaii. MORTON 1987a; F85, N84, 093

*Passiflora ligularis* - *Sweet granadilla*, *Poka* {S}. Considered by many to be the best of the passifloras. The orange-yellow fruits contain a soft, translucent, perfumed pulp of very agreeable taste. They are cut in half and eaten with a spoon, or the strained juice can be used for making cooling drinks and sherbets. Tropical America, naturalized in Hawaii. MORTON 1987a, POPENOE, W. 1920; A79M, D57{PL}, G20{PL}, G73, I49M{PL}, K8, L55J, L90J{PL}, L91M, N7J{PL}, N84, P5, P38

*Passiflora maliformis* - *Chulupa*, *Sweet calabash* {S}. Sweet, juicy, aromatic fruits are said to have a grape-like flavor. The seedy pulp is eaten out of hand, made into cold drinks, or scooped from the shell and served with wine and sugar. Tropical America, cultivated. MARTIN 1970, MORTON 1987a, NATIONAL RESEARCH COUNCIL 1989; D57{PL}, L91M, N84, 053M, P5, R78M

*Passiflora manicata* - {PL}. The smallish, green fruits have orange pulp with few seeds and an agreeable, piquant flavor. They can be eaten out of hand or mixed with milk to make a pleasant beverage. South America. MARTIN 1970; D57, L90J, N7J, N84, 053M{S}

*Passiflora mixta* - *Curuba de indio* {PL}. Green to greenish yellow fruits have a pleasant, aromatic flavor similar to those of *P. manicata* and may be used in a similar manner. Central America to Bolivia. MARTIN 1970, PEREZ-ARBELAEZ; N7J, N84{S}, 053M{S}, R77

*Passiflora mollissima* - *Banana passionfruit*, *Tacso*, *Curuba de Castilla* {S}. The yellow, oblong, aromatic fruits are eaten out of hand, used in ice creams, cocktails, fruit salads, jellies, pies, puddings, sauces and sherbets, or made into a liqueur, *crema de curuba*. The juice is highly prized and is also fermented into wine. Andean South America. FRIED [Re], MORTON 1987a, NATIONAL RESEARCH COUNCIL 1989, UPHOF; A79M, F80, L90J{PL}, L91M, N7J{PL}, N84, 053M, P5, P17M, R88, S92

*Passiflora organensis* - *Nensi* {PL}. The round fruits are eaten. They have yellow pulp and a special flavor, much in demand in parts of Brazil for making pastries. Brazil. UPHOF; E48, N7J

*Passiflora pinnatistipula* - *Galupa* {PL}. The fruits are eaten raw or made into beverages. They have purple rinds and fragrant yellow pulp with an agreeable sweet-acidulous flavor. Andean region. CARDENAS, NATIONAL RESEARCH COUNCIL 1989; N7J, N84

*Passiflora platyloba* - *Montesa granadilla*, *Granadilla dcida* {PL}. The acid fruits are used in making ices and refreshing drinks. Central America. KUNKEL, WILLIAMS, L.; G20, G96, N7J, N84{S}, 053M{S}



*Passiflora popenovii* - *Granadilla de Quijos, Curubejo* {PL}. The juicy fruits are eaten, and are considered one of the best of all passifloras for eating out of hand. They have sweet pulp with a rich penetrating aroma and an exquisite flavor. A rare species occasionally cultivated in Ecuador and Columbia. Sold in local markets of Banos and Riobamba. Ecuador. NATIONAL RESEARCH COUNCIL 1989, POPENOE, W. 1924; N7J

*Passiflora quadrangularis* - *Giant granadilla* {S}. Unripe fruits are steamed or boiled and eaten in soups, or cut into pieces, breaded, and cooked in butter with pepper and nutmeg. The bland, melon-like pulp of the ripe fruit, with the inner skin removed, is eaten raw, candied, canned in syrup, used in fruit salads, pies, jellies, cold drinks, sauces, wine, or served with sugar and shaved ice. Roots of old vines are baked or roasted and eaten like yams. Tropical America, cultivated. DUKE, MORTON 1987a, OCHSE, UPHOF; A79M{PL}, E29{PL}, E48{PL}, F80, G20{PL}, G96{PL}, L55J, L90J{PL}, L91M, N84, 053M, 093, P5, P17M, Q32, etc.

*Passiflora serrato-digitata* - *Tagua-tagua* {PL}. The yellow, globose, brittle fruit has sweet, white pulp said to have the flavor of guava. Tropical America. MARTIN 1970; A26{S}, E29, F80, 112, N7J, N84

*Passiflora tripartita* - *Tacso* {S}. Fruits are oblong, deep yellow when ripe, often blushed with red on one side. The pulp is deep orange colored, juicy, of pungent subacid flavor. They are eaten out of hand or used to prepare refreshing drinks and ice creams. Ecuador. POPENOE, W. 1924; N84

*Passiflora van-volxemii* - *Passiflora antioquiensis*

*Passiflora vitifolia* - *Grape-leavedpassiflora* {PL}. Yellowish fruits with a thin, parchment-like shell. White pulp, very fragrant, with a sweet to subacid flavor. Used as a dessert or for making refreshing beverages. Central America to Peru. MARTIN 1970; D57, E48, F53M, G96, H4, H78, 183M, J27, N84{S}, 053M{S}, R77

CULTIVARS {GR}

**Scarlet Flame:** Large, 5 to 7 inch, bright red-scarlet flowers that cover the plant. If cross pollinated, an egg-shaped fruit is produced that is ornamental, with white spots and stripes on a watermelon green ground color. It is tart and fragrant with the taste of strawberries, and as with *P. edulis*, it should be allowed to become wrinkled before eating. G20, N7J, N84

*Passiflora* 'Elizabeth' - {PL}. When cross pollinated, yields a very large, golden-yellow, pentagonal fruit, somewhat reminiscent of a mountain papaya with sweet, fragrant, pale white flesh that is sweet and delicious. Very good for eating out of hand. Also produces large, sweetly scented, lavender blue flowers with extravagant frilled filaments. Developed by Patrick Worley. G20, N7J, N84

*Passiflora* 'Purple Tiger' - {PL}. When cross pollinated with *P. caerulea*, yields a very large fruit similar to Elizabeth, very fragrant and with outstanding flavor. Strong growing plant with large oval leaves, angled stems, and very large, sweetly scented flowers with deep red-purple petals and white filaments highly striped in violet-blue. *P. alata* x *P. quadrangularis*. Developed by Patrick Worley. N7J

*Tacsonia mollissima* - *Passiflora mollissima*

PEDALIACEAE

*Ceratotheca sesamoides* - *False sesame* {S}. Leaves are consumed as a vegetable or added to soups for their mucilaginous properties. Seeds are eaten like those of sesame, and are also put in soups with the leaves. They also yield an edible oil. Often sold in markets. Tropical Africa. TANAKA, UPHOF, ZEVEN; N84, S28M

*Pedalium murex* - *Burra gookeroo* {S}. The mucilaginous leaves are eaten as a vegetable. The leafy stems have been used to thicken

buttermilk. Tropical Africa, Tropical Asia. HEDRICK 1919, LEYEL 1987a, UPHOF, WATT; F85

*Sesamum alatum* - *Gazelle's sesame, Tacoutta* {S}. The seeds are ground into flour, used in soups, or pressed for their edible oil. Leaves are used as a vegetable. Tropical Africa. DALZIEL, KUNKEL, TANAKA, ZEVEN; N84, S28M

*Sesamum capense* - *Aprilbaadjie* {S}. The small light brown seeds are eaten with boiled maize. Also the source of an edible oil. Cultivated locally by the Lovedu people. Southern Africa. FCK, F.; N84, S28M

*Sesamum indicum* - *Sesame, Simsim* {S}. Seeds are eaten dry, toasted, sprinkled on breads, cakes, and cookies, fermented into *tempeh*, made into nut milks and *seed yogurt*, or used for *halava* and other confections. They yield an oil, sometimes called *bene oil*, used in salads, margarine, and shortenings, or when made from roasted seeds employed as a flavoring, especially in oriental cuisine. In West Africa and the Southern United States, sesame seed meal is used for thickening soups and stews. *Gomashio* or sesame salt is a seasoning made of the roasted, ground seeds mixed with salt. Crushed seeds, hulled or unhulled, form sesame paste, sesame butter, and *tahini*. *Benne Wafers*, crisp cookies sprinkled with sesame seeds, have been popular in the Lowcountry of South Carolina since Colonial times. Sprouted seeds are eaten in salads. Leaves are eaten raw in salads, as a potherb, or in beverages and soups. Sesame seed presscake is made into confections or fermented into *dageh* and *sigda*. In the Sudan, a filtrate of the ashes from burnt stalks is added to stews. Tropical Africa, cultivated. BEDIGIAN, COLE, C. 1990 [Re], DIRAR 1993, HARRINGTON, H. [Cu, Cul], MEYEROWITZ 1994b [Re], MILLER, X, OCHSE, PAINTER [Re], ROSENGARTEN, SHURTLEFF 1975, SHURTLEFF 1979, TANAKA; C22{ED}, D92M, E7M, F80, F88{PD}, G68, K22, N84, 053M. (see also Sprouting Seeds, page 524)

CULTIVARS

**Afghani:** 110 days. Very early maturing, dependable strain that likes hot weather. Grows to 3 feet tall; produces an abundance of seed-filled pods. Tan seeds. Has strikingly beautiful, candelabra-like tillers. I99M, K49T

**Black Seeded:** {DF} Plants tall and lanky, branching, susceptible to lodging and shattering. Seeds are jet black, not as bitter as tan types, popular in oriental cooking. Often toasted and ground to a powder, mixed with sugar, and used for coating certain Chinese sweets. In Korea, they are made into a gruel called *hugimjajuk*. COST 1988 [Cul], NOH [Cul, Re]; A7, A49D, C27G, C34G, E56, F85{S}, F88, G47B, H91, H91{£D}, I19M, K2, L17, M15M

**Black Thai:** 120 days. Very tasty black seeds, sweet and rich, esteemed in oriental cooking. Drought tolerant plant, 5 to 6 feet tall, with much candelabra-like tillering. Attractive, pinkish-white flowers. Landrace from Thailand. C95, F73D, L3J, N84

**Brown Turkey:** 115 days. Dark brown seeds. Drought tolerant plant, 5 to 6 feet tall. Harvest when 5 to 10% of seed capsules are beginning to open. Landrace from Turkey. C95, L3J, L77D

**Tan Anatolian:** 118 days. Light-colored seeds similar to commercial sesame. Very good flavor. Drought tolerant plant, 5 to 6 feet tall. Landrace from the central plateau of Asia Minor. F73D, L3J

*Sesamum orientale* - *Sesamum indicum*

*Sesamum radiatum* - *Black beniseed, Bcuku* {S}. Young leaves and shoots are finely cut, cooked and eaten with cereals or added to soups. They have a mucilaginous texture and unpleasant smell. Seeds are eaten and also yield an edible oil. Tropical Africa, cultivated. DALZIEL, VAN EPENHUSEN, ZEVEN; U37M

PEPEROMIACEAE

*Peperomia maculosa* - *Culantro peperomia* {S}. The coriander-flavored leaves are used for seasoning beans and meats. Sold in local markets. Tropical America. ALCORN; 053M, Q32

*Peperomia pellucida* - *Greenhouse tea plant, Suna-kdsho* {S}. A small, weedy plant with succulent leaves and shoots that can be eaten in salads or used as a potherb. In the West Indies, the leaves are also brewed into tea. Tropical America. JACQUAT, MARTIN 1975, ZEVEN; N84

## PERIPLACACEAE

*Hemidesmus indicus* - *Indian sarsaparilla* {DF}. Roots are the source of a syrup used as a flavoring agent in foods, instead of true *sarsaparilla* (*Smilax* spp.). Southern Asia. TANAKA; E14T, F85{S}, F86G, GO, K18M, L36M, M15M, N7D

*Raphionacme hirsuta* - *Ghali* {S}. The large underground tuber is mixed with sugar and brewed into an intoxicating beer. Yeasts or molds that grow on the roots apparently contribute to the fermentation. Southern Africa. FOX, E; N84, S28M

## PHILESIACEAE

*Lapageria rosea* - *Chilean bellflower, Copihue* {S}. The fruits are yellow, the size of an egg, and have sweet, white, juicy pulp that is eaten fresh or processed. National flower of Chile. Chile, cultivated. HEDRICK 1919, VALENZUELA; C95, F80, K63G, K71, L91M, M46, N84, 053M, R77{PL}

## PHYTELEPHASIACEAE

*Phytelephas macrocarpa* - *Ivory nut palm* {S}. Young shoots are eaten as a vegetable. Fruits are consumed when young or used as a coffee substitute. The sweet liquid of the unripe seed has been used to quench the thirst. Tropical America, cultivated. HEDRICK 1919, KUNKEL, MENNINGER; A41M, A79M, K47G, I84M{PL}, N84

## PHYTOLACCACEAE

*Phytolacca acinosa* - *Indian pokeberry* {S}. The leaves are boiled and eaten like spinach or used in curries. Young shoots are used as a substitute for asparagus. Tropical Asia. BURKILL, HEDRICK 1919, TANAKA, WATT; F73D, F80, F85, 174, I81M, N9M, N9M{PL}, N84, 053M, Q24

*Phytolacca acinosa* var. *esculenta* - *Yama-gobo* {S}. Young leaves are cooked and eaten like spinach, oil-roasted, or put in soups. Roots are also edible. Tropical Asia. BROWN, W, BURR, TANAKA; N84

*Phytolacca americana* - *Pokeweed, Pokeberry, Poke salad* {S}. Unfolding leaves are cooked and served life spinach. Young shoots are excellent when prepared like asparagus, or they can be made into pickles. The tender, clear, inner portion may be rolled in white corn meal and fried. They are sometimes blanched before using, and also forced in dark cellars for winter use. Ripe berries are used for coloring wine, frostings, and candies. Seeds and roots are poisonous. North America. ANGIER [Re], BURR [Cu], FERNALD, GIBBONS 1962 [Pre, Re], MEDSGER, MORTON 1977, UPHOF; D92M, E61{PL}, F37T{PL}, F68T, F80, G68, J82, M34M, N84, 053M, Q24, S55

*Phytolacca decandra* - \* *Phytolacca americana*

*Phytolacca dioica* - *Bella sombm* {S}. Young leaves and shoots are cooked and eaten as vegetables. Fruits are made into jellies and jams or used to give red color to wines. Argentina, cultivated. FOX, F., TANAKA; G66, 133, N84, 053M, 093, P5, Q41, R88, T25M

*Phytolacca esculenta* - *Phytolacca acinosa* var. *esculenta*

*Phytolacca rivinoides* - *Venezuela pokeberry* {S}. Cooked leaves and shoots are eaten as a vegetable. Leaves are boiled and used for tea. Tropical America. ALTSCHUL, UPHOF, WILLIAMS, L.; F85

## PINACEAE

*Abies alba* - *Silver fir* {S}. Source of a greenish to brown honey-dew honey with a sweet, treacly or slightly resinous flavor. Popular

as a "tonic" honey in parts of Europe. The inner bark was made into a cake-like bread by the Lapps and Eskimos. Eurasia. CRANE 1984, TANAKA; A51M{PL}, D95{PL}, G66, K38, K63G, N71M, N84, 093, P5, P17M, P49, Q32

*Abies amabilis* - *Amabilis fir* {S}. Young branch tips are used as a substitute for tea. Northwestern North America. TURNER 1978; A2, B94, D95{PL}, D96, G66, K38, K63G, K75, \*75{PL}, N71M, N84, P49, R78

*Abies balsamea* - *Balsam fir* {S}. The aromatic, resinous pitch that exudes from the trunk, called *Canada balsam* or *spruce gum*, is molded into short sticks and used for chewing. It yields an oleoresin used to flavor candy, baked goods, ice cream and beverages. Inner bark can be ground into flour and used as an emergency food. Tips of twigs are used for tea. Eastern North America. MEDSGER, MORTON 1976, PETERSON, L., TURNER 1978; B94, C33{PL}, D45{PL}, G66, H49{PL}, I4{PL}, K38, K63G, K75, X75{PL}, N84, 053M, 093, R78

*Abies excelsior* - *Great silver fir, Grand fir* {S}. Young shoots are used as a tea substitute. The inner bark, or cambium, is used as an emergency food. Northwestern North America. TURNER 1978, YANOVSKY; A2, C9M, C33{PL}, C95, D95{PL}, E47, H49{PL}, 147, J26{PL}, K38, K63G, K75, AT75{PL}, M51M, 053M, etc.

*Abies grandis* - *Abies excelsior*

*Larix occidentalis* - *Western larch* {S}. *Larch gum*, exuded from the trunk and branches, is sometimes used for chewing. In the food industry it has become a substitute for gum arabic and serves as a thickener, stabilizer, emulsifier, and binder. The sap is made into a sweet syrup. Also the source of an edible manna. Western North America. BROUK, DONKIN, HART, YANOVSKY; A2, B94, G66, 147, J26{PL}, K38, K63G, K75, M35M{PL}, M74M, N84, 053M, P49

*Picea abies* - *Norway spruce* {PL}. The leafy branch or young shoot is used in the preparation of *spruce beer*. In France and Switzerland, *Vacherin d'Abondance* and *Vacherin Mont d'Or* cheeses are bound with bands of spruce, which permeate the cheese with a distinct and pleasant flavor of spruce resin. Eurasia. HEDRICK 1919, MASUI; C11M, D45, F85J{£D}, H49, 14, J16, K38{S}, K63G{S}, K75{S}, M51M, N84{S}, 053M{S}

*Picea excelsa* - \* *Picea abies*

*Picea glauca* - *White spruce* {PL}. *Spruce oil*, distilled from the leaves and twigs, is used in the food industry to flavor chewing gum, ice cream, soft drinks, and candy. Young cones are eaten roasted, fried, or pickled. The inner bark is used as an emergency food. The trunk yields a gum used for chewing. North America. FERNALD, KUNKEL, MORTON 1976; C11M, D45, H49, 14, J16, K38{S}, K63G{S}, K75{S}, M74M{S}, 053M{S}, Q32{S}

*Picea mariana* - *Black spruce* {S}. The sap and young twigs are boiled with honey, molasses, or maple sugar and fermented with yeast to produce the famous beverage known as *Danzig spruce beer*. A resinous exudation, *spruce gum*, is collected from the branches and used as a masticatory. Also a source of *spruce oil*, used commercially for flavoring. North America. FORGET, GIBBONS 1962 [Re], MORTON 1976, UPHOF; B94, D95{PL}, E87{PL}, G66, K38, K63G, K75, M74M, N71M, N84, P49, R78

*Picea nigra* - \* *Picea mariana*

*Picea pungens* 'Glauc' - *Colorado blue spruce* {S}. The needle tips are used for making a jelly which can be served with lamb, venison or breakfast muffins. Occasionally available at specialty markets. Western North America. SCHOFIELD; B94, C9M, C33{PL}, C38{PL}, D96, G66, G66{PL}, H92{PD}, J16{PL}, K38, K63G, K75, AT75{PL}, M74M, P49, etc.

*Pinus armandii* - *Chinese white pine, Yu-sung* {S}. The seeds are eaten and are esteemed as a great delicacy. China. TANAKA; B94,

B96{PL}, C9M, D95{PL}, F85, G66, K38, K63G, M92{PL}, N37M{PL}, N84, P5

*Pinus ayacahuite - Mexican white pine* {S}. The Tepehuan of Chihuahua eat the seeds in the western Sierra Madre. Mexico. LANNER; B94, C9M, F85, 128{PL}, K63G

*Pinus cembra - Swiss stone pine* {S}. Seeds are eaten in certain pastries and dairy foods. They also yield an edible oil. Eurasia. HEDRICK 1919, JAYNES, UPHOF; B94, C9M, D37{PL}, E47, E87{PL}, E91M{GR}, F80, G66, K38, K63G, M35M{PL}, N71M, P17M, Q32

*Pinus cembroides - Mexican pinyon* {S}. The oily seed kernels are eaten raw, roasted, ground into flour for baking into cakes, or made into a nut butter. Of all the pinons, they are richest in protein and the lowest in starch. Southwestern America. JAYNES, LANNER, MENNINGER; B94, C95, D95{PL}, F80, G66, I74{PL}, I83M{PL}, N84, 093

*Pinus cembroides van edulis - \*Pinus edulis*

*Pinus cembroides van maximartinezii - Pinus maximartinezii*

*Pinus cembroides van monophylla - Pinus monophylla*

*Pinus cembroides van parryana - \*Pinus x quadrifolia*

*Pinus coulteri - Coulter's pine, Big-cone pine* {S}. The large seeds are eaten in California. Southwestern North America. MENNINGER, UPHOF; B94, C9M, D95{PL}, D96, F80, G60{PL}, G66, I98M{PL}, K38, K63G, N84, 093, P5, Q32

*Pinus densiflora - Japanese red pine; Sonamu* {S}. Young green cones and mature needles are used in the production of Korean wines. The needles are also used to give a distinct resinous flavor to Korean autumn festival *half-moon rice cakes* and other sweets, which are steamed over beds of the needles. The pollen is added to provincial cookies sold in Korean markets. Seeds and inner bark have also been recorded as being edible. Japan, Korea. MILLON, PEMBERTON, TANAKA; B9M{PL}, C9M, D95{PL}, E47, F80, G66, I77M{PL}, I83M{PL}, K38, K63G, N0{PL}, N71M, 053M, P5, Q32, etc.

*Pinus edulis - Colorado pihon, Rocky Mountain nut pine* {S}. The oily, protein-rich seeds are eaten raw or roasted, or used in breads, cookies, confectionery, nut butters, ice cream, sauces, stuffings, pilafs, etc. Or they can be ground into a meal and used in gruels, soups, and puddings, or mixed with cornmeal or sunflower seed meal. Roasted seeds are also added to gourmet coffees, cocoa and herbal teas. The needles are brewed into a tea. Soft centers of green cones, when roasted, form a syrupy food. The sweet cambium is cut into thin strips and cooked like spaghetti. Southwestern North America. ANGIER [Re], COX [Re], HARRINGTON, H., LANNER [Nu, Re], MEDSGER; B94, C9M, D95{PL}, E47, F80, H1M{DF}, H49{PL}, I34{PD}, 147, I83M{PL}, J25M, K38, K63G, L75, N24M{PL}, P17M, etc.

*Pinus excelsa - \*Pinus wallichiana*

*Pinus gerardiana - Chilgozapine* {S}. The seeds are eaten raw or roasted as a dessert in the same way as pistachio nuts. They are greatly appreciated in areas of the world where they grew, and are gathered and sold in native markets. Large quantities are imported into India from Afghanistan. Himalayan region. MENNINGER; B94, D95{PL}, F9iZ{PL}, G66, H4{PL}, K38, K63G, N79M, N84, P17M, Q12, Q18, Q40, Q46

*Pinus griffithii - Pinus wallichiana*

*Pinus halepensis - Aleppo pine* {S}. The thin-shelled seeds are eaten, being of excellent flavor and quality. In Northern Africa, they are frequently added to cakes made for celebrations, and they are an ingredient (with sorghum) of a luxury beverage which is highly appreciated during the month of Ramadan. Also coarsely ground and sprinkled over *acida*, a famous Tunisian pastry. In Greece, the resin

which exudes from the trunk is used in modern day production of *retsina* and *kokkineli* wines. Seeds are sold in local markets. Mediterranean region. BOUQUET, CLARKE, LAMBERT-G6CS, ROBINSON, J. 1994; A7M{PD}, A41M, B94, C9M, D96, F53M{PL}, G66, I68{PL}, I83M{PL}, JO, K38, K46{PL}, K63G, N84, 053M, 093, P5, Q32, etc.

*Pinus koraiensis - Korean nut pine, Chinese nut pine* {S}. Seeds are eaten raw or roasted, used as an ingredient of candies, sweet cakes, glutinous rice desserts, *congee*, fancy kimchi, a kind of steak tartare, or fried as a garnish for drinks and savory dishes. Large quantities are exported by China. In Korea, the pollen is gathered and used in making cookies. Koreans also use the green cones for making wine, and they grind or finely chop the seeds into *pine nut powder* which is sprinkled on foods or used for coating sweet rice cakes and other delicacies. Eastern Asia. COST 1988 [Cul, Re], MILLON [Cul], NOH [Re], PEMBERTON, ROSENGARTEN; B94, C9M, D95{PL}, E47, E47M{DF}, E87{PL}, E91M{GR}, F80, G66, K38, K63G, N24M, N37M{PL}, N71M, P5, etc.

*Pinus lambertiana - Sugar pine* {S}. When cut into or wounded, the heartwood exudes a sap that forms lumps of a sugary substance that is sometimes used for sweetening food. When used in quantity it is cathartic. The seeds have a sweet kernel that is eaten raw, roasted, or pounded into cakes. Pacific Coast of North America. DONKIN, HEDRICK 1919, MEDSGER; A2, B94, C9M, D95{PL}, D96, G66, I98M{PL}, K38, K63G, K75, N24M{PL}, N71M, 093, P5

*Pinus maximartinezii - Martinez pihon* {S}. The edible seeds are very large, up to an inch long and as tasty as those of other species of pinon pine. Sold in the marketplace of Juchipila, Zacatecas. Mexico. LANNER; B94, D95{PL}, G66, I83M{PL}, 093

*Pinus monophylla - Single leaf pihon* {S}. Seeds are eaten raw or roasted, or ground and made into pancakes. They are the starchiest of the pinons and have the lowest protein value. Southwestern North America. GIBBONS 1979, LANNER; A18{PL}, B94, C9M, C43V, D95{PL}, D96, F85, G60{PL}, G66, I83M{PL}, I98M, I98M{PL}, K38, K63G, 093, etc.

*Pinus mugo* var. *pumilio - Mugo pine* {PL}. The leaves and twigs yield *pine needle oil*, and essential oil that flavors commercial baked goods, ice cream, candy, beverages and gelatin. Europe, cultivated. BURDOCK, LEUNG; A18, A50, A93M, C58, E87, G66{S}, H49, 14, K22, K38{S}, K63G{S}, M51M, NO, P5{S}, Q32{S}, etc.

*Pinus parryana - Pinus x quadrifolia*

*Pinus pinea - Italian stone pine; Pignolia nut* {S}. The seeds are eaten raw, roasted and salted, or used in sweetmeats, cakes, puddings, stuffings, *pesto* and *picada* sauces, pilafs, *macaroon* cookies, soups, *dolmas* (stuffed grape leaves), nut milks, etc. Romanian cooks grind entire young pinecones and use them to flavor game sauces. Also the source of an expensive, gourmet oil produced mostly in France. Mediterranean region, cultivated. ANDREWS, C. 1988 [Re], ANGIER, BIANCHINI, BISSELL [Cul], COLE, C. 1990 [Re], CUSUMANO [Cul, Re], GRAY, P. [Cul], ORTIZ 1992, ROOT 1980b; C9M, D37{PL}, D95{PL}, D96, E23M{DF}, F85, H73{PD}, I83M{PL}, K38, K63G, L91M, L99{DF}, N71M, N84, 053M, P17M, R47, etc.

*Pinus x quadrifolia - Parry pihon* {PL}. Apparently a natural hybrid. The oily seeds are an important food among the Indians of Baja California. They contain 11% protein, 37% fat, and 44% carbohydrate. Southwestern North America. LANNER, UPHOF; B94{S}, I83M, I98M

*Pinus remota - Remote pinyon, Texas pinyon* {S}. Recently discovered species whose seeds are eaten like those of other pines. Considered to be the thinnest-shelled of all the pinyons. First described in 1966, as a variety of the Mexican pinyon. Southwestern North America. LANNER; B94, K38

*Pinus roxburghii* - *Chirpine* {S}. The seeds are sometimes eaten. A sweet manna that exudes from the bark and twigs is used as food. Himalayan region. DONKIN, TANAKA; C9M, D96, F80, G66, H71, I65{PL}, I83M{PL}, K38, K46{PL}, K63G, 093, P17M, Q12, Q18, Q46, P38, etc.

*Pinus sabiniana* - *Digger pine* {S}. Large, oily seeds are eaten raw or roasted. The soft center of green cones can be roasted and eaten. Leaves are used as a tea substitute. Southwestern North America. CLARKE, JAYNES; A2, B94, C9M, D96, G60{PL}, G66, I83M{PL}, I98M, I98M{PL}, K38, K63G, N71M, 093, P5, P17M, R47, etc.

*Pinus sibirica* - *Siberian cedar pine* {S}. The highly nutritious seeds are eaten. They contain up to sixty four percent fat and are pressed commercially for the production of a cooking oil. The needles are brewed into a vitamin rich tea. Gathered from the wild on a large scale in Russia, and cultivated in plantations near the Ural Mountains. Eurasia. BURMISTROV [Nu], LANNER; B94, G66, K38, N61, N84

*Pinus strobus* - *White pine* {PL}. The fresh needles are brewed into an aromatic tea rich in vitamins A and C. An acceptable candy is made by boiling the tender new shoots in syrup. The firm, unexpanded male cones can be boiled, or stewed with meat. North America. FERNALD, GIBBONS 1966b, PETERSON, L.; B9M, B32, C11M, D45, D95, E33M, E47, H49,14, J16, K38{S}, N7T, 053M{S}, Q32{S}

*Pinus sylvestris* - *Scotch pine* {PL}. The leaves and twigs yield an essential oil, called *Scotch pine needle oil*, used by the food industry for flavoring beverages, frozen dairy foods, baked goods, etc. The cones have been used to flavor beer and wine. Inner bark can be used for making an emergency bread-like food. Also the source of a heavy bodied, strong flavored honeydew honey. Eurasia. BREMNESS, BURDOCK, CRANE 1975, FERNALD, LEUNG; A18, C9M{S}, C11M, C38, D45, E87, G66, G66{S}, H49,14,147{S}, J26, K38, K63G{S}, M35M, P5{S}, Q32{S}, etc.

*Pinus torreyana* - *Torrey pine* {S}. The large seeds are eaten raw or roasted. Southwestern North America. MENNINGER, UPHOF; A41M, B94, C9M, G66, 7777, I68{PL}, I83M{PL}, I98M, I98M{PL}, K38, K46{PL}, K63G, 093

*Pinus wallichiana* - *Indian blue pine* {S}. A manna-like substance that exudes from the leaves and twigs is eaten or employed in adulterating honey. The seeds are sometimes eaten. Himalayan region. DONKIN, TANAKA; B94, E87{PL}, F85, G66, H49{PL}, I83M{PL}, K38, K63G, M51M{PL}, N71M, 046, 093, P17M, Q12, Q18, etc.

*Pseudotsuga menziesii* - *Douglas fir* {PL}. A refreshing tea, high in vitamin C, is made from the young leaves and twigs. Young, tender tips impart a subtle, woody flavor to foods in which they are cooked. They can be used for dipping into marinades, basting barbecued meats or fowl, or infusing broths. The trunks exude a sweet manna-like substance. Western North America. BRYAN [Re], CLARKE, DONKIN, KIRK; B9M, C9M{S}, C11M, D45, E47, H49,14, K38{S}, K75, K75{S}, L75{S}, M51M

*Pseudotsuga taxifolia* - *Pseudotsuga menziesii*

*Tsuga canadensis* - *Eastern hemlock* {PL}. The young tips are used to make a tea and are also ingredients of *root beer* and *spruce beer*. The leaves and twigs yield *spruce oil*, used commercially to flavor chewing gum, ice cream, soft drinks, and candy. Inner bark is used as an emergency food. Eastern North America. FERNALD, HEDRICK 1919, MORTON 1976; B9M, C9M{S}, D45, D95, E33M, E47, H49,14, J16, K38, K63G{S}, K75{S}, N7T

*Tsuga heterophylla* - *Western hemlock* {S}. Young twigs are boiled with honey or molasses to produce *spruce beer*. Also a source of *spruce oil*, used as a flavoring in the food industry. The inner bark is made into cakes or bread. Western North America. MORTON

1976, YANOVSKY; A2, B94, C9M, C95, D95{PL}, F88M, 147, K38, K63G, K75, K75{PL}, M74M, NO{PL}, N71M

*Tsuga mertensiana* - *Mountain hemlock* {S}. The fresh needles are used as a tea substitute. Inner bark is used as an emergency food. Western North America. HELLER, KIRK; D95{PL}, D96, E63{PL}, E87{PL}, G66,147, K38, K63G, K75, M74M, N71M

PIPERACEAE

*Heckeria peltata* - *Pothomorphe peltata*

*Macropiper excelsum* - *Piper excelsum*

*Piper aduncum* - *Wild pepper*, *Higuillo* {PL}. The peppery fruits are used to season food. When black and ripe, they are said to be very sweet. Leaves are sometimes eaten as a potherb. Tropical America. DUKE, VON REIS; 112

*Piper auritum* - *Hoja de Santa Maria*, *Acuyo*, *Makulan* {PL}. The leaves, having the flavor and aroma of sarsaparilla, are used for seasoning soups, wild game such as armadillo, freshwater snails, and many other dishes. They are wrapped around tamale dough before it is packaged in corn leaves and steamed. In Honduras, young leaves are sometimes cooked and eaten as greens. The natives of Panama trap a river fish using the leaves as bait. After feeding on it regularly, the flesh of the fish takes on the flavor of the leaf. Recommended for aquaculture applications. Central America. ALTSCHUL, DUKE, HUTSON 1987 [Cul], JOLY, MORTON 1976, QUINTANA 1986 [Re], QUINTANA 1994, WILLIAMS, L., ZASLAVSKY [Re]; B73T{PR}, C43M, F93G, G73,181M, I83M, K22, L90J, M82

*Piper betle* - *Betel leaf* {PL}. Aromatic leaves are chewed with betel-nuts (*Areca catechu*). For this purpose, they are smeared with lime and cutch and used as a wrapping for slices of the nuts. Various spices, such as cinnamon, cloves, cardamom, nutmeg, and tamarind may be added to the mixture which is used as a stimulant. Malaysia to Micronesia. BROUK, MACMILLAN, MENNINGER, UPHOF; A26, C43M, E29, E48, F73D, G2M, G73, G96,112,181M, L90J, M82, N84{S}, P38

*Piper cubeba* - *Cubeb*, *Tailed pepper* {DF}. Dried unripe fruits, called *cubeb berries*, are used as a seasoning, having a strong, spicy odor and an aromatic, bitter, sharp flavor. Forms one of the ingredients of *ras el hanout*, legendary spice mixture of Morocco. Source of an oleoresin that enters into pickles, meat sauces, bitters and tobacco. Malaya, cultivated. BOUQUET, MORTON 1976, ROOT 1980b, UPHOF, WOLFERT 1973; A7, E14T, F37T, F85{S}, GO, G73, J58, K2, K18M, L34, M15M, N7D

*Piper excelsum* - *Kawakawa*, *New Zealand pepper-tree* {S}. In Polynesia the flower-clusters are eaten raw. Fruits are good to eat when fully ripe. New Zealand and Oceania. COLENSO, LOVE-LOCK; N84, 093, S43M

*Piper guineense* - *Ashanti pepper*, *Benin pepper* {S}. The fresh or dried fruit, milder than that of *P. nigrum*, is used for flavoring soups, rice and other foods. Leaves are also added to soups. Ash from the plants forms a substitute for salt. West Tropical Africa, cultivated. DALZIEL, KUNKEL, MORTON 1976, UPHOF; N84

*Piper longum* - *Indian long pepper*, *Jaborandi pepper*, *Pippali* {S}. Dried, unripe berries are used as a condiment in curries and pickles, or to adulterate black pepper. One of the ingredients of the Moroccan spice mixtures *ras el hanout* and *majfelja harra*. Also a principal ingredient of various Ayurvedic tonic formulas including *Trikatu*, *Chyavanprash*, and *Amrit Kalash*. India to the Philippines, cultivated. FRAWLEY, HEDRICK 1919, MORTON 1976, SIVARAJAN, TIERRA, WOLFERT 1973; F85, H14{m}, N7D{DF}, N7D{ED}

CULTIVARS {DF}

Timiz: (Ethiopian Long Pepper) Dark, grayish black fruits; 1 to 1 1/4 inch long and 1/8 to 1/4 inch in diameter; distinctive, peppery flavor. Much darker and narrower than the typical long peppers seen

at Indian markets. Popular in Ethiopian cooking, especially *zigni*—spiced ground beef dishes. H51

*Piper methysticum* - *Kava*pepper {PL}. Roots and stems are the source of a stimulating alkaloidal beverage called *kava* or *ava*, widely consumed in some Polynesian Islands. They are also used as a masticatory. Pacific Islands, cultivated. HEDRICK 1919, MACMILLAN, MASSAL, TANAKA, UPHOF; A49D{DF}, E14TIDF, E21D, E29, F37T{DF}, G73, 112, 174, I81M, I81M{DF}, K18M{DF}, L54{DF}\ L90J, M82, N84

#### CULTIVARS

**Black:** (Black Kava) Stems and veins are deep purple to black in color. Has several times the potency of commoner forms. Leaves of this strain appear to be as potent as the roots of other types. A pre-conquest Hawaiian cultivar, still secretly cultivated in some areas. A26, N84

*Piper nigrum* - *Black pepper* {S}. The pungent fruits, called *peppercorns*, are dried, ground and widely used as a seasoning. Milder-flavored *white pepper* is obtained from fruits whose outer coverings have been removed. *Mignonette pepper* or *shot pepper* is a mixture of white and black pepper widely used in France. *Poivre gris* is finely ground mignonette. Unripe, green peppercorns are pickled in vinegar and used as a relish. *Tellicherry* and *Muntok* are famous grades of black and white pepper, respectively. The seeds are the source of an oil used to flavor sausages, pickles, canned foods, and beverages. *Pepato* is a sheep's milk cheese from Sicily flavored with whole black peppercorns. Tropical Asia, cultivated. BOWN, CAMPBELL-PLATT, MACMILLAN, MORTON 1976, OCHSE, ORTIZ 1992, SCHERY, UPHOF; A79M, A94M{PD}, C34G{DF}, C43M{PL}, E29{PL}, E38M{PD}, F37T{PL}, F85, F85J{PD}, H90G{PD}, I12{PL}, I81M, K2{DF}, L16{DF}, M53{PL}, M82{PL}, N84, 042, 093, etc

*Piper sanctum* - *Hierba santa*, *Acueyo* {PL}. The cooks in Vera Cruz wrap their fish in the large, cordate, saffras-flavored leaves. In other parts of Mexico they are used for flavoring soups. Central America. UPHOF; F73D

*Piper sarmentosum* - *Cha phlo* {PL}. The young leaves are consumed raw, added to curries, blanched and eaten as a potherb, or put into *khaao yam*—a mixture of rice, raw vegetables and fermented fish sauce. Also used as a wrapping for *miang kam*, a kind of snack made of ginger, peanuts, roasted coconut meat, chiles, shallots, dried shrimp, sweet coconut meat sauce, and lime. Southeast Asia. JACQUAT, KONGPAN, LOHA-UNCHIT [Re], PONG-PANGAN; C43M, N84{S}

*Piper umbellatum* - *Pothomorphe umbellata* Ua

*Pothomorphe peltata* - *Lizard's tail pepper*, *Gedebong* {PL}. Young leaves are boiled or steamed and eaten with rice. They are also used as a wrapping for fish that are seasoned and roasted in hot ashes. The sweetish, ripe fruits are considered a delicacy by children. Brazil. OCHSE; N84

*Pothomorphe subpeltata* - *Pothomorphe umbellata*

*Pothomorphe umbellata* - *Segumbar urat*, *Boombo* {S}. Young leaves are eaten raw or steamed and served as a side-dish with rice. They are also used for wrapping other foods. In the Philippines, the leaves and young inflorescences are cooked with fish. The sweetish ripe fruits are eaten as a delicacy. Bark is also used as a condiment. Paleotropics. BURKILL, DALZIEL, KUNKEL, OCHSE; F85

#### PISTACIACEAE

*Pistacia atlantica* - *Mt. Atlas pistache*, *Betoum* {S}. The turpentine-flavored fruits, called *gadum*, are eaten raw. Dried fruits are added to parched wheat. An excellent edible oil is produced in the Middle East from the very small, crushed nuts. Various pastries are made from it. Seeds are pounded and mixed with pounded dates. Source of a resin, called *alk el anebat*, used in the same manner as mastic. Also used as a rootstock and as a pollen source for *P. vera*. Canary Islands, North Africa. BAILEY, G, BOUQUET, ROSEN-

GARTEN, UPHOF, WHITEHOUSE; A79M, C9M, G66, H40M{PL}, 174{PL}, J7M{PL}, N84, 093, P5, Q15G

*Pistacia chinensis* - *Chinese pistache*, *Huang-lien-mu* {S}. Young shoots and leaves are eaten as a vegetable. The nuts are roasted and eaten or employed in confectionery. China, cultivated. TANAKA; A79M, C9M, G66, H4{PL}, I28{PL}, K38, K63G, N33{PL}, N37M{PL}, N84, 053M, P5, Q32

*Pistacia lentiscus* - *Lentisk*, *Lentisk pistache* {PL}. A sweet, licorice-flavored resin, *mastic*, derived from the bark of the trunk, is chewed as a breath sweetener. It is also used to flavor *masticha* liqueur, *rahat lokum* (*Turkish delight*), puddings, almond paste, cookies, *Nabulsi* cheese, cakes, and candies. The Romans used the fruits as an aromatic seasoning. Seed kernels are the source of an edible oil, known as *shina oil of Cyprus*. In Sardinia, wild boar and other meats are roasted over mastic wood, the smoke contributing a distinctive aroma and flavor. Canary Islands, Mediterranean region. BOUQUET, DAGHER, GRAY, P. [Cul], HEDRICK 1919, MALLOS [Re], ROBINSON, R. 1991, UPHOF, VON WELANETZ, WALDRON, WHITEHOUSE; A7{DF}, G5M{PD}, H78, L50M{DF}, N7D{DF}, N84, G75G{S}, R59M

*Pistacia mutica* - *Turk terebinth pistache* {S}. The trunk is the source of a resin, known as *Bombay mastic*, used for chewing in some parts of Iran and Iraq. Seeds are sometimes eaten or pressed for their edible oil. Southwest Asia. JAYNES, UPHOF; G66

*Pistacia terebinthus* - *Terebinth pistache*, *Cyprus turpentine tree* {S}. The sweet, greenish seed kernels are eaten or pressed for their edible oil. Immature fruits, along with their stems, are preserved in vinegar and salt. Known as *atsjaar*, they are used as a relish to accompany wines served during dinner. Young leaves are cooked and used as a vegetable. The fresh flowers are eaten. Resin from the trunk is used in Iran as a chewing gum. Mediterranean region. HEDRICK 1919, KUNKEL, OZTURK, ROSENGARTEN, TANAKA, WHITEHOUSE; A79M, H71, N37M{PL}, N84, 093

*Pistacia vera* - *Pistachio* {S}. Nuts are eaten raw, roasted and salted, or used in confectionery, ice creams, cakes, cookies, pies, soups, etc. They also yield a delicious, gourmet-quality edible oil but due to the high price of the nuts it is not usually produced commercially. Also used for seasoning sausages such as *zampone*, *saucisson de langue*, and *mortadella*. In Iran, the fruits are made into a flavorful marmalade. Eastern Mediterranean to Southwest Asia, cultivated. GRAY, P. [Cul], JAYNES [Cu, Pro], KINSMAN, MENNINGER, ROSENGARTEN [Cul, Re], UPHOF, WHITEHOUSE; A52M{PD}, B71G{PD}, D75{DF}, D75{PD}, D95{PL}, G66, H4{PL}, H15T{PD}, H73{ED}, I58P{ED}, I66{PD}, K63G, L17{PD}, N84, P5, etc.

#### CULTIVARS {GR}

**Kerman:** Female. Nut above average in size; shells split well, are easily opened by hand; kernel size above average, of high quality; readily shaken or knocked from tree when ripe. Tree vigorous, upright-spreading; blooms late, produces heavily but biennially. Leading commercial cultivar in the United States. Originated in Chico, California from seeds imported from Iran. BROOKS 1972; B93M, H40M, 174, 183M, N20

**Male No. 3:** Used in Australia for pollinating *Sirora*. A ratio of one male tree for every ten female trees is recommended. S59

**Peters:** Male. Good producer of pollen; its blossoming coincides with early blossoming cultivars, as well as the later blossoming Kerman. In some years it may be slightly early for full coverage of Kerman. Has a tendency to be a lopy, week grower, especially when propagated on *P. vera* roots. Originated in Fresno, California by A.B. Peters. BROOKS 1972, JAYNES; B93M, H40M, 174, 183M, N20

**Sfax:** Female. Small nuts of very good quality; percentage of split nuts high; produced in dense clusters like grapes, easily harvested. Ripens very early, late August to early September at Chico, California. Relatively low chilling requirement, about half that of Kerman.

Pollinated by Peters. Originated in Sfax, Tunisia. JAYNES; U7G{S}

**Sirora:** Seedling of the Syrian cultivar Red Aleppo. More vigorous than Kerman. Also a precocious bearer. Introduced into Australia from California by the CSIRO, Merbein, Victoria. GLOWINSKI; S59

#### PISTIACEAE

*Pistia stratiotes* - *Water lettuce* {PL}. The leaves are sometimes added to soups but should be parboiled first to remove the acrid calcium oxalate crystals. Ash of the burned plants is used as a substitute for salt. Tropics. BURKILL, DUKE, TANAKA, WATT; C74, E48, H30, 190M, K34, M7M, M15, M73, M73M, N3M, N84

#### PITTOSPORACEAE

*Billardiera cymosa* - *Sweet appleberry* {S}. The reddish fruits were eaten by the Aborigines, both fresh and roasted. Currently being tested by the bushfoods industry as a tasty, dessert berry with an apple and aniseed aftertaste. Can also be used to make sauces for pork, veal and chicken. Australia. CHERIKOFF, CRIBB, ROBINS [Cui, Re]; N79{PL}, N84, R15M

*Billardiera longiflora* - *Purple appleberry* {S}. The oblong, violet-blue berries of this evergreen, climbing shrub have an agreeable taste and may be eaten out of hand, pureed, or added to fruit salads. Australia. HENDRICKSON, JOHNS, ROBINS, SIMMONS 1972 [Cu]; N84, 053M, 093, Q41, R15M, R33M, R88

#### CULTIVARS {PL}

**White:** (Fructo Albo) A form that produces white fruit. SIMMONS 1972; S69

*Billardiera scandens* - *Appleberry* {S}. The fruits are eaten, having sweet, juicy flesh and a flavor reminiscent of stewed apples with a hint of kiwifruit and grapefruit. For fresh eating, fruits should be completely ripe-translucent and very soft. Holds its shape, color and texture very well when cooked. Very good in baked desserts such as pies, tarts, muffins and scones. Australia. CHERIKOFF, CRIBB, ROBINS [Cui, Re]; N79{PL}, P38

#### PLANTAGINACEAE

*Plantago coronopus* - *Buck's-hornplantain*, *Minutina*, *Capuchin's beard*, *Herba Stella* {S}. Young leaves may be used in tossed salads. Blanch in boiling water for a few seconds to make them more tender before use. In Italy, they are one of the ingredients of *misticanze*, a mixture of wild and cultivated salad greens that originated in the Marche region. Eurasia. BIANCHINI, LARKCOM 1984, VILMORIN [Cu]; C53, F80, G6, 177, L77D, N84, Q11M, S17

*Plantago lanceolata* - *Rib-grass*, *Ribwort*, *Lamb's tongue* {S}. The young leaves are occasionally eaten. However, they are rather bitter and tedious to prepare as their fibrous strands must be removed before use. Seeds are said to be used like sago. Eurasia, naturalized in North America. FCX, F., LAUNERT, UPHOF; A2, C92, D26G, F37T{PL}, F68T, F88M, G6, J82, K57{PL}, L55J, L94M, N71M, N84, Q24, S55

*Plantago major* - *Common plantain*, *Greater plantain* {S}. Although fibrous, the leaves are sometimes pureed, used in salads, or as a potherb. It is best to select the leaf blades only, discarding the leaf stalks. Dipped in batter and fried over low heat for about half an hour they are said to resemble potato chips. For use in salads, blanched leaves are recommended. Dried leaves make an acceptable tea. The seeds are eaten parched or ground into meal. Roots are also edible. Northern temperate region. ANGIER, CLARKE [Re], FERNALD, FOX, F., GIBBONS 1979, HARRINGTON, H., KIRK, ZENNIE [Nu]; A2, C95, E61{PL}, F85, F88M, L94M, N71M, N84, 053M

*Plantago maritima* - *Seaside plantain*, *Sea plantain* {S}. Leaves are occasionally eaten in salads, cooked like spinach, boiled in broths, or pickled like samphire. In Alaska, they are canned for

winter use. Northern temperate region. HEDRICK 1919, HELLER, UPHOF; F88M, 048

*Plantago ovata* - *Blond psyllium* {DF}. The mucilage contained in the seed coat is used as a stabilizer in ice cream and chocolate manufacture. Sprouted seeds are eaten in salads, soups, stews, etc. Mediterranean region, North Africa, Southwest Asia. TANAKA; E14T, GO, J82{S}, K2, L94M, N84. (see also Sprouting Seeds, page 524)

*Plantago psyllium* - *Psyllium seed*, *Fleeseed*, *Fleawort* {S}. Sprouted seeds are eaten raw in salads. Due to their mucilaginous qualities they are grown on clay or other porous materials. The seeds also yield an oil recommended as a nutritional oil due to its high content of linoleic and alpha-linolenic acids. The seed husk mucilage is used commercially as a thickener or stabilizer in frozen dairy desserts. Eurasia. ERASMUS, LEUNG; C95, D26G, D56M, F37T{DF}, F37T{PL}, F68T, F85, F86G{DF}, G6, G68, I16{DF}, J82, K18M{DF}, L34{DF}, M63M{DF}, N84, etc. (see also Sprouting Seeds, page 524)

#### PLATANACEAE

*Platanus occidentalis* - *American sycamore*, *Plane tree* {S}. The sweet sap has been used in the preparation of syrup and sugar. North America. FERNALD, GIBBONS 1962; A80M{PL}, C9M, G66, H4{PL}, H49{PL}, K38, K63G, M69M{PL}, N71M, N84

#### POACEAE (GRAMINAE)

*Agropyron intermedium* - *Thinopyron intermedium*

*Agropyron trichophorum* - \* *Thinopyron intermedium* var. *trichophorum*

X *Agrotriticum* sp. (*Agropyron elongatum* x *Triticum durum*) - *Perennial grain* {S}. Seeds are ground into flour and used in baking. Food researchers at the Rodale Press Food Center, in a scientific comparison of the grains, found that perennial grain muffins and yeast rolls were preferred over the same products made with wheat flour. Protein, carbohydrate, and fiber levels were found to be similar to those of conventional wheat flour. ZAHRADNIK.

#### CULTIVARS

**W-21:** A warm-climate perennial; winter-kills in northern climates; persists for about 3 years under ideal conditions. Grows to a height of 2 to 4 feet and produces a very stiff, study, spring-like stalk. Seed does not shatter, but is held firmly in its erect seed head, which has the disadvantage of being tight. Susceptible to ergot and smut. One of the highest-yielding perennial grains, producing as much as 25 bushels per acre. The kernels resemble a small winter wheat. Planted like winter wheat in northern regions; can be spring planted and will produce grain the first year in Texas, Florida and some Pacific Coast regions. ZAHRADNIK; U8D

*Anthoxanthum odoratum* - *Sweet vernal-grass*, *Grass tea* {PL}. When crushed or when drying, the leaves give off a sweet, pleasant fragrance and can be used as a substitute for tea. Northern temperate region. CRIBB, FERNALD, GIBBONS 1979; C43M, C67M, D92M{S}, E61, E81M{S}, J66, J82, K22, K85, M82, N71M{S}, 053M{S}, Q24{S}, S55{S}

*Avena abyssinica* - *Abyssinian oat* {S}. The grain is edible. Occasionally it is roasted and eaten as a snack. In Ethiopia, it is harvested and threshed together with barley. The two grains are then mixed and used for making *injera*, *tala* and other foods. East African highlands. NATIONAL RESEARCH COUNCIL 1996, TANAKA, ZEVEN; U8M, Z91

*Avena nuda* - *Naked oat*, *Hulless oat* {S}. Occasionally cultivated as a cereal. Also excellent for sprouting. The hull is incompletely attached to the grain, yielding a naked seed easily upon threshing. Nevertheless, this species is not much cultivated, primarily because of its inferior yield. It is ideal for small-scale farmers and backyard growers. Cultivated. SCHERY, UPHOF, ZEVEN; B49, D92M,

F73D, G47, K46T, K49T, R47. (see also Sprouting Seeds, page 524)

#### CULTIVARS

**Bandicoot:** Local Australian cultivar that can be used for milling, grinding or sprouting. PIG, PIG{DF}

**James:** 100 days. Prolific producer of naked-seeded oats that thresh free of glumes like wheat. Harvested in late July from a spring planting. Grows approximately 3 1/2 to 5 feet tall. K17M, L3J, N24M

**Pennuda:** This is a medium height cultivar for early spring planting and late summer harvest. When harvested and threshed, the oat kernels are essentially free of the tough, inedible hulls of common oats. After winnowing the grain is ready for use as oatmeal or oat flour. Seeding rate: 96 pounds per acre or 2 to 3 pounds per thousand square feet. D68, G6, L7M, N84

**Spokane:** Medium-sized grain with good flavor. Especially good for making porridge. Grows to four feet tall when mature. L3J

**Terra:** 90 days. Long grain type. Relatively short straw. Should be planted in spring. Very productive for a hullless oat. Considered to be the best of the naked oats in home-garden trials in Maine. Apparently still grown commercially on the Canadian prairies. J39, N24M

**Torch River:** 100 days. Attractive, loose hulled plant with tall straw. Useful for human consumption by simple threshing and winnowing. An old cultivar of Canadian origin. G47

**Vicar:** The first licensed hullless oat cultivar in Canada. A mid-season to late type. Can be cooked whole and used like rice. Developed in Winnipeg in the 1940's. Named after George MacVicar of Portage la Prairie. J39

*Avena sativa* - *Oat* {PD}. Seeds are made into flour, oatmeal, rolled oats, bran, *groats*, breakfast foods, *sourdough bread*, *temppeh*, etc. In Belgium, they are used for *white beer*. Darbyshire oat cakes and *barley bannocks*, popular in Scotland, are made from oat or barley flour. A relatively new product—*amazake* made from oats rather than rice, is thicker and gives a sweet flavor and chewy texture to cakes, cookies and other pastries. *Oat milk*, a low fat lactose-free milk substitute, has recently been introduced to the natural foods market. The ancient Greeks had a dessert called *plakous*, a cake of oat flour, cheese and honey. *Oatmeal stout* is a dryish, full-bodied ale locally produced in Britain by adding *flaked oats* to the mash. Roasted seeds can be used in mock coffees, and in France are employed as a substitute for vanilla. *Sowans* are the soured fermented inner shellings of the grain. *Oat rim*, a totally flavorless and odorless fat-replacer product used in baked goods, is composed of soluble oat starch and fiber rich in beta glucans. Sprouted seeds are used in salads, dressings, and baked goods or dried and made into *sun granola*. Young seedlings are juiced or dried and used as a food supplement. Commercial date pieces are often rolled in oat flour. Cultivated. FINNEGAN, IRWIN [Re], JACKSON, M., LOGSDON 1977 [Cu, Re], MCNEILL, RITTER [Re], ROOT 1980a, SCHERY, SHURTLEFF 1979, UPHOF; A25G, A99, B8P, B31, C73P, D47M{S}, E56, E66M{S}, E68M, F68T{S}, G29, G47M{S}, G71{S}, J19M, M63M, N17, N84{S}. (see also Sprouting Seeds, page 524)

#### CULTIVARS {S}

**Cavuse:** 85 days. Fine-stemmed, yellow-kemeled spring oat of above average height. Will produce a good grain crop or may be used for hay. Sown in early spring as soon as the soil is workable, 4 pounds per 1,000 square feet. Grows 34 inches tall. E53, I99M, K5M

**Hercules:** Thll, stiff-strawed medium maturity cultivar. High yield potential and excellent test weight. Also excellent lodging resistance. A top choice of many farmers. Sow 3 bushels per acre. J97M, M95M

**Pale:** High-yielding, medium maturity cultivar with medium height straw. Resistant to lodging and Barl<sup>^</sup> Yellow Dwarf Virus. Good test weight. Used as a cover crop and/or grain crop in the North. Use

as a quick growing spring-summer green manure crop, or to some extent, as a winter cover crop. Introduced by the University of Illinois. D68, G6, I93M, J97M, K95M, M95M, N84

**Svaloff's Crown:** Medium tall cultivar that originated in Sweden. Fairly loose heads with a very heavy set of large seeds. F73D

*Bromus breviaristatus* - *Narrow-leaved brome* {S}. Seeds have been used for *pinole*. Has potential as a perennial grain crop, yielding two to three crops a year, as long as plants are kept fertilized and watered. Western North America. L77D, N84

*Bromus carinatus* - *California brome* {S}. Seeds are eaten by the Indians of California. Potential perennial grain crop able to survive summer droughts without irrigation. Western North America. YANOVSKY; C6M, C43V, C95, E15, E66M, G19T, G59M, N7G, N84

*Bromus mango* - *Mango* {S}. Was grown as a biennial cereal by the Araucano Indians of Chile until at least the middle of the 19th century. The grains were toasted and ground into flour and used to make an unleavened bread called *cougue* or a *chicha* drink. Grows on infertile acid soils. Thought to be extinct, this species was recently rediscovered. Southern Chile and Argentina. ZEVEN; U63

*Coix lacryma-jobi* - *Job's tears, Adlay* {S}. The hulled grains can be parched, boiled like rice, or milled into flour for making a type of bread. They are also utilized in soups, porridges, drinks, or pastries and other desserts. In India, the Nagas use the grain for the brewing of a beer called *zhu* or *dzu*. Parched seeds are used as a tea in Japan. Southeastern Asia, cultivated. ARORA, R., JACQUAT, MACMILLAN, SCHERY, TANAKA; A2, C92, F80, I39, K22{PL}, K53, K85{PL}, L42, N84, O53M, O93

*Coix lacryma-jobi* 'Ma-Yuen' - *Hato-mugi, Japanese barley, Tear grass* {DF}. Seeds are used as a cereal or brewed into an alcoholic beverage. Roasted seeds are made into a tea or coffee-like beverage. Widely used in macrobiotic cuisine and diets. A commercial product is produced in Japan by mixing an aqueous extract of tear grass with milk, whey or other liquid milk products to form an acidic beverage. Also made into malt syrup or *mizuname*. Unlike Job's tears, the fruits are soft-shelled and easily threshed. It is said that this form was introduced into China from Vietnam by the famous Chinese general Ma Yuen (A.D. 49), hence the name. ARORA, R., BELLEME, BELLEME 1993, GELLES [Re], KURMANN, SASS [Re], TANAKA, VAN DUONG; E31, E56, F88, F88{PD}, G20M{PD}, G47B, G47B{E£}, H91, H91{ED}, I19M, I19M{ED}, N84{S}

*Cymbopogon citratus* - *Lemongrass* {PL}. Basal portions of the leafy shoot are chopped and used for flavoring fish, soups, sauces and curries. Outer leaves may be tied in a loop and cooked with food to impart flavor, but are removed before serving. The heart of the young shoots is eaten as a vegetable with rice. A refreshing tea can be brewed from the leaves and served either hot or cold. Lemon grass is substituted for yogurt in the preparation of *nistisemos trahanas* (fasting trahanas), a fermented milk and cereal food. This type of trahanas is used during religious holidays in Greece and Turkey, when it would be sacrilegious to consume animal milks. Cultivated. HERKLOTS, MORTON 1976, OCHSE, ROUTHIER 1989 [Cul, Re], SCHNEIDER 1986 [Cul, Re], SHURTLEFF 1979, STEINKRAUS; B28, C9, C34G{ED}, C43M, C81M, G96, J66, K22, K85, L90G{DF}, L90G{PR}, M53, N19M

*Cymbopogon flexuosus* - *East Indian lemon grass* {S}. Source of a strongly aromatic, lemon-like essential oil used by food manufacturers for flavoring baked goods, fats and oils, ice cream, candy, beverages, chewing gum, etc. Dried leaves are commonly used in herbal teas. Tropical Asia, cultivated. BURDOCK, LEUNG, MORTON 1976; D92M, E61{PL}, F35M{PL}, F68T, J57{PL}, J82, K57{PL}, L89, N84, S55

*Cymbopogon martinii* - *Rosha grass, Geranium grass* {S}. Source of *palmarosa oil*, an essential oil obtained by steam distillation and used to flavor ice cream, gelatin desserts, chewing gum,

and bakery products. Tropical Asia. TANAKA; N84, Q46

*Cymbopogon martinii* 'Motia' - *Palmarosa grass* {PL}. Leaves, stems and flowering tops are the source of an essential oil called *palmarosa oil*, used in commercial baked goods, ice cream, beverages, candy, etc. Asia, cultivated. BURDOCK, ZEVEN; C43M, D92M{S}, E14T{PD}, E61, F37T, H94M, J76, J82, K57, M82, R53M, R47{S}

*Cymbopogon nardus* - *Citronella grass* {PL}. Leaves are used for flavoring soups, in cooking fish, and in preparing curries. They are also employed as a tea. Source of *geraniol*, *citral*, and *dronellal*, essential oils utilized as flavorings for food and drinks. Among them, citral is used to imitate strawberry, lemon, apple, and vanilla flavor. Tropical Asia. TANAKA, UPHOF; C43M, D92M{S}, E29, F35M, F37T, F85{S}, H94M, J76, J82, J82{S}, L90J, L94M{S}, M82, N84{S}, R53M, etc.

*Digitaria erilis* - *Fonio*, *Fundi*, *Acha* {S}. The grain is used as a cereal in parts of Africa, especially by the Hausas of central Nigeria. It is ground to a semolina-like flour and made into breads and a couscous-like product called *gwete*, popped, or eaten as a porridge with melted butter. Yields are poor but the seed is highly nutritious and palatable and is considered a delicacy. The tiny seeds are often contaminated with sand, however a precooked and cleaned product is becoming more available. Some strains produce a crop in as little as forty days. Has been cultivated for thousands of years. Tropical Africa. DALZIEL, HARLAN, NATIONAL RESEARCH COUNCIL 1996, SCHERY, UPHOF, ZEVEN; U37M

*Digitaria iburua* - *Black fonio*, *Iburu* {S}. Cultivated as a cereal by the Hausas of Nigeria and the Lambas of Togo. Used in the preparation of a couscous known locally as *wusu-wusu*, and a famous beer called *tchapalo*. Also prepared with beans in a dish served on special occasions. Often grown between rows of sorghum or pearl millet, and frequently as a mixture with *D. exilis*. West Tropical Africa. DALZIEL, HARLAN, NATIONAL RESEARCH COUNCIL 1996, UPHOF, ZEVEN; U37M

*Distichlis palmeri* - *Wild-wheat*, *Palmer's saltgrass*, *Trigo gentil*, *Nyipa* {S}. The grain may be cooked as a cereal, roasted, or used in muffins and stuffings. When sauteed, it has a nut-like flavor akin to sunflower seeds or pistachios and goes well on ice cream or in salads. It is high in bran and fiber, the fiber content being three times that of wheat. At one time thought extinct, the cultivated form was rediscovered and developed by Dr. Nicholas Yensen of Tucson, Arizona. The plant grows in saline soils but remarkably, grain grown even in full-strength sea water is not salty. Presently wild-wheat is mostly sold locally in Arizona through gourmet outlets and at special events. North America. NATIONAL RESEARCH COUNCIL 1990; NIETHAMMER [Re], YENSEN 1987, YENSEN 1988; I53Z{OR}

*Echinochloa colonum* - *Sawa millet*, *Jungle rice* {S}. Young plants and shoots are eaten raw with rice. The seeds are eaten as a cereal. In the Central African Republic, they are fermented to make beer. Tropics, cultivated. BURKILL, DALZIEL, DE WET, OCHSE, WATT; N84

*Echinochloa crusgalli* - *Barnyard grass*, *Cockspur grass* {S}. Dried or parched seeds are ground into flour for use in cakes, porridge, and puddings. They can also be popped like corn. In Japan, they are used for making macaroni and dumplings. The young plants, stem tips, and the heart of the young culms are eaten raw or steamed. Roasted seeds are used as a substitute for coffee. Northern temperate region. BURKILL, FERNALD, HARRINGTON, H., KIRK, KUNKEL, MALLESHI, OCHSE, UPHOF, WATT; A2, B49, D47M, G26, G47M, L91M, M34M, N11, N71M, N84

*Echinochloa crusgalli* var. *frumentacea* - *Echinochloa frumentacea*

*Echinochloa frumentacea* - *Japanese millet*, *Sanwa millet*, *Hie* {S}. The grain is boiled like rice, made into gruel or porridge, or, in India, boiled in milk. In Japan, it is sometimes used for making

*mochi*. The chief merit of the grain is its rapid yield, a crop sometimes being matured within six weeks of sowing. Eastern Asia, cultivated. BROWN, W., HOMMA, MACMILLAN, TANAKA, WATT; B13, D47M, D68, E66M, E66T{DF}, F73D, G19T, H85M, K46T, K95M, M25, M34M, P83M

#### CULTIVARS

**Chiwaoa:** 110 days. Rare improved type selected in India. Sweet, oleaginous seeds. Grows approximately 3 1/2 to four feet tall. L3J

*Echinochloa stagnina* - *Burgu*, *Dul* {S}. A sugar is extracted from the stems and utilized for making sweetmeats and confectionery, liqueurs, and non-alcoholic beverages. The Mohammedans in West Africa prepare a liquor from it. Tropical Africa. DALZIEL, MOLLISON, NATIONAL RESEARCH COUNCIL 1996, TANAKA, UPHOF; U14

*Echinochloa turneriana* - *Channel millet* {S}. Recommended as a cereal grain for severe arid regions, as only a single watering is required to produce a crop. After flooding, which is required to induce germination, the plant completes its development without further watering. Australia. NATIONAL RESEARCH COUNCIL 1975a; T69, U14

*Eleusine coracana* - *Ragi*, *Finger millet* {S}. Grains are boiled and eaten as a cereal or porridge, popped, malted, ground into flour for use in cakes, breads, and puddings, or made into a beer-like alcoholic beverage called *marwa*. Other fermented foods made from the grain include *ambali*, *kaffir beer*, *busaa*, *merissa*, *chang*, and *munkoyo*. In India, the flour is boiled in diluted buttermilk and kept overnight for use the next morning. Ragi malt is mixed with milk to form a refreshing beverage. The leaves are also edible. Tropical Asia, cultivated. BHANDARI, DIRAR 1993, FOX, E, HEDRICK 1919, MACMILLAN, MALLESHI, MARTIN 1975, NATIONAL RESEARCH COUNCIL 1996, STEINKRAUS, UPHOF, WILKES; E7M, F80, L3J, L7M, N84

#### CULTIVARS

**Candlestick:** (Candlestick Millet) Heads are borne on tall stalks and are shaped like candlesticks. Plants tiller heavily. This millet is grown on 50 million acres in India and Africa, where an almost unlimited number of delicious recipes have been developed. G47, L77D

**Dragon's Claw:** (Dragon's Claw Millet) 130 days. Grows to 3 feet tall. Curved, ornamental seed heads. Seeds smaller than common millet. Stalks stiff, resistant to lodging. Difficult to thresh. Trouble free; good yields. Seeds highly resistant to storage pests. Important crop for natural agriculture enthusiasts. B49, C95, F73D, G47, K46T, L77D

*Eleusine indica* - *Wire grass*, *Goose grass* {S}. In Indonesia, the young, tender plants are often gathered and eaten, raw or steamed, as a side-dish with rice. The seeds can be parched and ground into a meal for use in cakes and gruels. Also used for porridge and alcoholic beverages. Tropics, naturalized in North America. DUKE, GIBBONS 1979, KIRK, OCHSE, TANAKA; L3J, N84

*Elymus arenarius* -> *Leymus arenarius*

*Elymus canadensis* - *Canada wild-rye* {S}. Seeds were an important source of food for the Paiute Indians of the Southwestern United States. North America. DOEBLEY, YANOVSKY; B29, D47M, E66M, F96, G47M, 111, 147, J39M, J39M{PL}, J41M, J41M{PL}, J42, J43, K62, L41, Q24, etc.

*Elymus triticoides* - *Wild rye*, *Squaw grass* {S}. Seeds were parched and ground into a fine meal, called *pinole*, and consumed by the Indians as porridge or in cakes and drinks. The hairs on the grain must be singed off before it is used as food. Southwestern North America. KIRK, MEDSGER, YANOVSKY; C43V, E66M, F96

*Eragrostis abyssinica* - \* *Eragrostis tef*

*Eragrostis tef* - *Teff* {S}. Seeds are used in the preparation of *enjera*, a fermented, pancake-like bread that is consumed as a staple in Ethiopia. The prepared bread is spongy, soft, thin, and sour-



tasting. It generally accompanies a meat, vegetable, or legume stew known as *wot*. Other forms of enjera used in Ethiopian cuisine are fried enjera, dried and powdered enjera (*derkosh*), and *fifit* (stew with pieces of broken enjera). Teff is also combined with barley and other grains in the making of *talla*, an Ethiopian home-processed beer with a smoky flavor and a tan to dark brown color. In natural foods cooking it is often made into baked goods, vegiburgers, porridges and patties. Ethiopia, cultivated. COLE, C. 1991 [Cu, Re], DIRAR 1993, GELLES [Re], MESFIN [Pre, Re], NATIONAL RESEARCH COUNCIL 1996, SASS, STEINKRAUS, STEWART; A25G{DF}, B31{DF}, B31{PD}, C95, E31{DF}, H91{DF}, K46T, N84, O1, 053M

#### CULTIVARS {DF}

**Brown Seeded:** 120 days Very small, highly nutritious seeds, about 13% protein. Somewhat richer and more heartier-tasting than White Seeded. Makes a chocolate-brown *enjera*. Also has a slightly higher calcium content. Short plant with very small heads. Heavy yielding. Less demanding than White Seeded. A2{S}, A90M, E56, H51{PD}, J11M, J11M{ED}, J73{S}, L87G, L87G{PD}

**Red Seeded:** (Sirganya) Small, reddish brown seeds. Intermediate between Brown Seeded and White Seeded in both color and flavor. Preferred by some because of its more robust taste. Hardier, faster maturing and easier to grow than White Seeded. Sirganya is the Amheric name for mixed. NATIONAL RESEARCH COUNCIL 1996; A90M, J11M{PD}, L3J{S}, L87G, L87G{PD}

**White Seeded:** (Ivory, Thaf Hagaiz) 120 days Very small seeds, about 13% protein. Slightly lighter in flavor than Brown Seeded. Heavy yielding, slow maturing form that is usually grown in the cold season. Can only be grown below 2,500 meters altitude. The most common and desirable cultivar grown. NATIONAL RESEARCH COUNCIL 1996; A2{S}, A90M, E56, F73D(S), H51{PD}, J9M{S}, J11M, J11M{PD}, L3J{S}, L87G, L87G{P2}

#### *Euchlaena mexicana* - *Zea mexicana*

*Glyceria fluitans* - *Polish manna*, *Floating manna-grass* {S}. The seeds were considered a delicacy in certain parts of Europe and were an article of commerce there veil into this century. Flour from the seeds is said to make a bread little inferior to wheat bread. It is also used for thickening soups, gruels and puddings, imparting a slightly sweet, delicate flavor. The sweetish-tasting seeds are also used as a masticatory. Northern temperate region. CROWHURST 1972, DONKIN, FERNALD, HEDRICK 1919; N71M, R49{PL}

*Hierochloe odorata* - *Vanilla grass*, *Sweet grass*, *Russian buffalo-grass*, *Zubrovka* {PL}. The leaves have a strong, vanilla-like fragrance and yield an essential oil esteemed in France for flavoring candy, soft drinks, and tobacco. In Poland, one or more blades are put in a bottle of vodka for flavoring. Also said to be used as a coloring agent. Northern temperate region. BROWN, G., MORTON 1976, TANAKA; C43M, F35M, F80{S}, G47M{S}, G89, J39M, J42, J42{S}, J73, K2, K2{DF}, M15T, M15T{DF}, M82, N29{DF}, etc.

*Hordeum bulbosum* - *Abu suwaif* {S}. Grains are used for food. Bulbous roots are chewed or occasionally eaten. Currently being tested as a perennial grain crop in the United States. Mediterranean region to Southwest Asia. TANAKA; U8M, V73M, V85M, W3M, W59M, W88M, X33, X54, Y89M

*Hordeum jubatum* - *Foxtail barley*, *Squirrel-tail grass* {S}. Seeds are eaten as a cereal or parched and made into a coffee-like beverage. North America. KUNKEL, YANOVSKY; C9M, D56M, E61{PL}, F96, G47M, N84, 053M, 093, S55

*Hordeum vulgare* - *Barley* {S}. The grain is manufactured into bread flour, pearled barley for soup, breakfast cereals, and is the principal grain used for brewing beer. *Flaked barley* is sometimes added to beer, especially stout, for added body and head retention. In Bavaria, beer is sometimes converted into a gourmet vinegar. Also fermented into *temp eh*, *miso* and *enjera*. Roasted seeds are an ingredient of grain coffees such as *Cafix*, *Yannoh* and *Kaffree*, and a staple beverage of Korea called *poricha* or *barley tea*, which is

served hot, lukewarm, or cold with sugar or honey. The pressed juice of young seedlings is used as a beverage by natural foods enthusiasts. In powdered form it is marketed as *greenmagma* or *barleygreen*. Protein extracted from the leaves has been recommended as a food supplement. Sprouted seeds are eaten in salads and breads. In Morocco, the immature grains are used for preparing a special type of couscous known as *azenbu*, and on the island of Gavdos south of Crete a uniquely flavored bread called *pakhouda* is made from them. Source of a natural sweetener called *bakugato* in Japan and sold in the West as *malt sugar*, *barley jelly sugar*, or *maltose*. *Gefito* is an ancient food of the Guanchos of the Canary Islands prepared from parched grains that are ground into flour and kneaded with water into a paste. *Tsampa*, a similar food from Tibet, is a staple of that area. Malted barley flour, known as *diastolic malt*, is added by bakers to bread dough to feed the yeast in the sweetening and rising stages, and to improve crust color and flavor. Cultivated. COLE, C. 1990, DORJE [Re], FAIRCHILD 1930, HANNEMAN, LAMBERT-G6CS, LOGSDON 1977 [Cu, R<sub>c</sub>], MILLON [Re], PIRIE, RITTER [Re], SEIBOLD [Nu], SHURTLEFF 1975, SHURTLEFF 1976, STEINKRAUS, TANAKA, UPHOF, WOLFERT 1973; A52M{PD}, B31{PD}, F88{ED}, G47B{m}, G47CIED}, G71, E60P{PD}, E61, E66M, I43T{PD}, J19M{DE}, L54D{ED}, K95M, N17{PD}. N54{PD}. etc. (see also Sprouting Seeds, page 524)

*Hordeum vulgare* Cerinus-Coeleste Group - *Waxy hullless barley* {DF}. The grains are eaten as a hot cereal, cooked like rice, coarse ground into grits, rolled into flakes or ground into flour for bread making. Rolled grains can be mixed with or substituted for oatmeal. The grits are suitable for adding to soups and stews. Flour made from waxy hullless barley has greater water retention capabilities due to the high content of soluble fiber. Waxy hullless barley starch approaches 100% amylopectin which converts to sugar faster in syrup production. Consistently higher in beta-glucan soluble fiber, lysine and total dietary fiber than non-waxy types. Foods rich in beta glucans are thought to lower serum cholesterol. NEWMAN; 120

#### CULTIVARS

**Merlin:** Waxy-hullless barley with a light tan color and a mild, distinctive flavor. Can be cooked whole and used as an ingredient in soups, stews and salads. One of the cultivars marketed as Treasure State NuBarley. A90M, M89M, M89M{PD}

*Hordeum vulgare* Coeleste Group - *Hullless barley*, *Hadakamugi* {S}. One of the most popular varieties in the Far East where the grain is eaten with rice or parched and made into a cooling drink. The grain is often pressed to make it boil more readily. Also an essential ingredient in *miso* manufacture. Much easier to sprout than regular barley. GELLES [Re], TANAKA, ZEVEN; B31{DF}, B49, E31 {DF}, G47, PIG, PIG{DF}, R47. (see also Sprouting Seeds, page 524)

#### CULTIVARS

**Arabian Blue:** Very attractive, bluish seeds, blushed with purple; hullless; long awns; threshes easily by hand. Attractive plants, about 3 feet tall. Sown in early spring. F73D, K17M, K46T, N24M

**Black:** {DF} Small to medium-sized grain; attractive pure black color. Has a delicious, nutty flavor and a chewy texture. Keeps its glossy coloring even after cooking. Does not become sticky. Excellent in stuffings or combined with brown rice. Originally from Ethiopia, where it has been prized for generations. E56, F86T

**Black Buffalo:** {DF} Unique attractive deep purplish-black grains. Has a distinctive flavor, somewhat sweeter than other types. Maintains its color through cooking in all recipes. Produces a purplish flour that can be used in a wide range of baked products. The baked products will have a purplish color even if only 1/4 of the flour is from Black Buffalo. A very low yielder. A90M, J11M, M89M{PD}

**Bronze Nugget:** {DF} Hooded, six-rowed barley that resembles golden wheat in color, though more translucent. Has a rich, somewhat nutty flavor. Produces a whole grain flour that makes golden brown, nutty sourdough bread. The grits make a tasty hot cereal. Requires a slightly longer cooking time than Treasure State. Germin-

nates quickly, making it a good choice for sprouting. A90M, J11M, M89M, M89M{PD}

**Dolma:** Selected six-rowed type from the Kinnauri Himalayas, Himachal Pradesh, northern India. Prized locally for making *tsampa*, flour made from toasted grain. Grown at 9500 to 10,000 feet elevation. L3J

**Easv-Thresh Hulless:** 100 days. Very productive, awned, two-rowed type. Long heads of large, plump grains. Very easy to thresh. Makes excellent malt. Has succeeded in home-garden trials in Texas. Grows 24 to 36 inches tall. Planted in spring. K17M

**Ethiopian:** A two-rowed, naked seeded grain which easily threshes free from the grain. Translucent brownish hull. Midseason in maturity. Threshes clean like wheat and rye, yielding a ready to use whole grain. More heat resistant than other types. Yields well even when sown later in spring. Originally from the Abyssinian plateau. F73D, J39, L3J, K17M, N24M

**Excelsior:** Large, attractive purplish seedhead; long, rough awn; six-rowed. Purple seeds. Hard to thresh. Makes superior pilaf. Vigorous grower, 36 to 40 inches tall. Somewhat susceptible to lodging. Has done well in home-garden trials in Maine. F73D, J39, K17M

**Popping:** Light brown seeds. Will pop over medium heat in a skillet. Grows about 3 feet tall. Somewhat susceptible to lodging. K17M

**Purple Hulless:** 80 days. Rough awned, four-rowed barley with a 3 inch head. Very attractive, purple tinged seeds. Plants grow to 30 inches tall with good yields. Hard to thresh. Usually sown in spring. F73D, K17M

**Sanaatsuaa:** Small-seeded, hullless, six-rowed barley. Kernels are finer-grained or more "ricey" than other cultivars. Nutty flavor. Excellent fall growth habit, should be tried as a fall-planted over-winter crop in warm winter areas. Inconsistent when planted in spring. Originally from Japan. F73D, K17M

**Sheba:** 78 days. Very attractive golden awns at maturity. Dark seeds that thresh out cleanly; six-rowed. Very upright, relatively short plant. Moderate to heavy yields. Has resisted lodging better than other cultivars in home garden trials. F73D, K17M, K46T

**Tibetan Hulless:** 100 days. Awned, six-rowed, spring barley with small dark grains. Three foot tall plant with strong straw, does not lodge easily. Moderate, dependable yields. Hard to thresh by hand. May be somewhat variable in seed color, size and shape. Originally from Tibet, where it is traditionally used for making *tsampa*, a toasted grain flour. L3J, L77D

**Tibetan Purple:** A rare six-rowed awned variety from high in the Himalayas. Striking, iridescent violet ears. Deep flavored. High in energy. L3J

#### *Imperata arundinacea* -> *Imperata cylindrica*

*Imperata cylindrica* - *Pai-mao* {S}. Immature flower spikes are sucked or eaten. They are sometimes cooked as a potherb, fried, or put into soups. The slightly sweet rhizomes are chewed or eaten, and also yield a starch used in making beer. They are often mixed with a purple variety of sugar cane called *mia lau* to form a cooling, thirst-quenching, digestive beverage which is occasionally available at Oriental markets. Also the source of an edible manna. Tropical Asia. DONKIN, FOX, F., TANAKA, UPHOF, VAN DUONG; J82{PL}, N84, P17M

*Leymus arenarius* - *Sea lyme-grass*, *Strand wheat* {PL}. The whole grain, when cooked like rice, is delicious with wild game or other meats, and is very good served with sugar and cream as a breakfast cereal. Strand wheat flour, mixed half-and-half with wheat flour, adds a rich flavor to pancakes, biscuits and muffins. The protein content of the grain rivals that of red beans and salmon. Viking settlers of Iceland cultivated the grain until the turn of this

century. Northern temperate region. FERNALD, GIBBONS 1964, GRIFFIN; B28, C9M{S}, C92{S}, D95, E30, F35M, H29M, J24, L22, N84{S}, Q24{S}

*Leymus racemosus* - *Mammoth wild-rye* {S}. Grains are used for food in some parts of the former Soviet Union, especially in times of drought. The young underground shoots are sweet and tender and can be eaten raw. Currently being evaluated as a perennial grain crop in the United States. Southeastern Europe. BURRITT, KOMAROV; B28{PL}, E66M

#### CULTIVARS

**Volga:** (Volga Wild-Rye) A tall, creeping variety which is coarse and essentially non-palatable to livestock. Provides a vigorous, permanent cover for sand dunes. Released in 1949. Introduced from the Volga region of the former Soviet Union. E66M

*Milium effusum* - *English millet-grass* {S}. Seeds are used for making bread. The aromatic leaves have been employed for flavoring tobacco. Northern temperate region. KUNKEL, VON REIS; B28{PL}, N71M, N84, 048

*Oryza barthii* - *African perennial rice* {S}. The grain is eaten in some parts of Africa where it is considered to have a good flavor. Occasionally collected and sold in local markets. Grows in water, often as a weed in rice fields. Tropical Africa. DALZIEL, UPHOF, ZEVEN; U8M

*Oryza glaberrima* - *African rice* {S}. An indigenous cultivated rice of West Africa grown in flood plains of savanna regions, from Senegal to Lake Chad. Cultivated there for at least 1,500 years. Historically reserved for religious rituals and as a luxury food for chiefs. Preferred locally for its aroma and sweeter flavor. Used like Asian rice or for specialized local preparations such as *hetso* or *buca-k* beer made from rice and honey—and a festive sweet-tasting bread of the Mandingo and Susu people, made from rice flour and honey. Most types are red-skinned. Tropical Africa. NATIONAL RESEARCH COUNCIL 1996, UPHOF, ZEVEN; U8M

*Oryza sativa* - *Rice* {PD}. The grain is eaten boiled or steamed. It is also made into flour, pasta, breads, cakes, pastries, puddings, starch, *pilaf risotto*, *fiiju*, etc. *Poha* is flattened grains of rice that puff up when fried; used in India for making *cheewra* or *chiwra*, a granola-like product. Rice bran, when mixed with flour, is suitable for cookies, cakes, muffins, and pancakes. In Japan, it is called *nuka* and is widely used for pickling vegetables, along with sake lees. *Rice bran oil* is a light oil popular with gourmets and natural foods enthusiasts. Sprouted seeds are eaten in salads. Some fermented foods made from the grain include *apem*, *hopper*, *idli*, *dhokla*, *dosa*, *miso*, *sake* and other rice wines, *red rice* and *puto*. *Amazake* and *Rice Dream* are milk-like beverages produced from rice. *Flaked rice* and *rice extract* often added to popular American and Japanese beers. Food wrappers made from rice flour include rice paper or *bank trang*. Young seedlings can be used as a vegetable. *Genmai-cha* is *bancha* tea mixed with roasted and popped brown rice. *Brown rice malt syrup* or *mizumame* is a popular natural sweetener. *Tsuto-dofu*, a tofu dish popular on the island of Kyushu, is wrapped in rice straw, the straw imparting a distinctive aroma and flavor. Tropical Asia, cultivated. BELLEME [Re], COTTERELL, CUSUMANO [Cul, Re], DUKE, FINNEGAN [Nu, Re], IAFFREY, LOGSDON 1977 [Cu, Re], ROUTHIER 1989 [Cul, Re], ROUTHIER 1993 [Re], SHURTLEFF 1975, SHURTLEFF 1979, STEINKRAU S, SUGANO, TANAKA, UPHOF; A7, A25G, A52M, B8P, B31, C27G, C34G, D4, D43G, E56, E68M, F17, F74, F88, F97M, G47B, G47C, H7G, H91, I19M, I76T, K18M, L34, M34M{S}, N17, N84{S}, etc. (for cultivars see Rice, page 508, see also Sprouting Seeds, page 524)

*Oryza sativa* Glutinosa Group - *Glutinous rice*, *Sweet rice*, *Mochi-gome*, *No mi* {PD}. A distinct class of rice with glutinous kernels that bind together when cooked, imparting a unique chewy consistency. The grain is usually steamed, pounded and made into *mochi* cakes, pastries and sweetmeats. It is also ground to flour (*shiratamako*) and processed into dumplings called *dango*, or used for puffed rice. The flour is also an ingredient of *kochujang* and

Korean rice cakes (*ttok*), and is added to fried dishes. Glutinous rice is the preferred rice for manufacturing the fermented products *mirin*, *tapuy*, *lao chao*, *tapeh ketan* and *tapai*. Chinese black vinegar or *Chinkiang vinegar* is a very dark-colored, distinctly fragrant and flavorful vinegar made from glutinous rice. Fermented glutinous rice flavors meat and fish dishes and is used in preserving foods such as *fermented glutinous rice eggs*. *Shaohsing*, a famous Chinese rice wine made from glutinous rice, is often used in marinades and in cooking. Also mixed with brown rice in some forms of *amazake*. In Korea, glutinous rice is combined with adzuki beans, black soybeans, sorghum and millet to form *five-grain rice* (*ogokpap*). COST 1988, COTTERELL, CUSUMANO [Cul, Re], FINNEGAN, HAWKES [Re], MILLON, NOH [Cul, Re], PORTERFIELD, ROUTHIER 1989 [Cul, Re], SHURTLEFF 1975, SHURTLEFF 1979, SO, STEINKRAUS, TANAKA; C27G, C73P, F88, H7G. (for cultivars see Rice, page 508)

*Oryzopsis hymenoides* - *Indian rice-grass*, *Indian millet* {S}. The rather large, nutritious seeds have a pleasing taste and are used as a source of meal for making gruel and cakes, or to thicken soups. Sometimes the ground seeds were mixed with commeal and made into dumplings. When ripe, the seeds fall readily from the plant and are easily harvested. Presently being tested as a perennial grain for sandy soils in arid regions Western North America. CULLY, DOBLEY, HARRINGTON, H., KINDSCHER, MEDSGER; C4, C9M, D82, E66M, F44, F63M, G59M, 147, I98M, I98M{PL}, J25M, J25M{PL}, K62, M34M, N84, etc.

*Panicum colonum*-*Echinochloa colonum*

*Panicum crusgalU*-*Echinochloa crusgalU*

*Panicum miliaceum* - *Proso millet* {S}. Seeds are eaten boiled like rice, popped, flaked, pearled, or ground into flour for use in breads, pasta and dumplings or fermented into *tempeh* and *miso*. To enhance their nutty flavor they are commonly browned in a skillet before being used in casseroles, stews, souffles, and stuffings. Popular with those who follow a natural foods diet because its high alkaline content counteracts acids and makes it more easily digested. Sprouted seeds are eaten in salads, soups, and breads. Southern Asia, cultivated. LOGSDON 1977 [Cu, Re], MALLESHI, SCHERY, SHURTLEFF 1979, TANAKA; A15Z, B49, E66M, E97, G26, G47, H91{PD}, I19M{PD}, K5M, K71, L14G{PD}, M25, M34M, N84. (see also Sprouting Seeds, page 524)

#### CULTIVARS

**Red:** (Red Proso) Loose heads of red seeds. Planted in June and harvested mid to late August. E53, K49M

**White:** (White Proso) Looser heads than Red. Grows 30 inches tall. Planted 6 inches apart. C4, E53, K49M

*Panicum obtusum* - *Vine mesquite* {S}. Seeds were ground with cornmeal and consumed as food by the Hopi Indians. Southwestern North America. UPHOF; E66M

*Panicum palmifolium* - \**Setaria palmifolia*

*Panicum sonorum* - *Sonoran panic-grass*, *Sauwi* {S}. The grain is ground and used by the Guarijio Indians of northwestern Mexico in basic cereal foods such as *torillas*, *tamales*, and *at ole*. The flour is seasoned with salt and sugar, and mixed with milk to make a nourishing drink. Cultivated on a small scale. Southwestern North America. NABHAN 1984b.

#### CULTIVARS

**Guarijio Indian:** Small, golden-seeded millet type. High in lysine. Plant by broadcasting during warm rainy season. Attractive plant. Fast growing and heat tolerant. Rediscovered in 1976 in a very remote area of Sonora's eastern border with Chihuahua. Thought to have been extinct until then. 116, N84

*Paspalum scrobiculatum* - *Kodo millet* {S}. The grain is cooked and used like rice. It can also be popped like corn. In India, it is substituted for rice in the preparation of *dhokla*, *dosa* and /~/-acid-leavened fermented cakes. Tropical Asia, cultivated. FCK, F., MACMILLAN, MALLESHI, STEINKRAUS; U37M

*Pennisetum americanum* - *Pearl millet*, *Bulrush millet*, *Spiked millet*, *Bajra* {S}. The seeds are eaten like rice, ground into flour which is used in breads and cakes, or employed in the manufacture of numerous alcoholic beverages. They are also mixed with other grains and seeds in making the fermented products *dosa*, *enjera*, *khemiss-tweira*, and *uji*. In the Sudan, bulrush millet is preferred for making *aceda-jirya*, a fermented porridge often reserved for celebrities and dignitaries. In Ghana, the flour is made into a stiff porridge called *to* and a thin, fermented porridge or paste, locally known as *koko*. A deep-fried pancake, *mars a*, is also prepared there from the leavened batter of pearl millet flour. Ghanaian children often eat the sweet raw grains after threshing. In parts of India the immature ears are roasted and eaten like sweet corn. The popped grains, called *akohi*, *bhunja*, *lahi* or *phula* in India, are eaten with powdered sugar or jaggery. Sweet-stalk types have been found in Tamil Nadu. Cultivated. BALLENTINE [Re], DIRAR 1993, FCK, F., LOGSDON 1977, MACMILLAN, MENNINGER, NATIONAL RESEARCH COUNCIL 1996, RAO, STEINKRAUS, TANAKA; A25G{DF}, A25G{ED}, E7M, E61, F73D, L3J, M34M, N84, P17M

*Pennisetum glaucum* - *Pennisetum americanum*

*Pennisetum typhoides* - *Pennisetum americanum*

*Phragmites australis* - *Common reed-grass*, *Wild broomcorn* {S}. The young shoots are eaten like bamboo sprouts or pickled. Dried stems were made into a marshmallow-like confection by North American Indians. In Japan, the young leaves are dried, ground, and mixed with cereal flour to make dumplings. The partly unfolded leaves can be eaten as a potherb. A sugary gum that exudes from the stem is rolled into balls and eaten as a sweet. The rhizomes are sometimes cooked like potatoes. Although difficult to remove from its hull, the grain is said to be very nutritious. Cosmopolitan. FERNALD, KIRK, MEDSGER, TANAKA; A26, B28{PL}, D47M, F96, G26{PL}, J43, M16{PL}, Nil {PL}, M34M{PL}, N84, Q24

*Phragmites communis*-*Phragmites australis*

*Saccharum edule* - *Sugar cane inflorescence*, *Lowland pitpit* {PL}. The inflorescences, which are abnormal and remain enclosed within the leaf-sheaths, are eaten raw, steamed, roasted, fried, added to soups or cut into pieces and cooked with meat and stuffed fowl. When properly prepared, it might be used as a substitute for cauliflower. Tropical Asia. HERKLOTS, MASSAL, MAY, R. [Nu, Re], OCHSE; U7T

*Saccharum officinarum* - *Sugar cane* {PL}. Stems are the source of cane sugar, cane syrup, *molasses*, *rum*, etc. Sugar cane juice is consumed raw as a beverage or fermented into various alcoholic beverages and spirits. The core of fresh stems is often chewed for refreshment, and in Vietnam is used as a tasty skewer for grilling seasoned pastes of fresh shrimp. Unrefined or natural sugar is available in Japan as dark brown cakes known as *kuro-zato*, and in Mexico in the form of cone-shaped loaves called *piloncillo*. In the United States, products such as *brown sugar* are merely mixtures of white sugar and molasses. *Aguardiente* is raw sugar-alcohol, sweetened and usually strongly flavored with anise or other herbs. In the Philippines, a popular and expensive vinegar called *iloco* is prepared from sugar-cane wine. Caramel and caramel color are produced by boiling sugar with milk and ammonia respectively. Caramel is used for flavoring; caramel color is a ubiquitous commercial food colorant. Cultivated. COST 1988 [Cul], LEUNG, MACMILLAN, ORTIZ 1967, ORTIZ 1973 [Re], ROUTHIER 1989 [Cul, Re], SCHERY, SHURTLEFF 1977, STEINKRAUS, UPHOF; A28, B23P{PR}, E13G{PR}, E13G{PD}, E29, G13T{PD}, I76T{PD}, L35M{PD}, L55J{S}, L90J, N84{S}, P38

#### CULTIVARS

**Black:** Vigorous, productive plants, 6 to 8 feet tall. Stems are thick, firm, purple-black in color, and very sweet. Good for chewing and juicing. Can be grown in a large container in a greenhouse or sun room. M82, N84

**Rainbow:** Ornamental type with attractive variegations of yellow, green, purple and mauve. Suitable for eating fresh or juicing. Has slightly thinner stems than the commercial yellow sugar cane of Mexico and South America. Also not as tall growing, to 10 feet or so. Originated in Hana, Maui, Hawaii. D57

*Saccharum sinense* - *Chinese sugar cane* {PL}. The stems are chewed for their sweet juice. On the island of Shikoku in Japan, the juice is manufactured into a very rare sugar known as *wa sanbon to*. It is made by hand using a unique, two-hundred-year-old, traditional process. *Wa sanbon to* is extremely soft and fine and of the highest quality. It is essential for making top quality *higashi*, a rice flour confection used in the tea ceremony. Eastern Asia. TANAKA, WALKER; U7T

*Saccharum spontaneum* - *Wild sugar-cane, Thatch grass* {S}. The heart of the young shoot is eaten, either raw or cooked, as a side-dish with rice. Very young inflorescences, still enclosed within the leaf-sheaths, can be eaten raw, steamed, or roasted, having a sweet taste. Children chew the peeled rhizomes as a substitute for sugar-cane. Ash from burned plants is used as a substitute for salt. Tropics. OCHSE, ZEVEN; N84, Q46

*Secale cereale* - *Rye* {S}. Seeds are an important source of flour used in various breads, including *pumpernickel*, *knackerbrod*, *spisbrod*, *hiivaleipa*, and *limpa*. Rye flour is an essential substrate of the leaven used in making *sourdough bread*. Rye pasta has a rich earthy flavor. A unique beverage called *sahli* is produced by the home-brewers of Finland. It is made with a mix of barley and rye malts to which hops and juniper berries are added. *Kwass* is an alcoholic drink of Russia prepared from rye malt and rye flour. Roasted grains are used as a substitute for coffee. Sprouted seeds are used in salads and breads. Young seedlings are juiced or dried and used like those of wheat, barley and oats. The flower pollen is extracted by a special process and used as a food supplement, called *Cemilton*. Cultivated. HESSELTINE, JACKSON, M., LINSKENS, LOGSDON 1977 [Cu, Re], LONDON [Re], RITTER [Re], SCHERY, STEINKRAUS, TANTTU, UPHOF; A25G{PD}, B49, C19{PD}, D47M, E66M, G71, J19M{DF}, L3J, M34M, N84, R47. (see also Sprouting Seeds, page 524)

#### CULTIVARS

**PRG:** First true perennial rye grain offered for sale in the United States. Large, plump grains comparable to those of annual grain ryes. Only half the yields. Threshes easily and can be used like wheat for bread making. Excellent for naturalized grain crops. Has tested well in hot, dry areas of Oregon and the warm humid Southern states. J9M

**Tetra-Petkus:** A tetraploid rye developed from the German cultivar Petkus, which was selected from Pirnaer and Probststeier in the 1880's. Long, bright straw; bearded. Very vigorous; tall growing, height 6 feet. Large kernels with good bread-making quality. Ready to combine in the middle of August in Ontario. Good yields, up to 60 bushels per acre. D68, N84

#### *Secale kuprijanovi*-*Secale montanum*

*Secale montanum* - *Mountain rye* {S}. The grain is eaten as a cereal or ground into flour for making bread and other baked goods. One of the principal ancestors of modern rye. Mediterranean region to Southwest Asia. TANAKA, ZEVEN; F96, R49{PL}

*Setaria italica* - *Foxtail millet, German millet, Italian millet, Awa* {S}. The seeds are cooked like rice, parched, popped, added to soups and sauces, or made into porridge, cakes, puddings, *mochi*, or dumplings. In Korea, they are used in the preparation of *yakju* and *takju*, traditional alcoholic beverages. Also made into a syrup. Eurasia, cultivated. FERNALD, GOLDSTEIN, HOMMA, LOGSDON 1977, MACMILLAN, MALLESHI, SCHERY, STEINKRAUS, TANAKA; C4, C95, D47M, D92M, E61, E66M, E66T{DF}, G26, G47, K5M, K49M, M25, M34M, M95M, N84, etc.

#### CULTIVARS

**Golden German:** 95 days. Bright yellow, pendant ears, 10 to 12 inches long, densely packed with seeds. Excellent flavor. Grows to about 2 1/2 feet tall. Bears prolifically. Originally from central Europe. L3J

**Goldilocks:** 120 days. Large, thick ears may reach 14 inches in length. Attractive, spiralled braid-like appearance reminiscent of golden tresses. Grows to about 3 feet tall; yields abundantly. Originally from China. L3J

**Len Thian:** 115 days. Glutinous or sticky-starch type originating in China. A prolific bearer of ropelike heads. Grows 3 1/2 to 4 feet tall when mature. For upland culture. L3J, L77D

**Suei Gu:** 110 days. Glutinous type originally from China. Heavy bearer of long, thick-fingered, well-seeded ears. Golden grains. Grows 3 1/2 to 4 feet tall when mature. L3J, L77D

**White French:** 45-90 days. Very fast growing with a low water requirement. Adapts to a wide range of soils. Grows to 3 feet tall. FIG, R47

**White Wonder:** 85-90 days. Grows 4 feet tall. Lengthy, robust, 6 to 8 inch heads. White grain. Heavy yielding, easy to thresh. Superior to all non-white grains. Does well under poor, dry conditions but takes longer to mature. North American cultivar. A2, F73D, K49T, L3J, L77D, N84

*Setaria palmifolia* - *Palm grass, Highland pitpit, Luluwan kebo* {S}. Seeds are boiled or roasted and used as a substitute for rice. The heart of the young shoots, called *hombboot* in Indonesia, is eaten raw, steamed, or cooked with rice. Very young plants are eaten whole, usually raw, as a side-dish with rice. In New Guinea, improved horticultural forms are grown. Southeast Asia. BROWN, W, MASSAL, MAY, R. [Nu, Re], OCHSE, TANAKA; C9M, F85, H71, N84, 093

*Setaria viridis* - *Green foxtail* {S}. Seeds are used like millet, either boiled, roasted, or ground into flour. Also said to be used as a substitute for coffee. Widespread, weedy. KUNKEL, TANAKA; D92M, M34M, N84

*Sorghum bicolor* - *Sorghum, Indian millet, Guinea corn, Milo* {S}. The seeds are eaten as a cereal, ground into flour, made into dumplings, porridges and fried cakes, or used for the preparation of various fermented foods and beverages, including *maasa*, *aceda*, *kissra*, *kaffir beer*, *pito*, *urwaga*, *hulu-mur*, *merissa*, and *ogi baba*. In West Africa they are manufactured into *couscous*. Some types are grown for their bitter grains that are used for flavoring sorghum beer. *Kaoliang*, *Maotai*, and *Sanshu* are Chinese spirits produced from sorghum. *Mei-kuei-lu*, *Kaoliang* spirit flavored with rose petals, is used in Chinese cooking to add fragrance to marinades and in the master sauce for flavor-potting. Also used in the production of *Shanxi vinegar*, a rare black vinegar from northern China. Sorghum malt can be toasted and then extracted with water, yielding an attractive unfermented beverage with a malted, chocolate-type flavor. A ready-to-eat breakfast cereal made from sorghum has been developed in the United States and given the name *Captain Milo*. In Guatemala, the popped grains are made into a confection called *alborotos*. In India, a nutty flour made from popped sorghum is traditionally eaten after being mixed with milk and sugar, salt, buttermilk or chiles. The immature seedheads of certain strains found in Maharashtra make a very pleasant vegetable when roasted and eaten like sweet corn. Sprouted seeds are eaten. Tropical Africa. COST 1988, DAGHER, DIRAR 1993, FCX, F., LU, NATIONAL RESEARCH COUNCIL 1996, SAUER, SO, STEINKRAUS, WEINZWEIG 1996, WILSON, E.G. [Re], ZEVEN; A25G{DF}, A25G{PD}, C27G{PD}, E66M, F74{PD}, I16{PD}, L14G{DF}, L14G{PD}, M34M, N54{PD}, N84

#### CULTIVARS

**Black African:** 120 days. White grained cultivar used for porridge, gruel and *chapatis*. Sweet and light flavor, good for summertime eating. Drought tolerant plant, 8 1/2 feet tall, bears seeds in a

loose panicle. Grains are easily freed from enclosing glumes. May need protection from birds. C95, K49T, N84

**Black Kaffir:** 120 days. A seed and feed flour grain. Light colored seed with black hulls. Grows 6 1/2 to 8 feet tall. Tolerates drought and disease. Similar to Black African but with a tighter panicle. C95, H49, I64

**Dabar:** White-floured, high yielding sorghum from the Sudan. Popular in some areas for making white *kissra*. Also used for other fermented foods such as *nasha* and *abreh*. Very high in soluble carbohydrates, but lower in protein than Feterita; low in tannin. Developed at the Tozi sorghum research station in the Blue Nile province. Released in 1977. DIRAR; U37M

**Feterita:** Traditionally the most widespread sorghum of the Sudan. Although white sorghums are preferred in cities, rural Sudanese strongly believe the brown-seeded Feterita is nutritionally superior. Stores better and is easier to mill than other sorghums. Used for most of the numerous fermented foods of the Sudan, such as *kissra* and *merissa*. Introduced into the United States in 1906. DIRAR; U37M

**Gooseneck Brown Durra:** 120 days. Reddish-brown grain of a kind used for feed or brewed into native beers. Drought tolerant plant, 6 1/2 feet tall. Stout, conical seedheads held on recurved necks, like geese, hence the name. Not molested by birds. C95, N84

**Hazera 610:** 120 days. Medium-sized, reddish grain; semi vitreous, with good malting quality. Medium early, consistently high yielder; large, somewhat compact panicles; slight tendency to tiller. Adapted to medium and heavy soils. One of the cultivars used in Israel for adding to the popular non-alcoholic malt beverages. P75M

**Hazera 6060:** 125 days. Large, white grain of floury texture. Suitable for use in baking. Yields are good even under moisture stress and high temperatures during the last stages of growth. Recommended for light soils and dryland farming conditions. P75M

**Lesotho:** A staple food in its homeland of southern Africa. Traditionally cooked with beans to form a complete protein. Can also be used as a cereal by grinding to a coarse meal and adding raisins, apples, dried fruits, cinnamon, yogurt and brown sugar. Stalks grow 7 to 12 feet tall with numerous side tillers. L7M

**Mavo:** White-floured sorghum from the Sudan. Popular in some regions for making white *kissra*. Also used for other fermented foods such as *abreh*. Higher in calcium content than Feterita, but lower in protein and phosphorus. May be the Sudanese ancestor of the American milo type. DIRAR; U37M

**Popping:** Grown primarily for the small, pearly-white grain which is popped and eaten like popcorn. The grain may also be used as standard types are. N84, R47

**Teoehuan Popping:** 110 days. Slender plant with many tillers, to 7 feet tall. White seeds in arched panicles. May be popped and used like popcorn. Has an excellent nutty flavor. Plant in early July in low desert areas. Not drought resistant. Collected from Nabogame, an isolated northern Tepehuan village in southern Chihuahua, Mexico. F73D, J20, L3J

**Texicoa:** 115 days. Large, white-seeded type. Pleasant flavor, sweet and mild. Very good cooked whole like rice, or made into porridge or chapatis. Dense obovate seed heads. Grows to about 3 1/2 feet tall. C95, L3J, L77D

**Wad-Fahal:** White-floured sorghum widely used in the Sudan for making white *kissra*. *Kissra*, a staple flatbread, consists of paper-thin sheets of baked fermented batter. Also the preferred variety for making *abreh*, a similar bread, and *kissrat -kerr*, an enjera-like bread made from five different grains. DIRAR; U37M

**White Pearl:** 130 days. A rare cultivar with plump, pure white seeds. This is the type of grain sorghum preferred for human food. No bitter, toxic tannins like the grain sorghums grown in the United

States for feed purposes. Grown in nearly every state in India, where the grain is made into unlimited delicious foods. G47

**White Popping:** 100-110 days. Small, cream-colored seeds that can be used for popping. Grows 8 to 10 feet tall. The seed heads may also be harvested and used in dried arrangements. D76, G13M, H49, J20

Sorghum bicolor Saccharatum Group - *Sweet sorghum, Cane sorghum, Sorgo, Imphee* {S}. The stems are chewed for their sweet juice which is also made into *sorghum syrup, sorghum molasses*, and sugar. The grain is ground into flour for use in breads and pancakes. Stems are also said to be used as a culinary vegetable. HEMMERLY, LOGSDON 1977 [Cu, Pie], MACMILLAN, TANAKA; F64{PE}, J9M, K10, K49M{PD}, R47

#### CULTIVARS

**Amber:** 120 days. Drought tolerant plant, 8 1/2 to 10 feet tall. Gently drooping panicle with amber colored grains. Juicy stalks are used for manufacturing *sorghum syrup*. C95, F73D, N84

**Apache Red:** 120 days. Drought tolerant plant, 8 feet tall. Drooping red seedheads that attract birds. The stalk is chewed like candy when seeds have ripened (turned red). Also used for *sorghum molasses*. From the San Carlos Reservation in western Arizona. Adapted to grassland/scrub areas. C95, I16, L3J, L77D, N84

**Ho-K:** Stems are sweet and juicy and can be chewed like candy. The juice may also be extracted and boiled down to a syrup that is delicious on pancakes or waffles. Easy to grow. Tops of stalks are used in dried arrangements. L7M

**Iowa Sweet:** 125 days. Very sweet sugar cane type. Thick, juicy stalks. Grows to about 9 feet tall when mature. K20M

**Mennonite:** 90-100 days Very thick stalks, grow 7 to 8 feet tall and resist lodging. Large heads of grain; tight, orange-hulled seed heads. Does not produce too many suckers. Makes a light-colored syrup of good flavor. Seeds may be ground to make flour, especially for pancakes. An old heirloom from a Mennonite who used to have a sorghum mill near Jamesport, Missouri. F73D, K46T, K49M, L7M

**O'odham:** (Papago) (*S. bicolor* x *S. halepense*) 120 days. Once commonly grown for *sorghum molasses*. The sweet stalks can also be peeled and chewed. Grows 7 to 8 feet tall, producing many tillers. Red-tinted stalks. Perennial in some areas. Adapted to the low hot desert, where it is planted in spring or with the summer rains. C95, I16, K46T

**Onavas Red:** Very sweet and juicy. Burgundy-red seeds. Stalks produce numerous tillers. Planted during the summer rains in the low desert. Originally from the Pima Bajo village in Arizona. I16, N84

**Rox Orange:** 100 days. Produces a mid-stout stalk that is sweet, juicy and leafy and grows 6 to 8 feet tall with few tillers. Rounded, yellow-brown seeds with bright red hulls. Light-colored syrup type; makes very flavorful syrup. Yields well. An old heirloom, developed at the Wisconsin Agricultural Experiment Station. F73D, G26, K20M, K71

**Sweet Tooth:** The juice may be extracted from the canes and boiled down to make sorghum molasses, which can be poured on pancakes and waffles. H49

**Texas Black Amber:** (Black Amber) 110 days. An Heirloom first introduced to American agriculture by way of France. Produces plump amber seeds with shiry, black hulls. Molasses type. Also used for silage and as an ornamental. Grows 6 to 12 feet tall. Adapted to grassland/scrub areas where it is planted in early July under irrigated conditions. D92M, F63, G13M, I16, I64, J20, K10, L7M, M65, N84

**Waconia Orange:** Tall growing type used for silage as well as sorghum molasses. Reddish-orange hulls. Planting rate should be about 12 pounds per acre. A15Z

**White African:** 118 days. Very vigorous plant; grows 10 to 12 feet tall. Large-sized, thick stalks; long-jointed; very sweet, medium juicy to juicy. White seed with a black hull. Very old heirloom cultivar. Makes excellent dark-colored syrup. K46T

*Sorghum saccharatum*-*Sorghum bicolor*

*Sorghum vulgare*-*Sorghum bicolor*

*Sporobolus airoides* - *Alkali sacaton* {S}. The seeds are parched, ground, and eaten dry or made into mush. Recommended for saline agriculture. Southwestern North America. DOEBLEY, NATIONAL RESEARCH COUNCIL 1990; YANOVSKY; C4, C43V, E66M, F96, G60{PL}, 147,198M{PL}, K62, L89G, M25

*Sporobolus cryptandrus* - *Sand dropseed* {S}. Seeds are parched, ground, mixed with water or milk, and made into mush or biscuits. They can also be added to breads, muffins, and cereals. The tiny seeds have the advantage of being easily freed from their husks. North America. CROWHURST 1972, FERNALD, KINDSCHER, KIRK, YANOVSKY; A15Z, C4, C43V, D47M, E53, E66M, F63M, F96, G47M, 147, J39M, J43, K62, L3J, L41, M25, etc.

*Thinopyron intermedium* - *Intermediate wheatgrass* {S}. The seeds are eaten as a cereal, or ground into flour and used to make crepes, muffins, rolls, etc. Tests at the Rodale Research Center indicate that intermediate wheatgrass, along with pubescent wheatgrass are the best candidates among the perennial grasses tested for development into perennial grains, based on culinary evaluations. Adapted to areas with 15 inches or more of annual rainfall. Western North America. WAGONER; A15Z, C4, C92, D47M, E66M, F96

#### CULTIVARS

**Oahe:** Produces seeds that thresh free when the appropriate seed cleaning equipment is used. Better adapted to areas of higher rainfall than Luna and other cultivars of pubescent wheatgrass. Has an endosperm recovery rate of 50%. Oahe whole grain flour does not compare as favorably to wheat flour as does flour made from Luna pubescent wheatgrass. Developed by James Ross at the Brookings South Dakota Agricultural Experiment Station. C4, C43V, E53, E66M, F96, G19T, 199M, K62

*Thinopyron intermedium* var. *trichophorum* - *Pubescent wheatgrass* {S}. Seeds are eaten as a cereal or porridge, and are also ground into flour for making breads, cakes, pancakes, etc. In culinary tests at the Rodale Press Food Center, muffins made with 100% pubescent wheatgrass flour had a pleasant, sweet and nutty flavor. More drought tolerant than intermediate wheatgrass, growing in areas with 8 to 15 inches of annual precipitation. Western North America. WAGONER; E66M, F96, L41

#### CULTIVARS

**Luna:** Produces 160 pounds, or about 3 bushels of seed per acre. In milling, the endosperm recovery rate is 65% as compared to 70% for wheat, indicating that Luna should be used for whole grain flour rather than fractionated into endosperm flour, germ and bran. Luna whole grain flour compares favorably to that of a high quality dough forming wheat. Developed by the Los Lunas Soil Conservation Service Plant Material Center in New Mexico C4, C43V, E53, E66M, F96, G19T, 199M, K62

*Tripsacum dactyloides* - *Eastern gama grass*, *Buffalo grass* {S}. Grains are used for food. Popped kernels are almost indistinguishable from those of Strawberry popcorn. The seed of gama grass consists of 27 % protein and it is nearly twice as high in the amino acid methionine as corn. This high protein percentage, three times higher than corn and twice as high as wheat, allows breeders, who are working to develop gama grass as a perennial grain crop, to sacrifice protein content in their effort to achieve greater yields. North America. HEDRICK 1919, JACKSON, W., KINDSCHER; B29, B29{PL}, D47M, F73{PL}, G47M, H14M{PL}, H70M{PL}, 111, J39M, L41, M16{PL}

X *Triticosecale* sp. (*Triticum* spp. x *Secale cereale*) - *Triticale* {S}. Artificial hybrid, the first man-made grain. The grains are eaten in soups and salads or ground into flour for bread, pancakes,

cookies, muffins, etc. Being low in gluten, it is usually mixed with that of wheat for bread-making. Sprouted seeds can be used like those of wheat and rye. Generally, the hybrids have a higher protein and amino acid content than wheat and the plants are more winter-hardy. But yields have been low in some areas and lodging has been a fairly serious fault. Triticale grain is larger than wheat, but less abundant on the spike. GELLES [Re], LOGSDON 1977, SASS, SCHERY, TRITIRICH [Re]; B31{DF}, B49, E7M, E31{DF}, E53, E55{DF}, E66M, G29{ED}, I20{DF}, 120 {ED}, K5M, N84. (see also Sprouting Seeds, page 524)

#### CULTIVARS

**Juan:** An attractive cereal plant, not a dwarf. Has tall straw of about 40 inches and stands well without lodging. B49

**Oac Wintri:** Plants grow to 50 inches and are resistant to powdery mildew and leaf rust. Large kernels. Susceptible to preharvest sprouting and lodging. Good winter survival. Originally from the University of Guelph, Ontario, Canada. G50, M95M

*Triticum x aestivum* - *Wheat*, *Bread wheat* {ED}. Grains are ground into flour for use in bread, pasta, cakes, biscuits, pies, crackers, dumplings and numerous other fermented and unfermented products. Coarsely ground whole wheat flour is usually sold as *graham flour*. *Chapati flour*, also called *at a*, is generally made from low-gluten wheat and is used for making many kinds of Indian breads. The grain is sometimes eaten as a cereal like rice, or made into bran flakes, shredded wheat, puffed wheat and other breakfast foods. Food wrappers made from the flour include *phyllo*, *strudel*, *crepes*, *wonton*, *gyoza* and *lumpia*. The popped kernels are sometimes marketed as *wheat nuts*. *Bulgur* wheat, popular in the Middle East for *tabouli*, is wheat that has been parboiled, dried, and then cracked. *Kishk* is made from a fermented bulgur and yogurt mixture. *Jalebi* is a fermented wheat/yogurt product from India. *Lambic beer* and *weisse beer* are made from wheat. *Faro* and *gueuze* are types of lambic beer. *Amydoun*, wheat flour that has been steeped, drained, and dried in the sun, is used in the preparation of sweet pottages made with violets and other flowers. The sprouted seeds are used for making *essene bread*, and *fermec* or *rejuvelac* (*Poor Man's Beer*)—\* fermented, non-alcoholic beverage which is drunk or used as the basis for *seed cheese* or *seed yogurt*. Young seedlings, known as *wheatgrass*, are juiced and consumed as a chlorophyll-rich beverage. *Wheat germ* and *wheat germ oil* are popular natural foods products. Roasted grains are used as coffee. *Panocha*, sprouted wheat flour, is considered nutritionally superior. Wheat gluten, known as *minchin ox fit*, is a high-protein food widely eaten in Far Eastern countries. *Seitan* is wheat gluten that has been marinated in soy sauce and seasoned. Cultivated. BAKER [Re], GUINARD, JACOBS [Pre, Re], JAFFREY, JACKSON, M., MULLER [Re], ROUTHIER 1993 [Re], SEIBOLD [Nu], SHURTLEFF 1975, STEINKRAUS, TANAKA, UPHOF, VON WELANETZ; A7M, B31, B49{S}, C11G, C34G, D4, D47M{S}, E56, E66T, G29, G47B, G71{S}, H14I, H19M, H25M, H86, H91,120, J19M, L34, L50M, L97G, L99, M96, N84{S}, R47{S}, etc. (for cultivars see Wheat, page 574, see also Sprouting Seeds, page 524)

*Triticum boeoticum* - *Wild einkorn*, *Thaoudar wheat* {S}. Seeds are occasionally eaten. In prehistoric times they were most likely parched and eaten as whole kernels, or made into porridge and unleavened bread. Southeastern Europe to Iran. BROUK, KUNK-EL, PADULOSI, ZEVEN; U8M, V84T, X54, Y14M, Z91

*Triticum carthlicum* - *Persian wheat* {S}. Cultivated as a grain crop in the Turkish-Caucasian region up to 2100 meters elevation. Southwestern Asia, cultivated. UPHOF, ZEVEN; U8M, X54, Z91

*Triticum compactum* - *Club wheat* {S}. The grain is made into flour for use in bread, crackers, starchy breakfast food, etc. Grown in parts of North America to produce a pastry flour which is considered the softest of all wheat flours. Contains as little as four percent protein. Southwest Asia, cultivated. ALFORD, SCHERY, UPHOF, ZEVEN; U8M, V84, Z91

## CULTIVARS

**Pima:** A beardless soft white wheat grown by the Pima Indians at least as early as 1920. Unusual short, fat compact head; golden-brown seeds. Excellent for flour *tortillas* and chapatis. Grows to about 3 feet tall. F73D, L3J, K46T, N84

*Triticum dicoccoides* - *Wild emmer* {S}. The grain is edible. One of the parents of several cultivated species including *T. dicoccon*, *T. carthlicum*, and *T. turgidum*. Southwest Asia. SCHERY, TANAKA, ZEVEN; U8M, V85M, X54, Y14M, Z91

## CULTIVARS

**Mondor:** Semi-hard, spring wheat. Pale golden seeds with sufficient gluten; medium protein content of 12 to 14%. The grain remains solidly fixed to the ear until harvest. High yielding; resistant to lodging, foot rot, and scalding. G50

*Triticum dicoccon* - *Emmer, Farro, German wheat* {S}. The grain is ground into flour, made into pasta, bread, breakfast foods, pastries, *polenta*, added to soups, stews, salads, tortas, etc. Has a hearty, nutty flavor and holds up better than spelt when cooked. The crushed grains or *farricello* are used in a risotto-like dish known as *farrotto*. Emmer is one of the oldest cultivated wheats. Its culture has been declining, however it is still cultivated in some mountainous areas such as Germany, Ethiopia, Italy and Spain. In Italy, it is currently featured on the menus of the best restaurants. Popular in Ethiopia for making *genfo*, a porridge, and a special bread called *kit a*. Eurasia, cultivated. BUGIALLI [Re], DE VITA [Re], FIELD [Re], KASPER, NATIONAL RESEARCH COUNCIL 1996, PADULOSI, SCHERY, ZEVEN; B49, H25M{DF}, I94{DF}, I94{PD}, J39, K17M, L99{PD}, M56M{DF}, M56M{ED}

*Triticum durum* - *Durum wheat, Macaroni wheat* {PD}. The grain is hard, semi-translucent, and especially rich in gluten. Source of *semolina*, used for making pasta, spaghetti, noodles, cakes, puddings, *gnocchi* and other dumplings, certain breads, and *couscous* a staple food of North Africa. *Pane carasau* and *Carta da musica* are famous parchment-like flatbreads of Sardinia made from semolina. In Iran and Iraq, the grain is eaten in the form of a local porridge. Durum wheat is preferred for making *trahanas*, a fermented food made from crushed wheat and fermented sheep milk. It is also favored for *fireek* or *frekeh*, immature green wheat that has been parched, dried and cracked. The *fireek* has a distinct, smokey flavor and is used in pilaf or as a stuffing for poultry. The shelled or peeled grain, called *kamh makshour* or *grano*, is used in Middle Eastern and Italian cuisines, grano for the famous Easter pie called *pastiera di grano*. *Beghrir* is a pale yellow yeast-semolina pancake from Morocco that is cooked only on one side. It is reminiscent of a honey-comb with numerous small holes. Mediterranean region, Eurasia, cultivated. ALFORD [Re], CUSUMANO [Cul, Re], DAGHER, SCHERY, STEINKRAUS, TANAKA, UPHOF, WOLFERT 1973 [Pre, Re], WOLFERT 1994a [Cul, Re]; A7, A7M, B71G, C60D{PD}, C73P, C73P{DF}, H19M, H78M, H78M{DF}, I20,I20{DF}, L50M, M67{DF}, O53M{S}

## CULTIVARS

**Arnautka:** (Wild Goose) Heirloom durum wheat from southern Russia. Awneled, spring wheat. Resistant to leaf rust. Brought to the United States in 1864 by Russian immigrants who settled in North Dakota. SMITH, C; U8M

**Kubanka:** Heirloom durum wheat from southern Russia. Awneled, tall straw type; high yielding. Introduced into the United States in 1898 by M.A. Carleton of the USDA. At one time grown commercially in North Dakota. SMITH, G; F73D

*Triticum macha* - *Madia wheat, Makha wheat* {S}. Cultivated for its grain in the Republic of Georgia and parts of southern Russia. Western Asia. UPHOF, ZEVEN; U8M, X54

*Triticum monococcum* - *Einkorn, Stone Age wheat, One-grained wheat, Farro* {S}. The grain is ground into flour for making bread, biscuits, cookies, pasta, ice cream cones, etc. Yields flour with a strong, yellowish tinge. Reportedly the most primitive of all domesticated wheats. Occasionally grown in Germany, Switzerland, France and Italy. In France it is used in the preparation of a special

porridge, and is becoming popular in the natural foods trade. Much higher in carotene than modern wheats. One of three species of hulled wheats known as farro in Italy, along with *T. dicoccon* and *T. spelta*. Europe, cultivated. HEDRICK 1919, NATIONAL RESEARCH COUNCIL 1996, PADULOSI [Nu], UPHOF, ZEVEN; B49, G47, J39, K17M, L77D

## CULTIVARS

**Alaska Spelt:** Two-rowed heads with fine, short awns; about 3 inches long; 32 kernels per head. Rich lime-green, turning an attractive orange-brown when dry. Matures in mid-July, 7 to 10 days after *Triticum spelta* 'Khapli'. Grows slightly taller than 3 feet. Apparently misidentified as a spelt, hence the name. J39, K17M

**Black:** Two-rowed, flat black heads, not very long. Superb flavor. Grows about 3 1/2 feet tall. Ripens in mid-Aily. Still grown in northern Spain and southern France despite low yields compared to modern wheat. Reportedly 10,000 years old. J39, K17M

**Blonde:** Very similar to Black einkorn, except the heads are blond and somewhat shorter. The plants are also slightly shorter. J39

**Provenge:** Antique grain originally from Provence, France. Smaller grains than common wheat or spelt but prized by those who have tasted its unique, rich flavor. Graceful, slender ears with tightly adhering glumes; awneled. Grows 3 to 4 feet tall. Usually sown in September for harvest the following August. L3J

*Triticum persicum - Triticum carthlicum*

*Triticum polonicum* - *Polish wheat, Astrakan wheat* {S}. The grains are ground into flour which is suitable for making macaroni. Has one of the largest grains of all the wheats, closely resembling Kamut wheat. Not suitable for bread making. Can be grown very successfully under garden conditions. Eurasia, cultivated. SCHERY, UPHOF, ZEVEN; G47, J39

## CULTIVARS

**Kamut:** (QK-77) {DF} Very large kernels, 2 to 3 times the size of modern wheats. Contains significantly higher levels of protein and slightly higher levels of lipids, amino acids and minerals. Reportedly less allergenic but this has not been substantiated by controlled studies. Produces whole wheat pasta, flour, sprout bread and puffed wheat of superior flavor. Also makes excellent wheatgrass and wheatgrass juice (Green Kamut). Thought to have originated in the Fertile Crescent. Introduced into Montana around 1950. ALFORD, MEYEROWITZ 1994a; A25G, A25G{PD}, E7M{S}, E31{PD}, E56, E56{PD}, F86T, F97M, F97M{PD}, G47C{PD}, H78M, H78M{PD}, I39T{PD}, I43T{m}, JUM, J73{S}, K17M{S}, L24G{SP}, L24{SP}, etc.

*Triticum spelta* - *Spelt, Speltz, Dinkel wheat, Farro* {S}. The reddish grains are used for flour, cereal, bread, muffins, cookies, flakes, boiled like rice, or roasted and consumed as a coffee substitute. Reportedly less allergenic than common bread wheat. Highly valued for making gingerbread and pretzels. Still grown in some areas of Germany where the naked grains are often harvested prematurely. They are then smoked and added to soups as *gruenkern*. This product is available at specialty stores in New York and other large cities. Spelt pasta, recently introduced to the natural foods trade, has a delicious nutty flavor. Europe, cultivated. ALFORD, HUGHES, H. [Re], LOGSDON 1977, LOVELOCK, PADULOSI, STREHLOW [Nu, Re], UPHOF, WEAVER 1993 [Re], ZEVEN; A90M{DF}, B31{DF}, E7M, E31{PD}, E56{DF}, E56{PD}, F85, F97M{PD}, G47, I39T{PD}, I19M{DF}, I97{ED}, J51T{PD}, K17M, L77D, M67{SP}, N34{DF}, N84, 093, etc.

## CULTIVARS

**Altgold:** (Altgold Rotkorn) An awneled type originally from Belgium. Distinctive, deep earthy flavor. Reportedly does not contain gluten. Stiff-strawed plant, grows 3 1/2 to 4 feet tall. Usually sown in the fall for a mid-July harvest. L3J

**Ardenne:** Heirloom originally from Belgium. Deep, rich flavor preferred by many. Excellent for porridge lightly toasted and ground with flaxseed. Yields very well. Usually sown in the fall for a mid-July harvest. L3J

**Champ:** An awnless, brown chaffed cultivar that outyields common spelt by an average of 23.2%. Also contains 1% to 1.57% higher protein. Slightly taller and has considerably improved straw strength. Has very good resistance to leaf rust but is only moderately resistant to powdery mildew. Developed by Howard N. Lafever at the Ohio Agricultural Research and Development Center. The first public cultivar released in recent decades. J80

**Khapli:** Very early maturing, usually the first week in July from a spring planting. Length of heads, including awns, approximately 2 1/2 inches. Grows about 3 feet tall; prone to lodging. Can also be sown in the fall. K17M

Triticum sphaerococcum - *Shot wheat*» *Indian dwarf wheat* {S}. Grown as a grain crop in Punjab and the Central Provinces of India. Southern Asia, cultivated. UPHOF, ZEVEN; L77D

Triticum timopheevi - *Sanduri*, *Tschalta sanduri* {S}. An ancient grain crop cultivated in the Republic of Georgia. Western Asia, cultivated. UPHOF, ZEVEN; U8M, X54, Y14M, Y29, Z91

Triticum turgidum - *Rivet wheat*, *Poulard wheat*, *English wheat* {S}. The grain is made into flour which is used in making macaroni, spaghetti, vermicelli, etc. Cultivated. SCHERY, UPHOF, ZEVEN; C53, D92M, F85

Triticum vavilovii - *Vavilov wheat* {S}. Grains are used for food in Armenia. They are somewhat difficult to thresh. Characterized by its distinctive, branching spikelet. Western Asia. BROUK, ZEVEN; F73D, J39, K17M

Triticum zhukovskiy - *Zanduri wheat* {S}. Cultivated as a grain crop in western Republic of Georgia. Southwest Asia. ZEVEN; U8M, X54, Z91

Uniola paniculata - *Sea oats*, *Beach grass* {PL}. The seeds may be cooked and eaten as a cereal. Said to be of very good flavor. North America. MORTON 1977; B32, F73, F80{S}, M7M

Vetiveria zizanioides - *Vetiver*, *Khus-khus*, *Botha grass* {PL}. Roots are the source of khus essence and khus water, used in India for flavoring sherbets, syrup sweets, and fruit drinks. In the food industry, vetiver extracts are added to canned asparagus to enhance the flavor. Tropical Asia, cultivated. BURDOCK, DEVI [Re], MORTON 1976, UPHOF; A49D{DF}, B28, C81M, E14T{DF}, F37T, F85{S}, F93G, J82, K18M{DF}, K22, K85, L34{D£}, M82, N19M, Q46{S}, etc.

Zea diploperennis - *Diploid perennial teosinte* {S}. The seeds are sometimes eaten. A wild relative of maize discovered near El Durazno, Jalisco, Mexico. Crosses with maize to produce fertile hybrids. Mexico. ZEVEN; U14

Zea mays - *Corn*, *Maize*, *Indian corn* {PD}. The immature seeds are eaten raw, boiled, roasted, dried, in *succotash*, etc. *Chicos*, a traditional food of the Pueblo Indians of the Upper Rio Grande, is unripe corn that has been roasted, steamed and dried then stored for use in soups, stews and chili. Dried seeds are ground into meal for breads, cakes and *polenta*, or treated with lye and made into *hominy* and *masa* for use in *tortillas*, *tacos*, *tamales*, *enchiladas*, *atole* and *pinole*. Also made into numerous fermented foods and beverages, including *chicha*, *pozol*, *kenkey*, *banku*, *koko* and *tesguino*. Seeds that are high in lysine are known as *Quality-Protein Maize*. *Flaked corn* is added to many commercial beers. Corn oil is used in salads and cooking. The husks and fresh leaves are widely used for wrapping tamale fillings. Roasted seeds are used for coffee. *Corn nuts*, roasted and salted seeds, are eaten as a snack. Corn starch is used in confectionery and noodles. Corn bran, of excellent flavor, can be used instead of wheat bran in recipes. Young immature ears are boiled as a vegetable or made into tortillas. The pollen is used as an ingredient of soups. Fresh, succulent silks are chopped fine and mixed with masa in making tortillas. Young tassels are boiled and eaten. The pith of the stems is chewed like sugar cane or is sometimes made into syrup. Sprouted seeds are used in uncooked breads and cereals. Hypertrophies, produced by the corn smut fungus, are

consumed. *Corn cob jelly* is made from the juice of dried red corn-cobs. In New England, corncobs are favored for smoking fish, hams, poultry and other meats. The juice from succulent green corn is added to *Sage cheese* for coloring. Southern America, cultivated. DUKE, MULLER, NATIONAL RESEARCH COUNCIL 1988, OLIVER, PAGE, STEINKRAUS, TANAKA, UPHOF, WALTER, WEATHERWAX, WILL, WILSON, E.G. [Re], ZASLAVSKY; A52M, B31, C11G, C56G, C57, C64, D4, D7, D97, E13G, E60P, E68M, F42M, F68P, G13T, I8M, I16, I42G, I63T, J3, K19, L16, M63M, N17, N40, etc., (for cultivars see Corn, page 339, see also Sprouting Seeds, page 524)

*Zea mays ssp. mexicana* - *Zea mexicana*

Zea mays 'Ceratina' - *Waxy corn* {S}. Low plants with erect leaves. Grains with waxy endosperm. Probably originated as a mutation in Eastern Asia. Cultivated in China, Manchuria, Burma, and the Philippine Islands. UPHOF; X54, Z91

Zea mexicana - *Teosinte*, *Annual teosinte*, *Maiz cafe* {S}. Young shoots are boiled and eaten. Whole mature seeds can be eaten by first soaking them in water until soft enough to chew. Dried kernels can be popped like popcorn. The young spikes can be eaten before the seeds have matured. In Honduras, the seeds are roasted and mixed with coffee or used as a substitute for coffee. The wild ancestor of maize. Mexico. ALTSCHUL, BEADLE, TANAKA, WILLIAMS, L., ZEVEN; C95, J73, N84

#### CULTIVARS

**Day Neutral:** A strain that is not sensitive to day length and will flower and mature seed in northern areas. Developed by George Beadle and Walton Galinat. C7M

**Northern Teoehuan Maizillo:** 120 days. Nabogame race. The most distinctive annual teosinte. Green stems are chewed for the sweet juices. Grows to 6 feet tall. Prolific. Probably will not flower until after the autumn equinox so may require a greenhouse or frost protection. Produces a good crop in Tucson and the California central valley with minimum protection. From southern Chihuahua. F80, I16, K46T

Zizania aquatica - *Wild rice*, *Indian rice*, *Manoomin* {PL}. The long, brownish-black, delicious grain is eaten as an expensive, gourmet cereal. It is commonly cooked with mushrooms and served with game or fowl. Wild rice can also be ground into meal and used for baking in breads, muffins, cakes, pasta, and in thickening soups. Popped wild rice was traditionally eaten plain or with maple syrup. *Manzaan*, fine bits of rice left after winnowing, was somewhat of a delicacy to the Indians of the Upper Midwest and was often cooked together with wild rice or added to soups and stews. Often used as food for wildfowl, which become tender, rich, juicy and flavorful. With recent plantings in California coming into production it is now more readily available and at a lower price. However, some still prefer the flavor of grains harvested from wild stands and hand parched. North America, cultivated. ANGIER [Re], CREASY 1982 [Cu], FERNALDt GIBBONS 1962, HAWKES [Re], LOGSDON 1977 [Re], TURNER 1979 [Pre, Re], VENNUM; A25G{ED}, E56{DF}, E89G{PD}, F73, F88{PD}, G26{S}, G47M{S}, H7G{PD}, H41{DF}, H68M{P£}, I39T{ED}, I66{DE}, K34, M15, M34M{S}, Nil, N11{DF}, N11{S}, etc.

#### CULTIVARS (DF)

**Arrowhead Country:** Long, narrow grain, up to 3/4 inch long and about 1/16 inch in diameter. Somewhat larger than Father of Rivers or Mahnomen. Light golden brown, mottled with grayish-black. Sweet, light, delicate flavor. Premium wild rice hand harvested in Minnesota. C60G

**Father of Rivers:** Medium-sized grain, about 1/2 inch long and 1/16 inch in diameter. Light tan, mottled with grayish-black. Sweet, nutty flavor; excellent chewy texture. Both light and medium versions are available, the medium version having more of a rich robust flavor and a darker color. C60G

**Mahnomen:** Very rare, desirable strain. True hand parched wild rice. Plump, medium-sized grain, about 1/2 inch long and 1/8 inch



in diameter; medium to dark, brownish-gray color; very strong, smoky aroma; rich, distinctive, nutty flavor. Can be popped like popcorn. Named after the Native American word for wild rice. C60G

*Zizania latifolia* - *Manchurian wild rice*, *Water grass* {PL}. The swollen, infected base of the culms, parasitized by the smut fungus *Ustilago esculenta*, is eaten by the Chinese as a vegetable, known as *gau sun*, *cane shoots*, *wild-rice stem* and *sticky shoot*. It is parboiled, then sauteed with meats and other vegetables and has a nutty flavor reminiscent of corn and mushrooms. Seeds are used like rice. The very young inflorescence is cooked and eaten as a vegetable. Eastern Asia, cultivated. DAHLEN [Pre, Cul], FERNALD, HERKLOTS, TANAKA, TERRELL; B28, H30

#### CULTIVARS {S}

*Su Zhou*: An early cultivar with tender flesh. 054

*Zizaniopsis miliacea* - *Water millet*, *Southern wild rice* {PL}. The vigorous new tips of the white rhizomes are cut in short pieces, cooked until tender, and served with butter. Southern North America. FERNALD, GIBBONS 1979; C36

#### PODOCARPACEAE

*Dacrycarpus dacrydioides* - *Kahikatea* {S}. The sweet fruits are eaten or used as a masticatory. New Zealand. COLENZO, FULLER, HEDRICK 1919, UPHOF; D95{PL}, N73{PL}, N84, 093

*Dacrydium cupressinum* - *Rimu*, *Red pine* {S}. A resinous substance from the young branches was used by Captain Cook to make an alcoholic beverage resembling spruce-beer. Fleshy fruits are eaten. New Zealand. COLENZO, FULLER [Re], HEDRICK 1919, TANAKA; N84, 093

*Dacrydium franklinii*-*Lagarostrobus franklinii*

*Lagarostrobus franklinii* - *Huon pine* {S}. Source of an essential oil recommended for the manufacture of vanillin, which is used as a flavoring in ice cream, confectionery, beverages, etc Tasmania. TANAKA, UPHOF; B94, D95 {PL}, N84

*Podocarpus dacrydioides*-*Dacrycarpus dacrydioides*

*Podocarpus elatus* - *Brown pine*, *Illawarra plum* {S}. The large, fleshy fruit-stalk, resembling a purple-black grape with a waxy bloom, is mucilaginous and resinous in flavor. It is eaten raw, pickled, made into jam, jelly, chutneys and sauces, or added to muffins, cakes, puddings and pastries. A very popular bushfoods crop. Australia. CHERIKOFF [Re], CRIBB, ROBINS [Cul, Re]; M7M{PL}, N79{PL}, N79{PR} \ N79M, N84, 032M{PD}, 094, PIG, P5, P17M, P38, Q32, R33M

*Podocarpus macrophyllus* - *Japanese yew* {S}. Fruits are eaten by children in Japan. In Florida, where this tree has been introduced as a hedge plant, they are eaten out of hand or in pies and cakes. Japan, China. TANAKA; A41M, B41{PL}, C9M, D95{PL}, F53M{PL}, G66, H4{PL}, 765{PL}, K46{PL}, K63G, L47{PL}, N84, 053M

*Podocarpus spicatus* - *Matai*, *Black pine* {S}. The watery sap was drunk or used in the preparation of a beer-like beverage. Other authors report the young shoots being made into a beverage resembling spruce-beer. Fruits are sweet and edible. New Zealand. COLENZO, FULLER, HEDRICK 1919; N73{PL}, N84, 093

*Prumnopitys taxifolia*-*Podocarpus spicatus*

#### PODOPHYLLACEAE

*Achlys triphylla* - *Vanilla leaf*, *Sweet after death* {S}. A non-commercial volume of a vanilla substitute has been extracted from the leaves. Pacific Coast of North America. E15{PL}, E63M{PL}, F88M, 131, N84

*Podophyllum emodi* - *Himalayan may-apple* {S}. The fruits are eaten. Roots and leaves are considered poisonous, although some

authors report the young leaves as being edible. Himalayan region. HEDRICK 1919, TANAKA, WATT; A61, A61{PL}, L91M, P10, R53M, R53M{PL}

*Podophyllum peltatum* - *May apple*, *American mandrake*, *Wild lemon* {PL}. Ripe fruits have a peculiar, agreeable flavor and are eaten raw, cooked, or made into jams, jellies, marmalades, pies, and refreshing beverages. In the South, the juice of the fruit is mixed with Madeira and sugar. Unripe fruits are cathartic. Eastern North America. ANGIER [Re], BURR [Cu, Pro], FERNALD, GIBBONS 1962 [Re], MEDSGER, TURNER 1979 [Re]; BO, C9, C43M, C81M, D75M, E33M, J48, L88M, N9M, N9M{S}, N84{S}

#### POLYGONACEAE

*Antigonon leptopus* - *Coralvine*, *Mountain rose*, *Bellissima* {S}. Tubers are cooked and eaten. They are said to have a nut-like flavor. In Thailand the leaves and flowers are often cooked and served with vermicelli, while the flowers are added to omelettes. Tropical America. DUKE, JACQUAT, PONGPANGAN, UPHOF, WIL-LIAMS, L.; A79M, C9M, E7M, F80, F85, G96{PL}, H4{PL}, J27{PL}, N84, 053M, Q12, R33M

*Atraphaxis spinosa* - *Shir-khecht shrub* {S}. Source of a yellowish-white manna-like substance eaten as food or used in making sweetmeats. Southwest Asia. DONKIN; W3M, W88M

*Bistorta bistortoides* - \**Polygonum bistortoides*

*Bistorta vivipara*-*Polygonum viviparum*

*Coccoloba diversifolia* - *Pigeon plum*, *Dove plum* {PL}. Fruits are dark-purple, juicy, acid to subacid, and are eaten raw or made into jelly or wine. If held for a few days, they do not spoil readily but lose their astringency and dehydrate somewhat. Sold in local markets of Nassau, Bahamas. Florida, Caribbean region. KENNARD, MORTON 1977; D87G, E29, N84

*Coccoloba floridana* - *Coccoloba diversifolia*

*Coccoloba uvifera* - *Sea grape* {S}. The fruits are reddish-purple or occasionally off-white, juicy and subacid. They may be eaten out of hand or used for juice, jams, jellies, drinks, soups and syrup. Sea grape jelly has an attractive musky flavor and a distinctive, light lavender color. A potent wine of good flavor can also be made from the fruits. Florida, Caribbean region, cultivated. CREASY 1982, KENNARD, MORTON 1977, POLVAY [Re], RICHARDSON, M. [Pre, Re], STURROCK; A79M, D87G{PL}, E29{PL}, F85, G5M{PD}, G73, G73{PL}, I12{PL}, L91M, N40M, N84, 053M, 093

*Echinocaulos perfoliatus* - *Gambet* {S}. The young leaves and stem tips, sometimes including the young fruits, are cooked with other greens and eaten as a side dish with rice. Also used as a sour flavoring for soups, stews and fish dishes. Eastern Asia. OCHSE; 174, N84

*Emex spinosa* - *Hameedh* {S}. Young leaves are consumed like spinach. The fleshy leaf petioles are also edible. Roots are eaten raw or cooked. Mediterranean region. GHAZANFAR, KUNKEL, MARTIN 1975; F85

*Eriogonum fasciculatum* - *California buckwheat*, *Wild buckwheat* {S}. The flowers are the source of a deep light amber, heavy bodied honey of good flavor and rapid granulation. Often marketed as *California sage honey*. They are also brewed into tea or added to breads. Southwestern North America. CRANE 1975, FARNSWORTH [Re], PELLETT; B54M{PD}, C9M, C43V, C95, E66M, F63M, G60{PL}, H71, 147, 198M{PL}, JO, K15, 053M, 093, Q24, etc.

*Fagopyrum cymosum* - *Perennial buckwheat*, *Shakuchiri-soba* {S}. The leaves are boiled or steamed and served like spinach. Seeds are also eaten or ground into flour. Central Asia. HEDRICK 1919, TANAKA, UDESKY, WATT; Q40

*Fagopyrum esculentum* - *Buckwheat, Soba* {S}. Hulled kernels, or *groats*, are used in breakfast cereals, *kasha*, miso, sausage, and *polenta taragna*. Buckwheat flour is made into pancakes, noodles, and breads or used for thickening soups and gravies. The most expensive and revered buckwheat flour is the pure white *sarashina* flour of Jhpan. Young seedlings, called *buckwheat lettuce*, are eaten in salads and are widely available in natural foods stores. Beer may be brewed from the grain, and by distillation it yields an excellent spirit. Source of a very dark brown honey with a strong, distinctive flavor. Buckwheat honey is used in France to make a gingerbread *pain d'epices*, in Northern Europe for making honey cakes, and by Jews for their honey wine. Leaves can be eaten in salads or used like spinach. Southwest Asia. BIANCHINI, BROUK, CRANE 1975, DORJE [Re], GRIEVE, KINSMAN, KULVINSKAS, LOGSDON 1977 [Cu, Pie], PELLETT, UDESKY [Nu, Re], UPHOF; A25, B49, C85M, D65, E60PIPD}, Fil, G6, G58{PD}, H34M{PD}, H54,18M{PD}, I66M{PD}, I94{PD}, J20, J25M, J97M, K71, L89, M84{PD}, R47, etc. (see also Sprouting Seeds, page 524)

#### CULTIVARS

**Japanese:** Large-seeded type from Japan. Can be used as either a grain crop or green manure crop. Will grow on any soil but prefers light, well-drained soils. For green manure, cut and incorporate into soil when plant is newly in flower. D68

**Kaneko:** 95 days. Japanese heirloom buckwheat esteemed for grinding into flour to make soba noodles. High yielding plant that grows to 3 feet tall. Should be planted after the last frost. L3J, L77D

**Mancan:** An improved type that yields a nutritious grain in 80 days. Medium-tall plant with medium-sized, dark green leaves and white flowers. Approximately 1 plant per 1,000 bears pink flowers. Blooms in 30 days. Yields average to above average crops. Developed by the Agriculture Canada Research Station in Morden, Manitoba. A2, A15Z, E24, G50

**Manor:** A relatively new, high-yielding cultivar developed in North Dakota. Yields approximately 1,000 pounds per acre. Recommended as a quick, vigorous crop after peas. Sow at the rate of 50 pounds per acre. A15Z, G50

**New Type:** A heavy cropper and less liable to blight than other sorts. The kernels are larger and the straw is stouter and heavier. G71

**Soankv:** An improved type that makes excellent flapjacks. Planted late to mature in the fall, less than one pound per 1,000 square feet. Ripens in 2 to 3 months. K49M

*Fagopyrum tataricum* - *Tatarian buckwheat, Duck wheat, Dattan-soba* {S}. Seeds are eaten or ground into a flour used in various foods. They also yield an edible oil. The leaves are used as a vegetable. Central Asia. FERNALD, HEDRICK 1919, KUNKEL, TANAKA, UDESKY, WATT; G26, G50, M34M, Nil, N84

#### CULTIVARS

**Madawaska Native:** (Madawaska Buckwheat) 30-45 days. More cold hardy and drought resistant than regular buckwheat but with smaller kernels. Shorter top growth. Local cultivar from the upper St. John Valley, Maine. A2, C95, F73D, L77D

**Oala:** Folk-race buckwheat from 9500 feet in the Kinnauri Himalayas, adjacent to Tibet. Strong, hardy flavor. Traditionally toasted and ground for porridge or thick chapatis. In Kinnaur, the grain is broadcast in small stone-walled terraces then flood irrigated. More cold and drought tolerant than common buckwheat. L3J

**Sarasin a Ploves:** Small-seeded buckwheat used for making traditional French Acadian pancakes or crepes, called *ployes de boquuite*. When ground, yields a very light, almost white flour instead of the normal gray, known as Acadian Light buckwheat flour or *boquuite*. At one time the ployes were raised with a type of sourdough starter, called *le vien*, now apparently extinct. B46M{OR}, B46M{PD}, I34M{PD}

*Gymnopodium antigonoides* - *Dzidzilche* {PD}. The flowers are the most important source of *Yucatan honey*, a light amber honey with a delicious flavor. Considered one of the world's most aromatic honeys. When used in baking, it permeates the air with an appealing aroma reminiscent of a summer garden full of flowers at dusk. Often used for *pain d'epices* in France and *torrone* in Italy. Mexico. CRANE 1975; I66M, M63M

*Oxyria digyna* - *Mountain sorrel* {S}. The fleshy, succulent leaves have a pleasing acid taste, and may be used raw in sandwiches and mixed salads, as a potherb with peppery cresses, or in thick soups and purees. Eskimos allow it to ferment into a "sauerkraut" that is stored for winter use. Northern and Alpine regions. ANGIER [Re], CLARKE [Cul], FERNALD, HARRINGTON, H., HEDRICK 1919, HELLER, MEDSGER; J93T, N61, N84

*Persicaria hydropiper* - *Smartweed, Water pepper, Yanagi-tade* {S}. Young leaves and stems are roasted and eaten as a vegetable, or made into an acid, peppery condiment. In Japan, the young seedlings are a common market product and are used to garnish many dishes. *Tade-su* is a mixture of the leaves, boiled rice, and vinegar. Eurasia. CREBB, TANAKA, YASHIRODA; D56M, F73D, M34M, N40M, N84

*Persicaria hydropiper* 'Fastigiatum' - *Hosoba-tade, Beni-tade, Water pepper* {S}. The small, wine-red cotyledons have a sharp, acrid flavor and are used as a condiment or as a garnish for traditional Japanese raw fish (*sashimi*), tempura and sushi. A slender-leaved, gourmet cultivar. LARKCOM 1991, TANAKA, TSUJI [Re], UPHOF, YASHIRODA; J82, N84, S70

*Persicaria vulgaris* - *Lady's thumb, Heartweed, Redleg, Haru-tade* {S}. Young shoots and leaves are eaten in salads, stir-fried, or cooked briefly in boiling water and served with butter or vinegar. Eurasia, naturalized in North America. CROWHURST 1972, LARKCOM 1984, MEDSGER, TANAKA; D47M, M34M, N71M, N84

*Polygonum aviculare* - *Knotgrass, Michi-yanagi* {S}. The seeds are eaten or ground into flour for use in pancakes, cookies, and *pinole*. Young leaves and plants are eaten as potherbs. Leaves are also used as a substitute for tea. Eurasia, naturalized in North America. FERNALD, KIRK, KUNKEL, TANAKA; F37T{PL}, J82, N71M, N84

*Polygonum bistorta* - *Bistort, Snakeweed, Pink plumes, Easter ledges* {S}. Young leaves and shoots are an excellent substitute for spinach. In Northern England, they are used in the preparation of a Lenten pudding called *Easter ledger* pudding or *Easter herb* pudding. Rhizomes are roasted, boiled, mixed with seal oil or added to stews. Northern temperate region. GRIEVE [Re], HEDRICK 1919, HELLER, LAUNERT, MABEY [Re]; A61, D92M, F68T, F80, J82, N71M, N84, O53M, Q24, R47, R53M{PL}, S55

*Polygonum bistortoides* - *American bistort* {S}. The young leaves have a pleasantly tart taste and can be used as a potherb. Starchy roots are eaten raw, boiled or baked, or added to soups and stews. North America. HARRINGTON, H., YANOVSKY; E67T{PL}, F88M

*Polygonum cuspidatum* - *Reynoutria japonica*

*Polygonum hydropiper* - *Persicaria hydropiper*

*Polygonum maximowiczii* - *Persicaria hydropiper*

*Polygonum multiflorum* - *Fo-ti, Ho shou wu* {PL}. The roots are used in Chinese tonic soups, wines and porridges. Also very popular with natural foods enthusiasts. Available in both raw and cured forms, the latter considered the most nourishing. Cured roots are prepared by cooking in black soybean broth for up to thirty two hours. Along with *Angelica sinensis*, one of the main ingredients of a popular and potent tonic known as *Shou Wu Chi*. Eastern Asia. BENSKY, FLAWS 1994, FLAWS 1995, LEUNG, TEE-GUARDEN; B21P{DF}, D40G, E14T{DF}, F37T, F37T{DF},

F68T, F86G{DF}, H94M, I39{DF}, I49M, 174, J82, K18M{DF}, L34{DF}, L90J, M82, N84{S}, etc.

*Polygonum odoratum* - *Rau ram*, *Vietnamese coriander*, *Dam kesom*{PL}. Young leaves have an aroma somewhat reminiscent of coriander and a hot, peppery, but refreshing flavor. They may be used in raw or cooked fish, meat, rice, or vegetable dishes. One of the ingredients of *du 'a can*, a pickled dish resembling sauerkraut. Only the young, green leaves are used as the older, redder leaves have too hot a flavor. Southeast Asia. BOND [Cul, Re], HEDRICK 1919, HUTSON 1987 [Cul], JACQUAT, KUEBEL [Cu], PAINTER [Re], ROUTHIER 1989, UPHOF; C43M, E7, E61, F35M, F93G, H94M, 757, J66, J82, K22, L90J, L94M, M15T, M82

*Polygonum perfoliatum* - *Echinocaulos perfoliatius*

*Polygonum persicaria* - \**Persicaria vulgaris*

*Polygonum sachalinense* - *Reynoutria sachalinensis*

*Polygonum viviparum* - *Alpine bistort*, *Serpent grass* {S}. The tuber-like rootstocks are sweet, nutty, and wholesome. They may be eaten raw or boiled, but are best roasted. Young leaves are eaten as a potherb. Circumpolar. FERNALD, HARRINGTON, H., KIRK; D92M, J93T, N84, O53M, Q24

*Reynoutria japonica* - *Japanese knotted* {S}. Young shoots are boiled or steamed and eaten like asparagus with butter or sauce, or chilled and served with salad dressing. They have a somewhat acid flavor and can be used like rhubarb in pies, fruit soups, aspic salads, Isweet sauces, jams, puddings, chutneys, or wines. Rhizomes are sometimes eaten. Eastern Asia, naturalized in North America. ANGIER, CROWHURST 1972 [Re], FERNALD, GIBBONS 1962 [Pre, Re]; B28 {PL}, F85, N84

*Reynoutria sachalinensis* - *Giant knotweed*, *Sachaline* {S}. Young shoots and tips are eaten raw in salads, parboiled and served like asparagus, or used in soups. "Rhubarb" sauce, made from the peeled young stems, is <f superior quality, with a hint of lemon-flavor. The fruit is eaten, or stored in fish oil for later use. Eastern Asia, naturalized in North America. FERNALD, KIRK, TANAKA; C95, H4{PL}, K38, M16{PL}, N84

*Rheum australe* - *Himalayan rhubarb* {S}. Leafstalks are eaten raw, cooked, preserved in salt, made into preserves, or dried and stored for future use. They are said to have an apple-like flavor. Young shoots that have been blanched as they emerge from the soil are white, crisp, and free from fiber. Himalayan region. HEDRICK 1919, TANAKA, WATT; A61, A61{PL}, C95, D92M, D95{PL}, E87{PL}, M7M{PL}, N84, Q24

*Rheum emodi* - *Rheum australe*

*Rheum officinale* - *Chinese rhubarb* {PL}. In Italy and China, the dried rhizomes are used for making tonic wines and other alcoholic beverages. Extracts of the roots are valued by the flavor industry in formulations for bitter tonics, carbonated beverages, syrups, liqueurs, candies, baked goods, etc. One of the ingredients of the famous Italian bitter marketed as *Fernet-Branca*. Eastern Asia. BREMNESS, BROWN, G., BURDOCK, LEUNG; M7M, L34{DF}

*Rheum palmatum* - *Chinese rhubarb* {S}. The leafstalks are sometimes eaten or made into wine and preserves. Mongolia. HEDRICK 1919, TANAKA; D56M, D92M, F68T, G6, J82, L66{PL}, L91M, M7M{PL}, N84

#### CULTIVARS

**Bowles Crimson:** Large, palmately lobed leaves, dark red when young. Flowers large, panicles deep red. N84

*Rheum rhabarbarum* - *Rhubarb* {S}. Leafstalks are pleasantly acid and are stewed or baked in the manner of a fruit and used in pies, cakes, tarts, puddings, sauces, jellies, jams, ice cream, etc. The juice strained from stewed rhubarb can add color and flavor to a fruit punch. Some connoisseurs claim that the juice pressed from

hardened old stalks yields a delicious wine rivalled only by champagne. The young inflorescences resemble cauliflower and may be deep fried, or boiled and served "au gratin" with cream sauce. Rhubarb juice powder is added to "green food" supplements for flavor and nutrition. Cultivated. BRYAN [Pre, Re], CARCIONE, GRIEVE, HALPIN [Cul], HILL, JOHNS [Re], VILMORIN [Cu]; C56G{PD} C95, D97{PD}, J19M{ED}, N84, Q24. (for cultivars see Rhubarb, page 507)

*Rheum ribes* - *Currant-fruited rhubarb*, *Ribes* {S}. The leafstalks and fresh stems are eaten raw or cooked. Larger petioles are made into pies and preserves and are said to have the flavor of currants. In eastern Turkey they have been considered a delicacy since the thirteenth century. Sold at local roadside markets during spring. Southwest Asia. HEDRICK 1919, OZTURK, PHILLIPS, ROOT 1980a; U63

*Rumex acetosa* - *Garden sorrel*, *Broad-leaved sorrel* {PL}. The pleasantly acid leaves are eaten raw in salads, as a potherb, pureed, or used in soups, omelettes, sauces, *pease porridge*, etc. In France, sorrel is put into ragouts and fricasees, and is the chief constituent of *soupe aux herbes*. They also stuff shad with puree of sorrel, whose oxalic acid softens, and somewhat dissolves the numerous bones. Flowers are eaten as a vegetable or used for garnishing. The juice of the leaves is used to curdle milk. Seeds can be ground and made into bread. Eurasia, cultivated. BRYAN [Cul, Re], CUSUMANO [Cul, Re], GRIEVE, GUNDA, HALPIN, LARKCOM 1984, LEGGATT [Re], MABEY, MORTON 1976, ROOT 1980a, SCHNEIDER 1986 [Cul, Re], VILMORIN [Cu]; C3{S}, C9, C43M, D3M{PR}, F44{S}, G6{S}, H15T{PD}, J85T{PR}, K22, K66{S}, L7M{S}, M46, N19M, N40{PR}

#### CULTIVARS {S}

**Belleville:** (De Belleville) Large, pale green leaves, 3 inches long, slightly blistered; petioles lightly tinged with red. A small French cultivar that is hardy, fast growing, and well-proven to be productive under almost any conditions. C53, E63D, G68, J37M{PL}

**Blonde de Lvon:** (Mammoth Lyon) Large, thick, broad leaves, much rounder than other types; somewhat blistered. Pale green color. Tender and mild flavor. More resistant to bolting than Belleville; often grown in warmer climates. Named after the city of Lyon, France. E7M, E63D, E81M, J82, J82{PL}, K49M, N84

**Larghe Foglie Bionde:** Large, pale green leaves. Delicious in salads, sauces or soups. Will last for 3 to 4 years before requiring division. May also be grown as an annual. Usually harvested by stripping off the outer leaves every 15 to 20 days. Q11M

**Low Oxalic Acid:** Large, thick medium-green leaves that easily snap off their succulent stems. A highly refined Dutch selection, bred for low oxalic acid content. The flavor is only slightly sour. L89

**Nobel:** A new improved cultivar of sorrel. Leaves are larger, broader and more succulent than other cultivars. Grows about 12 inches tall. J82, K57{PL}, N84

**Profusion:** Distinct type that does not go to seed. Produces large quantities of tender, fleshy leaves all season, long after standard cultivars turn tough and bitter. Introduced by Richters. J82

*Rumex acetosella* - *Sheep sorrel* {S}. The sour leaves are commonly chewed to quench the thirst. Small amounts of the tender leaves may also be used in purees, soups, mixed salads, drinks, sandwiches, pies, or as an unusual garnish and seasoning for seafood, rice, and potatoes. In the Carpathian Mountains, they have been employed for curdling ewe's milk in cheese manufacture. The roots are also said to be edible. Northern temperate region. CLARKE [Re], FERNALD, GIBBONS 1966a [Re], GUNDA, HARRINGTON, H., TANAKA; A2, A7{DF}, B49, C43M{PL}, E14T{DF}, F37T{PL}, F68T, F80, F85, F86G, F88M, J5M{PL}, J82, K22{PL}, M34M, N71M, N84, etc.

*Rumex alpinus* - *Alpine dock*, *Monk's rhubarb*, *Pyrenean sorrel* {PL}. Young heart-shaped leaves are eaten raw in salads or cooked

as a potherb. Also employed as a preservative of unsalted butter during summer months. Eurasia. BURR, MABEY, UPHOF, VILMORIN; R49

*Rumex arifolius* - *Maiden sorrel* {S}. The young leaves are eaten raw in salads, cooked as a potherb, or added to soups and omelettes. In Norway, they are eaten with milk or mixed with meal and baked. Europe. HEDRICK 1919, ROOT 1980a, VILMORIN; Y14M

*Rumex crispus* - *Curled dock*, *Yellow dock* {S}. The young, tender leaves, rich in vitamins A and C, are eaten raw in salads, cooked as a potherb, or added to soups. When cooked in a cream sauce, the protein in milk combines with the tannin in dock and removes the astringency that some people find objectionable. In Belarus, the leaves are often preserved by dry salting. The seeds are ground into a meal or flour that can be used in pancakes. It is said that meat cooks more quickly if boiled or cooked with dock. Eurasia, naturalized in North America. ANGIER, BOLOTNIKOVA, GIBBONS 1966b, HARRINGTON, H., LEYEL 1987b, MEDSGER; A2, C43M{PL}, C95, D40G, D47M, E5T, F37T{PL}, F68T, F85, F86G, J82, L3J, M34M, N84

*Rumex hymenosepalus* - *Canaigre* {S}. The crisp, tart leafstalks are excellent eaten in pies like rhubarb. The leaves are eaten, but are cooked in several changes of water to remove the bitter tannin. Seeds are sometimes used in mush. Southwestern North America. CLARKE [Re], KIRK, MEDSGER, UPHOF; F80, F85, 198M, L55J, N84

*Rumex montanus* -> *Rumex arifolius*

*Rumex obtusifolius* - *Broad-leaved dock*, *Bitter dock* {S}. The young leaves can be eaten as a potherb, pureed, or used in soups. When boiling the leaves, the water should be changed once or twice to take away the strong taste. Older leaves usually become bitter. Northern temperate region. FERNALD, MEDSGER; J82, N84

*Rumex patientia* - *Patience dock*, *Monk's rhubarb*, *Spinach dock* {S}. Leaves are boiled or steamed and eaten like spinach, added to soups, or made into a delicious puree. Their flavor is milder than that of garden sorrel. They should be harvested when young and tender and a fourth part of common sorrel mixed with them. It has the advantage of producing leaves earlier in the season than any other kind. Southern Europe, naturalized in North America. BURR [Cu], FERNALD, GRAY, P. [Re], LARKCOM 1984, MEDSGER, VILMORIN; C95, E63D, N84, 048

*Rumex sagittatus* - *Surengan*, *Soorengan* {S}. The sour leaves are cooked and eaten as a spinach. In Java, they are used as a substitute for tamarind in the preparation of savory stews. Indonesia. FOX, R, OCHSE; F85, N84, S28M

*Rumex sanguineus* - *Bloodwort*, *Red-veined dock* {S}. Young leaves are used as a substitute for spinach. Ornamental in appearance but with coarse-textured leaves. For use in salads, soften by blanching in boiling water for a few seconds. Northern temperate region. HEDRICK 1919, LARKCOM 1984; D92M, E48{PL}, E87{PL}, F35M{PL}» N84, 048, 053M

*Rumex scutatus* - *French sorrel*, *Buckler-leaved sorrel* {PL}. The leaves are extremely acid and are used primarily as a flavoring. They are preferred by many gourmets because they add more zest to mixed salads, sauces, and the much-esteemed cream of sorrel soup. Eurasia. GRAY, P. [Cu], GRIEVE, HALPIN, MORTON 1976, VILMORIN; E61, F37T, F35M, J82, L56, M82, N84{S}, }, P92, R32{S}, R49, R53M, R53M{S}, S55{S}

#### CULTXVARS

Silver Shield: Similar to regular French sorrel in growth and flavor, but the leaves are variegated with silver. E61, F35M

*Rumex vesicarius* - *Bladder dock*, *Chooka*, *Katta palak* {S}. The acid leaves are eaten raw or cooked. They are occasionally used for curdling milk. Cultivated as a vegetable in parts of Indonesia and occasionally sold in local markets. Macaronesia to Southwest Asia. BURKILL, GHAZANFAR, OCHSE, UPHOF; E83T

#### PONTERIACEAE

*Pontederia cordata* - *Pickrel-weed* {PL}. The seeds are eaten raw, boiled like rice, or dried and ground into flour for making bread. Raw seeds have a very acceptable nutty flavor and texture. When slightly parched in an oven they are said to be excellent. Young leaves are cooked as a potherb or chopped and added to tossed green salads, soups, and stews. North America, Tropical America. CROWHURST 1972, DUKE, FERNALD, GIBBONS 1979, MORTON 1977; C74, D75M, G26, G85, H4, J37M, M72, M73, M73M, N3M, Nil

#### PORTULACACEAE

*Anacampseros albissima* - {S}. Used in the preparation of a beer like beverage. Southern Africa. FOX, F.; G91M{PL}, 133, N84, 053M, Q41, R88

*Claytonia caroliniana* - *Broad-leaved spring beauty* {PL}. The tender leaves and stems, when steamed for a short time, make an excellent potherb. They are mild in flavor and are best mixed with stronger tasting greens like sheep sorrel or violets. Corms can be cooked and eaten like potatoes. Eastern North America. FERNALD, GIBBONS 1979, MEDSGER; C81M, N7T, N84

*Claytonia megarrhiza* - *Alpine spring beauty* {S}. Young leaves and flowering tops are eaten raw in salads or cooked as a potherb. They are succulent, juicy and mild in flavor. The long, thick, fleshy roots are peeled and then boiled or baked. Western North America. GIBBONS 1973, HARRINGTON, H.; H98{PL}, J93T, L13, N84

*Claytonia perfoliata*-*Montia perfoUata*

*Claytonia sibirica*-*Montia sibirica*

*Claytonia virginica* - *Spring beauty*, *Fairy spuds* {PL}. Starchy bulbs are eaten boiled, fried, mashed, in salads, soups, and stews, or cooked with peas like new potatoes. They are said to have somewhat the flavor of chestnuts. Young leaves and stems are eaten raw in salads or steamed and served as greens. Eastern North America. ANGIER, CROWHURST 1972, FERNALD, GIBBONS 1962, KINDSCHER, MEDSGER; BO, D75M, E33M, F51, H4, H49, J41M, K41, L55, L59P, M69M, N9M, N9M{S}

*Lewisia rediviva* - *Bitter-root* {PL}. The roots are peeled to remove the bitter rind, cut into pieces, boiled for about twenty minutes, and served with butter. During the cooking process the roots become soft and swollen and exude a pink, mucilaginous substance. Dried roots were sometimes stored for a year or two before eating, when they became less bitter. Flathead Indians mixed them with berries, added them to meat or bone marrow, used them to thicken gravies, or in more modern times, ate them with milk or cream and sugar. Western North America. GIBBONS 1979, HARRINGTON, H. [Pie], HART, KIRK, MEDSGER; A61, A61{S}, E24{S}, E67T, H98, I47{S}, 174, K47M{S}, K79, L13{S}, M35M, Q24{S}

*Montia perfoliata* - *Miner's lettuce*, *Winter purslane*, *Cuban spinach* {S}. The young, succulent leaves, stems, and flowers are excellent eaten in a tossed green salad or added to mesclun and other salad mixtures. Older leaves can be used as a potherb. For salads, they are often grown as seedling crops using the cut-and-come-again technique. North America, cultivated. ANGIER [Re], CLARKE, HARRINGTON, H., KIRK, LARKCOM 1984 [Cu], NIETHAMMER, VILMORIN; A2, B49, C53, F88M, G6, G59M, H73{PR}, 139,198M, J73, K49M, N84, 053M, R32, R47, R53M, S55, etc.

#### CULTIVARS

Emerald Green: Very bright dark-green leaves. Good, mild flavor. Very high leaf count per plant. One of the best types for specialty market gardeners because of its resistance to bruising. Grows somewhat prostrate like spinach. Developed by Tim Peters of Peters Seed & Research. 177, J9M

**Lanceleaf:** Long, narrow leaves with a golden-reddish tinge. Flowers have purplish markings. Selected from a native Willamette Valley Prairie stand by Frank Morton of Shoulder to Shoulder Farm. N7G

**Miner's Pick:** Large, fast-growing strain with a distinctive upright growth habit. Most flavorful during cool weather. Usually sown in early fall or very early in the spring. If sown at warmer times of the year the quality will be better cooked than raw. Developed by Tim Peters of Peters Seed & Research. J9M

*Montia sibirica* - *Siberian purslane* {S}. Leaves can be added raw to mixed salads or they can be cooked for a short time in a small amount of water and served as a green vegetable. North America to Eastern Asia. HEDRICK 1919, HELLER; A61, A61{PL}, F85, F88M, J6, L59P{PL}, 053M, Q24, R49{PL}

*Portulaca oleracea* - *Purslane, Pusley, Verdolaga* {S}. Succulent leaves and stems are eaten raw in salads, pickled, stir-fried, sauteed, added to capers or olives, or used in casseroles, stews, omelettes, sandwiches, fritters, etc. Their mucilaginous texture makes them a good substitute for okra in gumbo and other creole dishes. They are also notably rich in omega-3 fatty acids. In Middle Eastern countries, purslane is commonly added to the famous bread salad called *fattoush*. To preserve the plant for winter use put it into salt and dry white wine. The seeds are ground for use in gruels, cakes, breads, and pancakes. Sprouted seeds are eaten in salads. Ash of the burnt plant is used as a substitute for salt. Eurasia, cultivated. ANGIER [Re], CRIBB, FERNALD, FCK, F., GIBBONS 1962 [Re], HALPIN [Cu], HAMADY [Re], LAUNERT, MORTON 1977, VILMORIN [Cu]; B49, C85M, C95, F80, H73{PR}, L89, N40{PR}, N71M, 053M, Q41, R32, R47

#### CULTIVARS

**Golden:** (Goldgelber, Pourpier Dore) Large leaves and stalks with a pale green or yellowish cast that contrasts well with the red stems. Much more upright than regular green cultivated purslane. Milder in flavor, therefore more suitable for use in salads. When cooked, the leaves do not differ very much in color from those of the green purslane. VILMORIN; C53, D68, E63D, F80, G6, G68, 139, J9M, J20, J82, K49M, L89, N7G, N84, 053M, S55, etc.

**Golden Tall:** Improved type. Selected for the golden color of the stems and the greenish-gold color of the leaves. C95

**Green Garden:** Leaf shape and color similar to the wild form, but much larger. Very upright growing stems. Selected by Frank Morton of Shoulder to Shoulder Farm. N7G

**Jade Green:** 60 days. Improved type with an upright branching growth habit, said to resemble a jade plant, hence the name. J9M

*Portulacaria afra* - *Elephant grass* {PL}. The pleasantly acid leaves are sometimes used to give a tart flavor to a mixed salad. Southern Africa. FCK, F., TATE; AOM, B84, E48, G18, 157, L26, L90J

*Talinum crassifolium* - *Talinum triangulare*

*Talinum cuneifolium* - *Talinum portulacifolium*

*Talinum paniculatum* - *Caruru, Flameflower* {S}. The leaves and stems are blanched and used in green salads, cooked in soups, or eaten like purslane. Tropical America. HEDRICK 1919, VON REIS; D40G, D92M, E7M, F35M{PL}, F85, H4{PL}, N84, 053M, Q41, R88

*Talinum patens* -> *Talinum paniculatum*

*Talinum portulacifolium* - *Aby, Ndele, Muiki* {S}. Leaves are cultivated in some parts of Africa as a spinach. Tropical Africa, Tropical Asia. UPHOF; R88

*Talinum triangulare* - *Surinam purslane, Surinam spinach, Water leaf* {S}. Young leaves and tender stems, having a slightly sour taste, are chopped and added to salads, parboiled, steamed, sauteed, or used in egusi soup. When cooked they can be excessively soft and

mucilaginous, so overcooking should be avoided. Tropical America, naturalized in Florida. HAWKES [Cu], HERKLOTS, MARTIN 1975 [Cu], MORTON 1977, OOMEN, VAN EPENHUSEN; F85

#### PRIMULACEAE

*Lysimachia clethroides* - *Gooseneck loosestrife, Oka-tora-no-o* {PL}. Leaves are eaten as a vegetable or used as a condiment. Fruits and flowers are also said to be edible. Eastern Asia. KUNKEL, TANAKA, UPHOF; B9M, B28, B30, C2, C9, D95, E63M, H63, 177M, M98, N84{S}

*Lysimachia nummularia* - *Moneywort* {PL}. Leaves and flowers are occasionally used as a tea. Europe. UPHOF; C43M, E63M, G89M, 190M, M16, M65M, M73M, N84{S}

*Primula veris* - *Cowslip* {S}. Flowers are used in salads, preserves, pickles, as a garnish, or fermented into the liquor called cowslip wine. They were also made into a vinegar that was drunk with soda water rather than being used as a condiment. Leaves are eaten raw in salads or used as a substitute for tea. Northern temperate region. GRIEVE, LARKCOM 1984, LEGGATT [Re], MABEY, MACNICOL [Re], MICHAEL, UPHOF; B55M{DF}, E33, F80, G0{DF}, K53, L66{PL}, L91M, M77M{PL}, N7D{DF}, N71M, N84, 053M, R47

*Primula vulgaris* - *English primrose* {S}. The flowers are eaten raw in salads, as a cooked vegetable, or used in preserves, custards, tarts, or confections. Leaves are added to salads, eaten as a potherb, or mixed with other herbs as a stuffing for meat and poultry. Both leaves and flowers can be made into syrup or tea. Europe, cultivated. BRYAN [Re], GRIEVE, HEDRICK 1919, LEGGATT [Re], MACNICOL [Re]; E7M, E33, L66{PL}, L91M, N71M, N84, 053M, Q24

#### PROTEACEAE

*Banksia marginata* - *Australian honeysuckle* {S}. The flower is filled with a sweet nectar, which may be sucked directly or washed out with water to form a refreshing beverage. Australia. CRIBB, TANAKA; M7M{PL}, N79M, N84, 093, P5, P17M, Q32, R15M, R33M, R60, S92

*Banksia menziesii* - *Firewood banksia* {S}. Source of an extra light amber honey of mild flavor and excellent quality. May contain 10 to 12% sucrose, occasionally more. Western Australia. CRANE 1975; N79M, N84, 033, 093, P5, P17M, Q32, R15M, R33M, R60, S92

*Banksia prionotes* - *Orange banksia* {S}. The flowers yield an extra light amber honey of mild flavor and excellent quality. Western Australia. CRANE 1975; N79M, N84, 033, 093, P5, P17M, Q32, R15M, R33M, R60, S92

*Brabejum stellatifolium* - *Hottentot's almond* {S}. Seeds are steeped in water to remove the bitter, mildly poisonous principles, then boiled, roasted and used as a substitute for coffee. South Africa. FOX, E, HEDRICK 1919, MENNINGER; N84, S28M

*Dryandra sessilis* - *Parrotbush* {S}. The flowers yield a light to extra light amber honey with a characteristic flavor much appreciated by some. An important honey source in Western Australia. Australia. CRANE 1975; N79M, N84, 033, P5, Q32, R15M, R33M, S92

*Gevuina avellana* - *Chilean hazel, Avellam* {S}. The pleasant tasting nuts are eaten raw, having a flavor similar to the European hazelnut. In Chile, they are roasted and sold in small paper bags like peanuts. As a natural food, they contain 12.5% proteins, 49.5% oil, and 24.1% carbohydrates. Chile. MENNINGER, ROSEN-GARTEN, VALENZUELA; D95{PL}, N84

*Grevillea excelsior* - *Tall grevillea* {S}. The Aborigines of the Nullarbor Desert region of Western Australia prepare an alcoholic drink from the flowers by shaking the nectar into bowls of water,

and then letting the resulting liquid ferment for twenty four hours. Australia. CRANE 1975; 033, R33M

*Grevillea juncifolia* - *Tarrakirra* {S}. The blossoms may contain appreciable quantities of nectar which can be sipped directly, washed with water to make a sweet drink, or mixed with wattle gum to form a jelly-like dessert. Australia. CHERIKOFF, O'CONNELL; N84, R15M, R33M, S92

*Grevillea robusta* - *Silky oak* {S}. One of the richest sources of nectar, it produces masses of golden flowers, each one containing a drop of nectar in its deep throat. This can be sucked directly, shaken into a bowl, or washed out in a small quantity of water. Australia. In Northern Africa, the flowers are used as an adulterant of saffron. BOUQUET, CHERJKOFF, CRIBB; A79M, C9M, C92, F85, K38, L91M, N84, 053M, 094, P5, R15M, R33M

*Hakea eyreana* - *Untjiya* {S}. The flowers are rich in nectar, which may be sipped directly or washed out with water and made into a sweet drink. Australia. O'CONNELL; N84

*Hakea suberea* - *Untjiya* {S}. The flowers may yield considerable amounts of sweet nectar that can be sipped with a straw, or mixed with water to form a sweet beverage. Australia. O'CONNELL; N84, R15M, R33M, S92

*Hicksbeachia pinnatifida* - *Australian rosenut, Red bopple nut* {S}. Nuts are eaten, the flavor being rather agreeable, especially after roasting. The bright red husk of the nut resembles a rose hip, hence the name rosenut. In addition to bearing an edible nut, the tree has considerable ornamental value, with its large unusual leaves and bright fruit. Australia. CHERIKOFF, CRIBB, MENNINGER, THIES; N84, P17M, P38

*Knightia excelsa* - *Rewa-rewa, New Zealand honeysuckle* {S}. Source of a medium dark amber, heavy bodied honey with a rich, distinctive flavor and slow, coarse granulation. New Zealand. CRANE 1975, CRANE 1984; N84, 093

*Lambertia formosa* - *Honeyflower, Mountain devil* {S}. The flowers yield copious amounts of sweet nectar, however eating too much can cause headaches and other allergic reactions. Australia. CHERIKOFF, DONKIN; N79M, N84, P5, P17M, R15M, R33M

*Macadamia integrifolia* - *Macadamia nut* {S}. The sweet, delicious nuts are eaten raw, roasted, fried, coated with chocolate or carob, used in fancy pastries, candies, ice cream, nut butters, cookies, cakes, and pies. Macadamia nut oil, containing 80% monounsaturated fats and only 8% omega-6 fatty acids, can be used to add a subtle nutty flavor to salads and stir-fried or sauteed dishes. Sometimes called the smooth-shelled macadamia. Australia, cultivated. CRIBB, CUSUMANO [Cul, Re], JAYNES [Cu], MENNINGER, ROBINS [Cul, Re], ROSENGARTEN [Re]; A7{m}, A25G{PD}, A86{DF}, C9M, D56M, E29{PL}, F85, H7I, I60M{PD}, J65{PD}, L14G{ED}, L17{PD}, N84, 093, P17M, P38, etc. (for cultivars see Macadamia, page 417)

*Macadamia tetraphylla* - *Macadamia nut* {S}. Nuts are eaten raw, roasted and salted, fried in coconut oil, used in ice cream, nut butters, confectionery, bread, salads, sauces, cakes, biscuits, soups, and milk shakes. Kernels are generally higher in sugar content and lower in oil than those of *M. integrifolia*, and therefore sweeter. Sometimes called the rough-shelled macadamia, although there are intermediate forms. Australia, cultivated. HASTINGS [Re], JAYNES; F85, H12{DF}, N79M, N84, P17M, P38, Q32, Q49M, R33M. (for cultivars see Macadamia, page 417)

*Macadamia* x sp. (*M. integrifolia* x *M. tetraphylla*) - *Macadamia nut*. Natural and artificial hybrids. The nuts are eaten. In subtropical areas, these hybrids appear to be better producers of quality nutmeats than either of the two parent species, (for cultivars see Macadamia, page 417)

*Protea angolensis* - *Sugar bush* {S}. In Zimbabwe, the sweet tips of the young shoots are chewed by children. A traditional syrup is prepared from the nectar-rich flowers by simmering them in water

until the liquid is reduced and thickened. Southern Africa. TREDGOLD; N84, S28M

*Protea cynaroides* - *Boer honey-pot, King protea* {S}. The sweet nectar of the flowers is consumed directly. South Africa. SCHERY; A79M, E53M, F85, N84, 053M, 093, P5, Q32, R60, R88, S28M

#### *Protea mellifera* - *Protea repens*

*Protea repens* - *Honey flower, Sugar bush* {S}. The nectar of the flowers is consumed directly or made into a delicious syrup, known as *sukerbos stroop*. South Africa. FCK, F., UPHOF; A79M, E53M, N84, 053M, 093, P5, Q32, R60, S28M

*Telopea speciosissima* - *Waratah* {S}. The flowers produce copious quantities of nectar that may be sipped directly or used for making a sweet beverage. Australia. CRIBB, DONKIN; N79M, N84, 033, 053M, 093, P5, P17M, Q32, R15M, R33M, R60, S28M, S92

#### PSILOACEAE

##### *Psilotum nudum* - \* *Psilotum triquetrum*

*Psilotum triquetrum* - *Whiskfern, Moa* {PL}. The whole plant is made into a tea. Tropics. TANAKA; C7M, E48, M69

#### PTERIDACEAE

*Pteris ensiformis* - *Sword brake, Hoko-shida* {S}. In Indonesia, the young uncurling fronds are steamed and eaten as a side-dish with rice, mixed with other vegetables, or put in stews. Tropical Asia. OCHSE; M42{PL}, N84, 093

#### PUNICACEAE

*Punica granatum* - *Pomegranate* {S}. The refreshing, subacid fruits are eaten out of hand, or used in fruit salads, tossed salads, desserts, *muhammara*, etc. Pomegranate juice can be used in soups, sauces, jellies, ices, or made into a sweet syrup called *grenadine* that flavors drinks, ice cream, cakes, baked apples, *daiquiris*, etc. Pomegranate molasses or *dibs rumman* is widely used in Middle Eastern cuisine. The dried seeds, *anardana*, are used as a seasoning in dal, *chat masala*, *samosa* (fried pastries), stuffings, and chutneys. Boiled leaves are said to be eaten. Dried, soaked flowers are cooked with fish to reduce the odor. Eastern Mediterranean to Southwest Asia. BOWN, GHAZANFAR, JOHNS [Cul], MORTON 1987a, NORMAN, POPENOE, W. 1920 [Cu, Pro], SALLOUM, SCHNEIDER 1986 [Cul, Pe], TANAKA, UPHOF, VON WELANETZ, WOLFERT 1994a [Re]; A7{DF}, A7{PD}, D77M{PL}, E29{PL}, F80, K29M{ffi}, L15M{m}, L16{ED}, L50M{ED}, N84, 053M, P5, P17M, Q12, Q32, etc. (for cultivars see Pomegranate, page 492)

*Punica granatum* 'Nana' - *Dwarf pomegranate* {S}. Fruits are edible. The plant is a dense shrub to three feet tall, nearly evergreen in mild winters. Blooms when a foot tall or less. Flowers are orange-red, single, and are followed by small, red fruits. Excellent garden or container plant. Also good for bonsai. TANAKA; A79M, F85, G96{PL}, H4{PL}, I49M{PL}, J82{PL}, K22{PL}, N37M{PL}, 053M, P5, P17M, Q32

#### PYROLACEAE

*Chimaphila maculata* - *Spotted wintergreen* {PL}. Leaves are nibbled for their refreshing qualities. In Mexico, they are used as a catalyst in the manufacture of *tesguino*, an alcoholic beverage prepared by fermentation of germinated maize. North America, Mexico. FERNALD, STEINKRAUS; BO, F5I, K4I, L59P, M69M, N7T

*Chimaphila umbellata* - *Pipsissewa, Prince's pine* {S}. Leaves are nibbled, brewed into a tea, or used as an ingredient of *root beer*. An extract of the leaves is used to flavor candy and soft drinks. In Mexico, the Tepehuano use the herb in the preparation of *navaitai*, an alcoholic beverage made from sprouted maize. North America, Eastern Asia. CROWHURST 1972, FERNALD, GIBBONS 1979,

HALL [Re], KIRK, MORTON 1976, STEINKRAUS; D75M{PL}, F85,144,147, L55J, N84, 053M

#### RANUNCULACEAE

##### *Cimicifuga foetida*-*Cimicifuga simplex*

*Cimicifuga simplex* - *Samshina-shdma* {S}. Young leaves are boiled and eaten. The fragrant root is used as a spice. Eastern Asia. TANAKA, VON REIS; M92{PL}, N84

*Clematis apiifolia* - *Botinzuru* {S}. Young leaves are boiled and used as a vegetable. Roasted ones are used as a substitute for tea. Eastern Asia. TANAKA; N84

*Clematis maximowicziana* - *Sweet autumn clematis*, *Senin-sd* {PL}. Young leaves, after parboiling, are eaten boiled or stir-fried. Young buds are similarly used or pickled in vinegar. Flowers are also edible. Eastern Asia. TANAKA; B28, C9, D92M{S}, G89M, 191, K63G{S}, M77, N84{S}, Q24{S}, R78{S}

##### *Clematis paniculata* - \**Clematis maximowicziana*

*Clematis vitalba* - *Traveller's joy*, *Old man's beard* {S}. The young sprouts are eaten in parts of Europe. In the Val Colvera region of Friuli, Italy, they are added to *pistic*—a ritualistic spring dish containing up to fifty six different wild greens. Sometimes combined with hop shoots in frittatas. Eurasia. DE VITA [Re], PAOLETTI, UPHOF; A2, A61, A61{PL}, D92M, G66, K63G, N61, N71M, N84, 053M, 093, P5, P49, Q24, R78, S55, etc.

##### *Coptis groenlandica*-*Coptis trifolia*

*Coptis trifolia* - *Goldthread*, *Canker-root*, *Mitsuba-dren* {PL}. The plant is said to be eaten, or it can be mixed with sassafras-root bark and Irish moss, and brewed into a kind of herbal root beer. The goldthread contributes a bitter flavor and yellow color to the beverage. Northern Asia, North America. GIBBONS 1966b [Re], TANAKA; A51M, D75M, 144, J75

*Ranunculus bulbosus* - *Bulbous crowfoot* {S}. The young flowers are pickled. Bulbs are eaten after thorough boiling or drying. Caution is recommended as this plant has a strongly acrid juice that can cause blistering. Northern temperate region. FERNALD, GIBBONS 1979, KIRK; N71M, N84, 048

*Ranunculus ficaria* - *Pilewort Lesser celandine* {PL}. Young leaves are eaten raw in salads and sandwiches or cooked as a potherb. The bleached stems are cooked and eaten. Both the bulbils which form in the leaf axils and the roots can be cooked and served with meat. Flower buds make a good substitute for capers. Eurasia. LAUNERT [Re], UPHOF; J75, M77M, N84{S}

*Ranunculus polyanthemos* - *Diügingigegi* {PL}. In Turkey the aboveground parts are added to *herbal cheese*, a specialty of Van, Siirt and other East Anatolian provinces. They are first pickled in salt water to remove any toxins. Eurasia. OZQELIK, OZTURK; A61

*Ranunculus sceleratus* - *Cursed crowfoot* {S}. The leaves are occasionally boiled and eaten as a potherb, the cooking water being poured off beforehand. In Nepal, they are used for making *gundruk*, a fermented and dried green vegetable. Northern temperate region. FERNALD, HEDRICK 1919, LEYEL 1987b, MANANDHAR; N84

#### REHMANNIACEAE

*Rehmannia glutinosa* - *Di huang*, *Lo sok tei*, *Chinese foxglove* {DF}. Leaves and roots are occasionally eaten as vegetables. The roots are also used in Chinese tonic soups, often with chicken and pork, or dilute rice porridges known as *congee* or *jook*. Sometimes soaked in rice wine with cardamom and other spices. Available raw, dried, wine-cured, or steam-cured. One of the ingredients of *Emperor's Secret* classic herbal tea, *Mu #16* tea, and *Four Things Soup*. Eastern Asia. BENSKY, FLAWS 1995, LEUNG, TAN [Re], TANAKA, TEEGUARDEN, TIERRA; E2M, E14T, E60P{PD},

E66T{PD}, F37T, GO, G19P, G47B{PD}, G73, H36{PD}, K18M, K53{S}, K79{PL}, L21T, L34, M15M, M15M{ED}, N7D, etc.

#### RESEDACEAE

*Reseda odorata* - *Mignonette* {S}. The flowers are occasionally floated into a bowl of wine or added to ice cream. Mignonette flavored salt is used frequently in Turkish cooking, especially with veal and lamb dishes. North Africa, cultivated. BURKILL, MACNICOL, TOOMRE [Re]; C3, C43M, C43M{PL}, E7M, 139, J76, J76{PL}, K53, 053M, 089, S55

#### RHAMNACEAE

*Berchemia discolor* - *Munye*, *Brown ivory* {S}. Ripe fruits are sweetish and are eaten fresh, dried, as a jam or sweetmeat, or fermented into an alcoholic drink. The pulp is sometimes mixed with millet meal to form a cake which is baked or steamed. Tropical Africa to Arabia. FOX, E, TREDGOLD, UPHOF; N84, S28M

*Ceanothus americanus* - *New Jersey tea*, *Red root* {S}. The leaves are gathered while the plant is in full bloom, dried in the shade, and used as a tea substitute. It has an agreeable taste, somewhat resembling that of *Bohea tea*. Does not contain caffeine. North America. ANGIER, FERNALD, GIBBONS 1962, KINDSCHER, MARCIN; D95{PL}, E14T{DF}, GO{DF}, G47M, J40, J40{PL}, J41M{PL}, J42, J82, K18M{DF}, L34{DF}, M82{PL}, N84

*Ceanothus cuneatus* - *Wild lilac*, *Snowbrush* {S}. The leaves and flowers make excellent tea when steeped in boiling water for about five minutes. Western North America. KIRK; B94, D95{PL}, C9M, C43V, D95{PL}, G60{PL}, G66, 147, I98M, I98M{PL}, K15, N84, Q32

*Ceanothus ovatus* - *Smaller red-root* {S}. Young leaves and flowers are steeped in boiling water for about five minutes. The resulting liquid is yellowish in color and tastes similar to Oriental tea, but is considered milder and sweeter. North America. FERNALD, HARRINGTON, H.; J39M, J39M{PL}, J42, N84

*Ceanothus velutinus* - *Sticky laurel*, *Tobacco brush* {S}. The leaves can be used as a substitute for tea. Western North America. HARRINGTON, H.; B94, C43V, D95{PL}, D96, E15, E66M, F68T, G66, G66{PL}, 147, J26{PL}, N84

*Colubrina arborescens* - *Coffee colubrina* {PL}. Second in importance to the bark of *C. elliptica* in the preparation of the tonic beverage known as *mauby* or *mauf*. Florida, West Indies. D87G

*Colubrina elliptica* - *Mauby*, *Smooth snakebark*, *Nakedwood* {PL}. In Puerto Rico and the Virgin Islands, the bark is steeped in water to make a cooling, fermented drink called *mabi champan*, considered a good tonic. Sold by street vendors and at soft drink counters. The bark, a concentrate, and the bottled beverage are sold in West Indian neighborhoods of New York and other large cities. Florida, Caribbean region. CARIAS [Re], DEWITT 1993, MORTON 1977, ORTIZ 1973 [Re]; C4M{PD}, D87G

##### *Colubrina reclinata*-*Colubrina elliptica*

*Colubrina texensis* - *Hog plum*, *Coma* {PL}. Tart fruits are crushed in a mortar and steeped in water to make a cooling drink. Southwestern North America. LATORRE 1977b; H4

##### *Gouania domingensis* - \**Gouania lupuloides*

*Gouania lupuloides* - *Chewstick*, *Toothbrush tree* {S}. In Jamaica, the aromatic, bitter stems are chopped to produce a foam which is added to *ginger beer*, root beers, root tonics, and sodas to add flavor and body. Bundles of the sticks are available in local markets. Caribbean region. BENGHIAT [Re], MORION 1977, WALSH; Z25M

*Hovenia dulcis* - *Japanese raisin-tree*, *Kenpo-nashi*, *Kuai-tsao* {S}. The fleshy, thickened fruit-stalks, when dried, have the sweet flavor and texture of raisins and can be used similarly. In China, they are eaten to annul the effects of wine. A sweet extract of the seeds,

boughs, and young leaves was used as a substitute for honey. Eastern Asia. CHANG, K., UPHOF, WILSON, E.H.; D95{PL}, E7M, G17{PL}, G66,149M{PL}, 183M{PL}, J61M{PL}, K38, K67{PL}, M16{PL}, 053M, P38, R47

*Krugiodendron ferreum* - *Leadwood, Black ironwood* {PL}. Ripe fruits are black, juicy, and have a sweet, agreeable flavor. They are usually eaten raw. Florida, West Indies. MORTON 1977; D87G

*Paliurus spina-christii*-*Ziziphus spina-christii*

*Phyllogeiton discolor*-*Berberchia discolor*

*Reynosia latifolia* - \**Reynosia septentrionalis*

*Reynosia septentrionalis* - *Darling plum, Red ironwood* {PL}. Fruits are dark purple, thin-skinned, with very sweet, agreeable flesh said to resemble blueberries. They are eaten raw or cooked. Florida, West Indies. MEDSGER, MORTON 1977; D87G

*Rhamnus crocea* - *Red berry* {PL}. The fruits are eaten raw and are excellent mixed with meat. They impart a red color to the mixture, and it has been reported that they will temporarily tinge one's skin red, if eaten in quantity. Southwestern North America. HEDRICK 1919, KIRK; D95, G60,198M, 198M{S}

*Rhamnus prinoides* - *Mqppi buckthorn, Gesho, Woody hops* {S}. In Ethiopia, the stems are used as a substitute for hops in the preparation of *talla*, a home-processed beer with a smoky flavor and a tan to dark brown color, and *tej*, a yellow, sweet, effervescent honey wine or *mead*. The fermentation containers used for producing these beverages are smoke-seasoned by inverting them over smoldering gesho stems and olive wood. Roots and stems are used in tonic soups. Fruits are sometimes eaten. Drier Tropical Africa. FOX, E, GACHATHI, MESFIN [Re], STEINKRAUS, VON REIS; F85, H51{DF}, H51{ED}, N84, S28M

*Rhamnus purshianus* - *Cascara buckthorn* {S}. The fruits are sometimes eaten. An extract of the bark, with the bitterness removed, is a common flavoring for soft drinks, baked goods, and ice cream. North America. MORTON 1976; A2, B74{PL}, B94, D95{PL}, D96, F85, F88M, 147, N0{PL}, N84

*Sageretia theezans* - *Sweet plum, Kuro-ige* {PL}. The fruit is edible. Leaves are used as a tea substitute in Tonkin. They are often mixed with the leaves of *Cleistocalyx operculatus*. Tropical Asia. UPHOF; K22, N7J, N37M

*Ziziphus joazeiro* - *Joazeiro* {S}. Fruits are sometimes consumed by the natives. May have potential as a rootstock for other species because of its non-suckering habit. Brazil. UPHOF; X88M

*Ziziphus jujuba* - *Jujube, Chinese date, Tsao* {S}. The ripe fruits are eaten fresh, dried like dates, boiled with millet and rice, stewed, baked, pickled, glaceed, or used as a coffee substitute. They are also used in puddings, cakes, breads, jellies, soups, sweetmeats, etc. A popular Chinese confection known as *ma tsao* is made by scoring the fruits, then soaking them in honey or sugar syrup. In Korea, jujube flour is used in the preparation of *kochujang*, a fermented hot pepper-soybean paste that resembles miso. Cultivated. CHANG, W. [Re], COST 1988 [Cu], JOHNS, POPENOE, W. 1920 [Cu, Pro], STEINKRAUS, TANAKA; C9M, C27G{DF}, C27G{PD}, E29{PL}, G19M{PD}, G66, G92{DF}, H4{PL}, K63G, N84, 053M, P17M, Q32, Q46, R47, etc.

#### CULTIVARS {GR}

**Admiral WHkes:** Elongated fruit, about 2 inches in length. The very last cultivar to ripen in late fall. Not particularly sweet, but still much appreciated due to its availability so late in the season. One of the progeny plants from the plant collecting expedition of Admiral Wilkes to the South Seas around 1840. The original plant still exists on the Capitol grounds in Washington, D.C. H53M, H53M{SC}, I66T

**Ant Admire:** Medium-sized, narrow, elongated fruit with a very sweet flavor. Ripens in mid-season. Obtained from the Nanjing

Botanical Gardens in China where it seemed to attract ants, hence the name. Introduced into the United States by Roger Meyer. H53M, H53M{SC}

**Chico:** (GI 7-62) Medium-sized, round fruit with a somewhat flattened blossom end; resembles a crabapple in appearance; most smaller fruits are seedless. Flesh very crisp, with a slightly acid flavor that gives it a character all its own. Tree is more thorny than other cultivars; does not do well in cool, coastal areas. STEBBINS; H53M, H53M{SC}

**GA 866:** Elongated fruit, about 2 inches in length; ripens in mid-season. One of the seedling selections from the field trials at the Chico, California Research Station. Thousands of seeds were planted as a research project to popularize the jujube in the 1950's. GA 866 has turned out to be the sweetest cultivar from that project and can have a soluble sugar reading of 45% brix. H53M, H53M{SC}

**Honey Jar:** Marvelous, uniquely flavored jujube. Tiny, round fruit, only about 3/8 inch to 1 inch in size; smaller than all named cultivars. Extremely sweet both fresh and dried. Honey Jar is a well deserved name for this cultivar which originated in China. Introduced into the United States by Roger Meyer. H53M, H53M{SC}

**Lin:** Very uniform, elongated fruit, 2 inches or more in length; very small seeds. Excellent fresh or dried. Dried fruits are very chewy and more reminiscent of a true date than other varieties. Ripens early in the season. Hangs on the tree a long time after turning mahogany. H53M, H53M{SC}

**Lang:** (Meltiq) Very large, oblong to pear-shaped fruit; skin mahogany red; begins to ripen near the end of the ripening period for Li; must fully ripen to the mahogany red color before picking. Quality only good fresh, but excellent for drying. Tree very large, more upright than Li; bears profusely at an early age. Discovered in China by Frank N. Meyer. Introduced in 1924. BROOKS 1972; A63, A88M, C54, D37, G49, H4, H53M, H53M{SC}, I49M, I53M, I68,174,183M, J61M, N20, etc.

**Li:** Very large, round to ovoid fruit, up to 2 inches long; skin mahogany brown. Primarily for eating fresh, having excellent flavor and texture. Ripens in late August, and unlike the Lang, will ripen if picked at the yellow-green stage. Tree more branched and spreading than Lang; reaches a height of 15 to 20 feet after 20 years. Discovered in China by Frank N. Meyer. Introduced in 1924. BROOKS 1972; A41G, A63, A88M, B74, C54, D37, G49, H53M, H53M{SC}, I49M, I53M, I68,174,183M, J61M, N20, etc.

**Redlands 4:** Large, round fruit, somewhat similar to Li but fruit size, on average, tends to be much greater; excellent sweet flavor and crisp texture; ripens several weeks after Li. One of several selections obtained from the Chico collection, and planted at a homestead in Redlands, California. The original name has been lost. H53M, H53M{SC}

**Sherwood:** Large to very large fruit, 1 1/2 to 2 inches long or more; flesh of excellent quality, notably dense in texture; ripens extremely late. Will keep under refrigeration longer than any cultivar yet tested, up to 6 weeks. Tree with relatively small thorns, extremely productive. Originated near Shreveport, Louisiana. Introduced by J.S. Akin. H4, H53M, H53M{SC}, K67

**Shui Men:** Medium-sized, elongated fruit with a delicious flavor, a perfect balance of sweet and tart. Quality excellent, either fresh or dried. Ripens in midseason. Bears good crops. Originated in China. Brought into the United States in 1914 by Frank N. Meyer. Introduced in 1924. BROOKS 1972; H53M, H53M{SC}

**Silverhill:** (Silverhill Long, Tigertooth) Long, narrow fruit, 1 1/2 to 2 inches in length; skin reddish-brown; flesh dense and sweet, of very good flavor; ripens in midseason. Quality excellent either fresh or dried. Similar to Silverhill Round. Originated in Silverhill, Alabama. H53M, H53M{SC}



**Silverhill Round:** Plum shaped fruit, about 1 1/2 inches in diameter. When ripe it is a light mahogany color with a sweet, date-like white flesh. Very high sugar content in the hard-ripe stage; has the flavor of a prune when soft-ripe or shriveled. Ripens in September. G17

**So:** Round, medium-sized fruit; brownish-red skin; moderately sweet flesh. Tree very gnarled with a zigzag type growth habit; apparently a genetic dwarf. Originated in China. Introduced into the United States in 1914 by Frank N. Meyer. Never released, but has been used in research studies. BROOKS 1972; G17, H53M, H53M{SC}, K67

**Sugar Cane:** Small to medium-sized, oval fruit, about 1 inch long; very sweet and crunchy, unusually dense for a jujube; small seeds. Very thorny tree. Originated as a seedling on the property of Roger Meyer in Valley Center, California, near some sugar cane plants. H53M, H53M{SC}

**Yu:** Large, narrow, elongated fruit; tapered toward the blossom end; skin reddish-brown; flesh sweet, firm; keeping quality rather good. Tree tall; main branches with few side branches; leaves large. Originated in China. Introduced into the United States in 1913 by Frank N. Meyer. G17, H53M, H53M{SC}

*Ziziphus lotus* - *Lotus fruit* {S}. The small mealy fruits are occasionally eaten or made into bread and wine. Thought to be one of the trees that produced the lotus of the ancient *Lotus Eaters* or *Lotophagi* mentioned in Greek mythology. Northern Africa to Southwest Asia. BROUK, DARBY, HEDRICK 1919, UPHOF; Q15G

*Ziziphus mauritiana* - *Indian jujube*, *Ber*, *Dunks* {S}. The fruits are eaten fresh, dried like raisins, boiled with rice, pickled, or used in jellies, preserves, chutney, sauces, *murabba*, and beverages. In Venezuela, a jujube liqueur is made and sold as *crema de ponsigne*. Dried fruits are pounded and pressed into cakes, used as a floury meal, or mixed with salt and tamarind pulp to make a condiment. Young leaves are cooked and eaten in Indonesia. In Africa they are used in soups and couscous. Drier Africa to Southern Asia. DUKE, MARTIN 1975, MORTON 1987a [Cu, Pd], OMAWALE, PAREEK, SINGH, S., STURROCK, VON MAYDELL; A79M, E29{PL}, F85,174{PL}, M17{PL}, N84, P17M, Q12, Q18

*Ziziphus mucronata* - *Buffalo thorn*, *Cape thorn* {S}. The fruit is sweetish and mealy when ripe and is eaten fresh, dried, or made into bread, porridge, or a refreshing beverage. Roasted seeds are used as substitute for coffee. Drier Tropical Africa. FOX, F., HEDRICK 1919, TREGOLD; G66, K63G, M17{PL}, N84, 053M, 093, P17M, S28M

*Ziziphus sativa* *Ziziphus jujuba*

*Ziziphus spina-christii* - *Christ's thorn* {S}. Mealy fruits have a pleasant, subacid taste, somewhat resembling dried apples. They are eaten both fresh and dried. Northern Africa to Southwest Asia. HEDRICK 1919, UPHOF; A79M, D95{PL}, G66, H4{PL}, JO, K63G, N79M, N84, 053M, P17M, Q15G

*Ziziphus vulgaris* *Ziziphus jujuba*

#### RHIZOPHORACEAE

*Rhizophora mangle* - *American red mangrove* {PL}. Dried leaves make a most agreeable substitute for tea. Moderation is recommended due to its tannin content, or milk should be added to bind the tannin. The roots, starchy fruits, and the inner portion of the green sprout, or hypocotyl, have been used as emergency foods. Tropical American coasts, West Africa. DUKE, MORTON 1977, TANAKA; A79M{S}, D87G, F73, F85{S}, M69, N84{S}

#### ROSACEAE

*Acaena anserinifolia* - \**Acaena sanguisorbae*

*Acaena sanguisorbae* - *New Zealand bur*, *Bidi-bidi* {S}. The leaves are used as a substitute for tea. Australia, New Zealand. HEDRICK 1919; F85, N84, S43M

*Agrimonia eupatoria* - *Agrimony* {S}. Flowers, leaves, and stems are harvested when the plant is in bloom and brewed into a refreshing tea. Both the fresh and dried herb are used, and the tea can be consumed either hot or cold. Europe. GRIEVE, MACNICOL, MARCIN, PAINTER; C67M{PL}, E61, E61{PL}, F80, 139, K85{PL}, M82{PL}, N71M, 053M, R47, S55

#### CULTIVARS

**Sweet-Scented:** Hardy perennial to 3 feet with narrow pinnate leaves. Bright yellow five-petaled flowers in slender, dense spikes. The whole plant is sweet-scented and the flowers have a spicy, apricot-like fragrance. For this reason it is popular in France for making tea. E7M, N71M

**To pas:** Improved type from Bulgaria that has larger plants and flowers for a higher yield. Sturdy, upright plant, slow growing. Produces yellow flowers from June to August the second year after planting. G6, J82, N84

*Agrimonia odorata* - \**Agrimonia eupatoria*

*Agrimonia procera* - \**Agrimonia eupatoria*

*Alchemilla vulgaris* - \**Alchemilla xanthochlora*

*Alchemilla xanthochlora* - *Lady's mantle* {PL}. In Northern England, the leaves are mixed with those of *Polygonum bistorta* and *Persicaria vulgaris* in the preparation of a Lenten pudding called *Easter ledger* pudding or *Easter herb* pudding. Europe. MABEY; C67M, C81M, E30, E61, F35M, G96, J76, J82, K22, K85, N71M{S}, N84{S}

*Amelanchier alnifolia* - *Saskatoon*, *Western service berry* {PL}. The sweet, blueberry-like fruits are eaten fresh, dried like raisins, stewed, or used in jams, puddings, jellies, pancakes, muffins and pies. American Indians pounded the fruits into cakes which were dried for future use, and also employed the fruit in making *penmican*. Western North America. HARRINGTON, H., KINDSCHER, MEDSGER, SIMMONS 1972, TURNER 1979 [Re]; A16, A50, A91, C33, D45, D95, G5M{PD}, I47{S}, J25M, J25M{S}, K63G{S}, M35M, N84{S}

#### CULTIVARS {GR}

**Forestbura:** Large fruit, about 1/2 inch in diameter, produced on very tight clusters. Mild flavor. Originated in Forestburg, Alberta, Canada by the Beaverlodge Research Station. Introduced in 1963. BROOKS 1972; L27M

**Honeywood:** Large, dark-purple fruit with an excellent pleasant flavor; abundantly produced in heavy clusters, up to 15 berries in a cluster. Bushes grow to about 6 1/2 feet in height and will eventually develop into many-stemmed clumps. Bears at an early age. Selected from wild seedlings by A.J. Porter. Introduced by Honeywood Nursery in 1973. Very popular cultivar in Canada. RONALD; A65, B47, D95, F67, G54, H42, J89M, K64, L27M, N24M

**Martin:** Large-fruited selection developed by Dieter Martin of Langham, Saskatchewan. Excellent flavor. More uniform ripening of berries. Seedling of Thiessen, which it otherwise resembles. Currently being evaluated in a comprehensive cultivar trial. Introduced in 1990. BROOKS 1997; B47, H42, 146, N24M

**Northline:** Large, sweet, good quality fruits. Shrub to 5 feet high. Suckers rather freely. Selected near Beaverlodge, Alberta, Canada. Introduced in 1960 by J.A. Wallace. A65, G54, 174, K64

**Pembina:** Fruit is large, sweet, full-flavored; borne on long clusters. Bush upright, slightly spreading, grows 8 to 10 feet high; very vigorous and productive. Does not sucker freely. Developed by Beaverlodge Research Station, Beaverlodge, Alberta, Canada. Introduced in 1952. BROOKS 1972, RONALD; A65, B47, 174

**Regent:** Semi-dwarf shrub; height 4 to 6 feet, 4 foot spread. White flowers in late April followed by an abundant crop of purple-black fruits which ripen in early summer. Excellent for jams and jellies. Autumn foliage in shades of yellow and red. Selected both for berry production and ornament by J. Candrian, Regent, North Dakota. A74, B4, C9, D37, D65, D69, F43M, G4, H29M, I49M, 160, I77M, K64, L27M, L70, etc.

**Smoky:** Fruit large, round; flesh very sweet and juicy, full-flavored; fruit size 1/2 to 5/8 inch. Bush spreading, reaching 6 to 8 feet; reliable and very heavy bearing, single bushes have yielded 88 pounds of fruit in government research trials. Produces suckers freely. Leading commercial cultivar in Canada. Originated in Beaverlodge, Alberta, by W.T. Macoun, Canada Department of Agriculture. Introduced in 1956. BROOKS 1972; A65, B47, B74, F67, G54, G87, H85, K64, L79, N24M

**Success:** Fruits are up to 1/2 inch in diameter and are very good for eating out of hand. Bushy-shrub growing 6 1/2 to 8 feet high; suckers freely. Grown primarily in the eastern Great Plains states. Introduced by H.E. Van Deman of Kansas about 1878, and said to have been grown in Illinois from seeds obtained in Pennsylvania. A91{PL}, N24M

**Thiessen:** Very productive, with fruits up to 1/2 inch in diameter. Similar to Honeywood in most respects. Tree roundish in form. It differs in its mature height, and may reach 16 feet with age. Selected from wild seedlings and introduced in 1976 by George Krahn, Lakeshore Nurseries, Saskatoon, Saskatchewan. A65, B47, F16, F67, G54, I46, I74, K64, L27M, L79, N24M

**Timm:** Large, blueberry-shaped fruit; very sweet and flavorsome; ripens early. Medium-sized tree, produces fruit in its second year. Large showy clusters of white flowers. Ornamental fall colors of yellow, red and maroon. Introduced by the Plant Material Center, Bismark, North Dakota. A91{PL}

*Amelanchier arborea* - *Downy serviceberry* {PL}. The sweet fruits are eaten. North America. TURNER 1979; E33M, G6<5{S}, H4, K38{S}, K63G{S}, M77M, N84

*Amelanchier asiatica* - *Korean juneberry* {S}. The bluish-black berries are eaten, being of good quality. Eastern Asia. SIMMONS 1972, TANAKA; G66

*Amelanchier bartramiana* - *Bartram shadblow* {PL}. Fruits are oval or pear-shaped rather than round like most juneberries. They are sweet and juicy and can be added to muffin and pancake mixes and to fruit sauces. Also dried and stored for future use. North America. CROWHURST 1972, MEDSGER; 160

*Amelanchier canadensis* - *Juneberry, Serviceberry* {PL}. The sweet fruits are eaten out of hand and are also stewed, dried, preserved, added to pancakes and muffins, or made into pies, sauces, jams, jellies and cakes. Dried fruits are used like raisins or currants in puddings and muffins. When thoroughly cooked in puddings or pies, the seeds impart an almond-like flavor to the finished product. North America. ANGIER [Re], FERNALD, FREITUS [Re], GIBBONS 1962 [Re], MEDSGER, SIMMONS 1972; A50, B9M, B32, C9, C47, D65, G23, G66{S}, 14, I49G, K38{S}, K63G{S}, M69M, M92, 053M{S}, etc.

#### CULTIVARS {GR}

**Prince William:** Large, multi-stemmed shrub; height 10 feet, spreads to 6 feet; large white flowers; orange to red fall foliage color; fruits heavily. Fruit 3/8 inch to 1/2 inch in diameter; purplish-blue; of high quality. Selected at Madison, Wisconsin. Introduced by Tom Watson. K37M, L27M

*Amelanchier denticulata* - *Membrillo* {S}. The ripe fruits are eaten fresh and also make excellent jelly. Southwestern North America to Central America. WILLIAMS, L.; F85, H4{PL}

*Amelanchier x grandiflora* (A. canadensis x A. laevis) - *Apple serviceberry* {PL}. Natural hybrid. The sweet fruits are eaten fresh, dried, in pies and other desserts, canned, frozen, or made into wine.

North America. LOGSDON 1981; A74, A50, B32, C9, D37, G21M, G66{S}, H45M, 174, J61M, K38{S}, K63G{S}, K89

#### CULTIVARS {GR}

**Ballerina:** Large shrub or small trees, will reach 15 feet in height. Covered with large white flowers in spring, followed by a crop of red fruits which are very tasty. Named and described by H. J. van de Laar of Holland. H4, H49

**Cole's Select:** Large shrub or small tree with multiple stems; upright, spreading; height 20 to 25 feet; thicker, glossier foliage than others; pink buds and long, drooping clusters of large white flowers; brilliant orange-red fall color. Small, reddish-purple fruits. C9, H4, H44, I77M, K37M, K60, N37M

**Princess Diana:** Small, gracefully spreading tree; yellowish flower buds, opening to white; outstanding, brilliant red fall foliage, colors early and lasts until late in the season. Fruit 3/8 inch in diameter; purplish-blue; sweet. Selected at Elm Grove, Wisconsin. Introduced by Tom Watson. K37M, K77, L27M

*Amelanchier laevis* - *Allegheny shadblow* {PL}. The sweet, purplish-black fruits are eaten fresh, dried, or made into jams, sauces, and pies. Eastern North America. HENDRICKSON, LOGSDON 1981, YANOVSKY; A50, A74, C9, C47, D69, D95, G66{S}, 14, I60, I91, J39M, K37M, K38{S}, K63G{S}, K89, M92, N84{S}, etc.

#### *Amelanchier lamarkii* - \**Amelanchier x grandiflora*

*Amelanchier obovalis* - *Southern juneberry* {S}. The reddish-purple fruit is very good eaten out of hand or in pies, jellies, or blender drinks. Southeastern North America. BULLARD.

#### CULTIVARS {GR}

**Jennybelle:** (A.J.) Fruit reddish-purple when ripe, up to 1/2 inch in diameter; ripens from late May to mid-June; flavor sweet, even when fruit is red and not fully ripe. Small bush, seldom over 10 to 12 feet tall. Produces few suckers, making it easy to manage. Blooms late; comes into bearing at an early age; vigorous and productive. Resistant to drought, frost, and hot temperatures. D37, F43M, K67

*Amelanchier ovalis* - *European juneberry, Snowy mespilus* {S}. Berries are red at first, turn black with a purplish bloom when ripe, and are about the size of a black currant. Not particularly palatable but can be used for jam or wine making. Europe. SIMMONS 1972; G66, H4{PL}, N71M, N73{PL}, P49

*Amelanchier stolonifera* - *Quebec berry, Dwarf juneberry* {PL}. The sweet, juicy, purplish-black fruit is often used to make jelly. Eastern North America. HENDRICKSON, SIMMONS 1972; A50, D95, G89M, H90, J39M, K63G{S}, N37M

*Amelanchier utahensis* - *Utah serviceberry* {S}. Fruits are eaten raw, stewed, dried or used in pancakes, jams, jellies, and wine. Dried fruits are added to soups and stews. Western North America. KIRK; C43V, D95{PL}, E66M, G66, G89M{PL}, L55J, N84

#### *Amelanchier vulgaris* - *Amelanchier ovalis*

*Amygdalus besseriana* - *Dwarf almond, Russian almond* {PL}. Seeds are the source of an oil being similar but inferior to bitter almond oil. Also produces a bitter almond water. The fruit is eaten in Siberia. Used as a frost-resistant rootstock for A. communis. Eurasia. UPHOF, ZEVEN; A91, B15M, C33, D95, F67, G66, G66{S}, K38{S}, K63G{S}, K64, K89, M35M, NO, N84{S}

*Amygdalus bucharica* - *Bukhara almond* {S}. In breeding, this almond relative may form a source of sweet pits, of high oil content and of good kernel to shell ratio. Central Asia. ZEVEN; U7G

*Amygdalus communis* - *Almond* {S}. Seeds are eaten raw, salted, roasted, sprouted, or used in cakes, confectionery and pastry. They can also be blended with water to form almond milk, made into almond butter or pressed for their edible oil. Almond oil is mildly sweet and nutty, very low in saturated fats and goes well with salads

and vegetable dishes. The tender kernels of young almonds, picked before they mature, are a traditional delicacy in the Middle East. Almond paste is used in *macaroons*, *marzipan*, *amaretti*, etc. *Picada* is a mixture of almonds, chopped parsley, garlic and olive oil, essential in Catalan cuisine. On La Palma, in the Canary Islands, a local goat cheese is smoked over a fire of almond shells. Source of a smooth, caramel-colored honey with an excellent nutty flavor. Southwest Asia, cultivated. ANDREWS, C. 1988 [Re], CANUT, COLE, C. 1990 [He], CUSUMANO [Cu], GRAY, P. [Cu, Re], GRIEVE, JAYNES [Cu, Pro], MENNINGER, ROSENGARTEN [Re], UPHOF; A7{PD}, A25G{PD}, A52M{PD}, D81{PO}, D87D{PD}, E31{PD}, F32D{PD}, G29{PD}, G92{PD}, I19M{PD}, I66M{PD}, K63G, M15M{PD}, M63M{PD}, N54{PD}, N84, Q12, etc., (for cultivars see Almond, page 264)

*Amygdalus communis* 'Amara' - *Bitter almond* {S}. Kernels are the source of *bitter almond oil*, which is detoxified and used as a flavoring for *maraschino cherries*, ice cream, baked goods, extracts, *amaretto* liqueurs, and *orgeat*, a syrup used in beverages. Blanched, crushed kernels are added to peach, cherry, or apricot preserves. GRIEVE, MORTON 1976, VON WELANETZ; G66

*Amygdalus davidiana* - *David peach*, *Chinese wild peach* {S}. The kernels are used in China to flavor confectionery and some special dishes, but they contain prussic acid. Fruits are also edible. Used as a disease resistant, low-chill rootstock. China. BROOKS 1972, GESSERT, TANAKA; F91T{SC}, G66, K38, K63G, N73{PL}, N84, O53M, P38. (for cultivars see Peach, page 455 and Rootstocks, page 510)

#### *Amygdalus nana* -> *Amygdalus besseriana*

*Amygdalus persica* - *Peach*, *Tao* {S}. The fruit is eaten fresh, dried, canned, stuffed, candied, processed into jam and juice, in cakes, ice cream and pies, pickled, as peach butter, preserved in brandy, etc. Unripe, green fruits can be used for making jam. The kernels are one of the sources of *Chinese almonds*, and of *bitter almond oil* which is used as a commercial flavoring. *Noql-e-khastahi* is an Afghan snack made of sugar coated peach or apricot kernels. Flowers are eaten in salads, used as a garnish, or brewed into tea. When distilled, they furnish a white liquor, which imparts a flavor resembling the kernels of the fruit. An infusion of the leaves in white brandy, sweetened with barley sugar, is said to make a fine cordial, similar to *noyau*. *Southern Comfort* is Bourbon whiskey flavored with peaches. Peach wood has a sweet, fruity flavor and is used as a smoking wood, however it can lose its flavor shortly after being cut. Peaches are sometimes fed to pigs, to give a special flavor to ham. The leaves are used for making a yeast starter in bread baking. Eastern Asia, cultivated. BJORKMAN, BROWN, G, GRAY, P. [Cu], GRIEVE, LEUNG, LEYEL 1987a, MACNICOL [Re], RAY, C., SABERI, TANAKA, UPHOF, WEAVER 1993; B94M{PD}, E63K{PD}, G66, I23M{PD}, J3{PC}, K38, L55J, N71M, O53M, Q12. (for cultivars see Peach, page 455 and Rootstocks, page 510)

*Amygdalus persica* Compressa Group - *Flat peach*, *Ping-tzu-t'ao*. Fruits are eaten fresh or processed. TANAKA, UPHOF; (for cultivars see Peach, page 455)

*Amygdalus persica* Nucipersica Group - *Nectarine*, *Yu-Vao* {PD}. The fruits are eaten out of hand, dried, preserved, as a topping for ice cream and cake, canned, brandied, processed into jams, marmalades, pies, fruit leather, added to fruit salads, etc. The wood can be used like that of peach for smoking foods. CARCIONE, CREASY 1982, SIMMONS 1972 [Cu]; D81{PO}, I23M, J3, M63M{DF}. (for cultivars see Nectarine, page 433)

*Aphanes arvensis* - *Parsley piert* {S}. Young plants are pickled or eaten in salads. Europe. KUNKEL, MABEY; N84

*Armeniaca brigantina* - *Briangon apricot*, *Alpine plum* {S}. The kernels are the source of *huile des marmottes*, an oil used in France in lieu of olive oil. Fruits are occasionally eaten. Europe. HEDRICK 1919, TANAKA; Y89M

*Armeniaca x dasycarpa* - *Black apricot*, *Purple apricot*, *Susincocco* {GR}. The plum-like fruits are purple-black in color and have soft, juicy flesh that is subacid to acid. They are eaten fresh, and may also be used in marmalades. Probably a natural hybrid, *Armeniaca vulgaris* x *Prunus cerasifera*. Cultivated. SIMMONS 1972, ZEVEN.

#### CULTIVARS

**Tlor Tsiran:** Small, oval fruit; dark-purple; fuzzy, apricot-like skin; yellow-orange flesh, marbled with red, tender and juicy; flavor and quality very good. Self-fertile tree; very winter hardy; somewhat resistant to brown rot. Blooms slightly later than most apricots. Originated in the former Soviet Union. J61M

*Armeniaca mandshurica* - *Manchurian apricot* {PL}. The fruits are small, juicy, subacid to sweet, and can be eaten fresh, stewed, dried, or made into preserves. Northeastern Asia. TANAKA; A91, B15M, B73M, D76, E97, G66, G66{S}, H42, H85, I49G, 178, K63G{S}, K89, L27M, L70, N19, P49{S}, etc.

#### CULTIVARS {GR}

**Debbie's Gold:** Medium-sized, thin-skinned fruit; very firm, deep orange flesh; freestone. Excellent for canning. Ripens in early July. Excels as an early season apricot in staggered plantings. Self-fertile, but will produce better crops if used with a pollinator. Introduced by Aubin Nursery. A91

**Manchu:** Large, round-oblong fruit; skin burnt-orange with blush; flesh orange, slightly dry and acid; cooking quality good, only fair for dessert; ripens in early August. Tree large, vigorous, spreading; very hardy; self-fruitful, bears heavy crops regularly. Seedling of seed brought from northern Manchuria in 1924 by N.E. Hansen, South Dakota Agricultural Experiment Station. Introduced in 1936. ANDERSEN, BROOKS 1972; E97, F91T{SC}

**Scout:** Fruit medium to large; flat, oblong-cordate, pointed; skin golden bronze, slightly pubescent; flesh deep yellow, fine, tender; freestone; quality fair to good as dessert, good canned or for jam; season late July and early August. Tree tall, upright, rounded; moderately vigorous; hardy; productive. Originated in Morden, Manitoba, Canada. ANDERSEN, BROOKS 1972; A74, A91, B15M, H85, I49G{SC}, K64, L70, M35M{PL}

*Armeniaca mume* - *Ume*, *Japanese apricot*, *Mei-tze* {PL}. Fruits are eaten raw, candied, boiled, preserved in sugar, pickled in salt and dried, or made into a liqueur and *Chinese plum sauce*. The pulp is also used in the preparation of *ume-bishio*, a sour jam. Fruits preserved in salt and flavored with red Perilla are known as *umeboshi* or *salt plums* and are popular with those who follow a macrobiotic diet. They are placed in the center of rice balls to give a slightly sour and salty flavor. The fragrant vinegar obtained from the fruit is used for pickling ginger and in salad dressings. In China, the blossoms are used for scented tea. Young budlings are edible. Japan, cultivated. CUSUMANO [Cu, Re], HEDRICK 1919, LEE, G., SHURTLEFF 1975 [Re], TANAKA, UPHOF, USHIO [Nu, Re]; B96, C54, D95, E56{ED}, E66T{ffi}, E87, G66{S}, H91{PJ2}, K38{S}, K63G{S}, N37M, N84{S}, P49{S}

*Armeniaca mume* 'Microcarpa' - *Ko-ume* {PD}. The relatively small fruit is pickled like that of the type. It has its own special flavor, texture and effect. Pickled fruits, known as *ko-umeboshi* or *tiny salt plums*, are sprinkled with sugar and eaten as dessert. Cultivated. TANAKA; E56, H91

*Armeniaca vulgaris* - *Apricot* {S}. Fruits are eaten fresh, dried, stewed, candied, made into paste, juice and fruit leather, used in pastries, pies, cakes, jams, confectionery, preserved in brandy, pickled, etc. Unripe fruits can be used in compotes or bottled in syrup. Sour green apricots are used in pilafs in Uzbekistan. Sweet-kernel types, called *alpricots* or *apricot almonds*, are eaten raw, added to salads, or ground and made into jams, preserves, and other sweet dishes. In Central Asia, they are available both shelled and roasted in the shell after the pits have been soaked in brine, which causes the kernel's shell seam to split slightly in the manner of a pistachio. Blanched kernels, sometimes called *Chinese almonds*, are eaten raw, roasted, or made into the agar-agar based white *almond*

*jelly*, often served as *dim sum* or with fruit cocktail. Bitter apricot kernels are used in Saronno, Italy to produce *Amaretti di Saronno*, a macaroon cookie, and *Amaretto di Saronno*, a liqueur. Also the source of an edible oil. Apricot wood can be used as a fruity smoking wood, however it requires a greater level of expertise than some other types. Cultivated. BJORKMAN, COST 1988 [Cul], HERBST, S., JOHNS [Cul, Re], MARIANI 1991, PERRY 1993, TANAKA, UPHOF; D81{PO}, E47M{DF}, F32D{PD}, G40{PD}, G66, H19M{PD}, I23M{PD}, J66M{PD}, L34{PE}, L99{PD}, M15M{PD}, N84, Q12, Q46. (for cultivars see Apricot, page 287 and Rootstocks, page 510)

*Armeniaca vulgaris* 'Ansu' -*Anzu*, *Ansu apricot* {S}. The fruit is eaten like that of the type. Seed kernel oil is used as a substitute for olive oil. The leaves and buds can be eaten. TANAKA; E7M, G66, K38

*Armeniaca vulgaris* x *Amygdalus persica* - *Peachcot* {PL}. Artificial hybrid. Apricot x peach. Occasionally cultivated for its edible fruit. Large, yellow-skinned fruits; moderately firm flesh; good flavor which resembles a peach. Tree has the characteristics of the apricot parent. Ripens early to late June. A63, A88M, C54, L47  
CULTIVARS {GR}

**Bill's:** Medium-sized, juicy fruits; delicious peach-like flavor with the secondary sweetness of the apricot; ripens in June, 2 weeks earlier than either parent. Excellent for canning, drying or storing. Hardy to Zone 5. Developed by William Schildgen. A91

**Bill's Nectar:** Medium to large fruit, resembles a peach; sweet melting white flesh, blood red near the pit, very aromatic. Quality very good for canning, the skin not needing scalding to peel off. Hardy to about 16° F. Hybrid of a honey peach, Elberta peach, Belle of Georgia peach, apricot and nectarine. Developed by William Schildgen. A91

**Ora A:** (84-12) The earliest non-melting fleshed cultivar. Firm-fleshed fruit with good eating quality. Resembles an apricot. Lacks acid content and red color. Requires 350 hours of chilling. Potential export item. Developed in Australia. Q93

*Armeniaca vulgaris* x *Prunus besseyi* - *Cherry cot* {GR}. Artificial hybrids. Apricot x western sand cherry. Combines the late flowering habit and cold-hardiness of sand cherry with the fruit qualities of the apricot.

#### CULTIVARS

**Yuksa:** Western sand cherry x New Large apricot of Europe. Produces an abundance of flowers. Originated in Brookings, South Dakota by N.E. Hansen. Introduced in 1908. HANSEN; F91T{SC}, N24M

*Armeniaca vulgaris* x *Prunus* spp. - *Plumcot* {PL}. Artificial hybrids. Apricot x various plums. Occasionally cultivated for their edible fruit. UPHOF; A63, C54, I68, L47, Q93

#### CULTIVARS {GR}

**Apex:** Apricot x Japanese plum. Large, globular fruit; skin attractive deep pink or light crimson; flesh honey-yellow, firm, rich, aromatic, apricot-like; freestone; ripens about the middle of June. Tree stout, compact, upright growing. Originated in Santa Rosa, California by Luther Burbank. Introduced in 1911. T49M{SC}

**Bill's:** Attractive, pinkish-orange fruit with a thin skin. Flesh has a rich hue of gold and a unique sweet flavor. Ripens in early August. Self-fertile. Developed by William Schildgen. A91, A91{SC}

**Burbank:** Delicious fruit that resembles a plum more than an apricot. Burgundy-purple skin; golden yellow flesh; very small pit. Rescued from Luther Burbank's Garden in Santa Rosa, California. LI

**Dapple Dandv:** (Dapple Dandy Pluot) Medium-sized fruit; skin greenish yellow, dotted with red, turning maroon with yellow dapple when ripe; flesh red and creamy white, sweet and juicy, flavor very good; freestone; ripens in August, between Flavor Queen and Flavor King. Requires 400 to 500 hours of chilling. Pollinate with Flavor

Queen, Flavor Supreme or Santa Rosa plum. Developed by Floyd Zaiger. Sometimes marketed as *dinosaur egg*. A88M, J61M, N20

**Flavor Delight:** (Flavor Delight Aprium) Attractive, 2 inch fruit, resembles an apricot more than Parfait; distinctive flavor and texture, pleasant lingering aftertaste; ripens in early June. Vigorous, upright tree; partly self-fruitful but heaviest crops are produced if cross-pollinated by Royal or Tilton apricots. Requires 600 hours of chilling. Developed by Floyd Zaiger. A88M, C34, I49M, I83M, L33, N20

**Flavor King:** (Flavor King Pluot) Reddish-purple skin and crimson flesh; very rich, spicy sweet flavor and aroma with little or no acidity; ripens in mid-August. Naturally small tree. Requires 500 to 600 hours of chilling. Pollinate with Flavor Supreme or Santa Rosa and Late Santa Rosa plums. A88M, C34, J61M, LI, N20

**Flavor Queen:** (Flavor Queen Pluot) Plum-like yellow fruit with excellent eating qualities; sweet, juicy flesh with an apricot-like aftertaste; ripens in mid-July and can be harvested over a period of several weeks. Needs 500 to 600 hours of chilling. Pollinizer required. Developed by Floyd Zaiger. A88M, C34, E87, I49M, I68, I83M, LI, N20

**Flavor Rich:** (Flavor Rich Pluot) Large, dark-purple fruit; firm, yellow-orange flesh, very sweet; ripens in late August and early September, 2 to 3 weeks after Flavor King. Vigorous, upright tree; pollinate with Dapple Dandy and Flavor King, or Santa Rosa plum. Requires 800 hours of chilling. Developed by Floyd Zaiger. A88M, N20

**Flavor Supreme:** (Flavor Supreme Pluot) Small to medium-sized fruit, 2 1/2 inches in diameter, resembles Satsuma plum; sweet, flavorful red flesh, firm but juicy, resembles Elephant Heart plum; superior to any early plum; ripens in early June in central California. Vigorous, productive tree; needs 500 to 600 hours of chilling. Pollinizer required; pollinate with Flavor Delight or any Japanese plum. Developed by Floyd Zaiger. A88M, B74, E87, I49M, I68, I83M, J61M, LI, L33, N20

**Mesch Mesch Amrah:** Very dark red fruit with yellow flesh. Flavor raspberry-like, sweet to tart, variable from season to season. Thought to be a hybrid of the Japanese plum (*P. salicina*) and the Mesch Mesch or Musk apricot. Introduced into the United States from Tripoli, Libya. J61M

**Parfait:** (Plum Parfait) Medium-sized fruit, similar to an apricot with red-blushed skin over dark yellow. Flesh is dark yellow marbled with red near the pit, firm, similar to apricot. Very good to excellent flavor, slightly tart. Tree is semi-dwarf, height 10 to 12 feet, spreading; resembles a plum tree in form and is very ornamental. Bears lightly when young. A88M, D76, E97, N20

**Rutland:** Fruit the size of an ordinary apricot with a deep-purple velvety skin. Brilliant red flesh with a strong sub-acid flavor making it suitable for cooking, jellies, and jams. When fully ripe it is an excellent dessert fruit possessing an apricot-plum flavor. Developed by Luther Burbank. Introduced by George C. Roeding in 1907. WICKSON; T49M{SC}

**Spring Rubv:** Distinctive, purple-leaved plumcot. Furry, red-skinned fruit with orange flesh, of fair quality. Possibly a hybrid of apricot and *Prunus cerasifera* f. *purpurascens*. T49M{SC}

*Aronia arbutifolia* - *Red chokeberry* {PL}. Fruits are eaten raw, stewed, or made into jelly. The Indians used them for making *penmican*, a mixture of fresh fruit, dried meat and melted fat. North America. HEDRICK 1919, PETERSON, L., YANOVSKY; B9M, C38, D95, H8, I11M, K63G{S}, K89, M92, N71M{S}, N84{S}, P49{S}, R78{S}

*Aronia melanocarpa* - *Black chokeberry* {PL}. The raw berries have a good flavor but are very astringent, much like choke-cherries. Stewed with sugar or honey they make an acceptable fruit sauce, and are also processed into a very dark, thick, good-flavored jelly. They contain an abundance of pectin and can be added to pectin-deficient

fruits to make them jell. Improved types are used in Europe to produce a delicious tart-sweet juice comparable to cranberry juice. This is available in ethnic stores that carry Polish or Russian foods. North America. FERNALD, GIBBONS 1979; A61M{PD}, A91, D69, D95, G66, G66{S}, G89, G89M, H49, I49G, K38{S}, K63G{S}, K89, M69M, N71M{S}, N84{S}, R78{S}, etc.

## CULTIVARS {GR}

**Nero:** Shiny black fruit; weight about 1.2 grams, whereas fruit of wild specimens usually weigh about 0.6 grams; vitamin C content ranges from 15 to 30 mg. Bears fruit in clusters of 15, the yield per tree being twice that of wild specimens. Also selected for more flavorful fruit. The first commercially available cultivar. Developed in the former Soviet Union. F43M, 160,166T, J61M, L27M

**Viking:** Improved type with attractive; bluish-black fruit. Very good flavor makes it suitable for eating out of hand. Grows to 3 feet in height. Highly adaptable to soil conditions and exposure. Hardy to -40° F. Has attractive, intense crimson red fall foliage. E63, F43M, I49M, I49?, 160,166T, M92

*Aruncus dioicus* - *Goat's beard* {PL}. Young buds, leaves and stems are eaten as a potherb. Near the town of Pordenone in Western Friuli, Italy, the young shoots form an ingredient of *pistic*—a mixture of fifty six wild greens eaten as an early spring ritualistic dish. Eurasia, naturalized in North America. PAOLETTI, TANAKA; B28, B30, B51{S}, C9, C92, D24, E7M{S}, E33M, E91G{S}, H63, H70M, I11M, K63G{S}, M37M, M77, M98, etc.

*Cercocarpus ledifolius* - *Mountain mahogany* {S}. The scraped bark makes a flavorfull additive to a brew of mormon tea (*Ephedra* 'Spp.). In the Bishop area of California, three hundred year old logs of the dense, heavy wood are used for smoking hams, bacon and other meats, the mahogany wood contributing a unique, rich flavor and aroma. Western North America. KIRK; B94, C4, D95{PL}, E66M, F44M, G60{PL}, G66, G66{PL}, G89M{PL}, H45{PD}, I47, J25M, J25M{PL}, J26{PL}, L55J, N84, etc.

*Chaenomeles cathayensis* - *Cathay quince* {S}. The large, dull-green fruits are not as attractive as those of some *Chaenomeles* species but make an excellent jelly. They can also be stewed or preserved. China. JOHNS, TANAKA; D95{PL}, 053M

*Chaenomeles japonica* - *Dwarf Japanese quince*, *Maule's quince* {S}. Fruits are eaten raw, stewed, preserved in brine, baked, or made into jelly. The rich, aromatic juice, as tart as a lemon, is squeezed and used for culinary purposes. Japan, cultivated. HEDRICK 1919, TANAKA; B32{PL}, C9M, G66, H49{PL}, K38, K63G, L47{PL}, L91M, N71M, N84, 053M, R78

## CULTIVARS {GR}

**Blood Red:** Very small, fragrant, pear-shaped yellow fruits stained with red. Flavorful when eaten raw; very good for making jams and jellies. Tiiy, deep blood red flowers. Grows to 4 feet tall or more, spreading to 3 or 4 feet. E87

**Victory:** Large, attractive yellow fruit; highly aromatic; hangs on the plant until late October. Makes delicious syrup or preserves. Abundant scarlet-red flowers produced in spring, and also often in summer and fall. Ornamental as well as usefull. I66T

*Chaenomeles sinensis* - *Pseudocydonia sinensis*

*Chaenomeles speciosa* - *Japanese quince*, *Flowering quince* {S}. The fruits are cooked or parboiled, mashed after having the seeds removed, and then mixed with honey and ginger and made into a beverage. They can also be used for jellies, conserves, or for flavoring apple or other fruit pies. China. SIMMONS 1972 [Cu], TANAKA; G66, H4{PL}, K63G, N71M, N84, P49

## CULTIVARS {GR}

**Cameo:** Low, compact growth; height 3 to 5 feet; very few thorns. Attractive semi-double flowers of soft apricot-pink. Bears edible greenish-yellow fruits with an appealing lemon-like fragrance. Makes fine jelly, jam and preserves. Haidy to -20° F. A74, B9M, C9, C45M, D95, E87, H4, H29M, H78,174, J61M, L49, M92

**Jet Trail:** Yellow lemon-scented fruits that make g>od jelly. Low growing, compact shrub, only growing to about 3 feet tall. Covered with large fluffy white flowers in the spring. A74, B9M, D95, H4, H29M, H45M, 174, L47, M92

**Texas Scarlet:** Produces fragrant fruits, 3 inches in diameter, which are excellent for canning or making jellies. Small bush, 4 feet tall and 4 or more feet wide, covered with showy orange-red flowers in the spring. Haidy in USDA Zones 5 to 8. A74, B9M, C45M, D95, E87, F53M, H4, H29M, H44, H45M, H49, H78, H89M, H90, 174, J61M, L49, M92, etc.

**Tovo Nishiki:** Large fruits, sometimes as large as apples, with a very appealing aroma; ripen in late summer. Suitable for use as jelly. Produces attractive pink, red and white flowers, often on the same branch. Bushes can reach 6 feet in height and width. Hardy in USDA Zones 5 to 8. B96, D95, F43M, H4, H49,174, J61M, M92

*Chaenomeles speciosa* var. *cathayensis* -\* *Chaenomeles cathayensis*

*Cotoneaster nummularia* -\* *Cotoneaster racemiflora*

*Cotoneaster racemiflora* - *Black-wood* {S}. Source of *shir-kist* or *shir-khecht*, a whitish, sweet, manna-like substance used as food in India and Iran. It contains 13% saccharine and 37.5% dextrose. North Africa to Southern Asia. DONKIN, UPHOF; D95{PL}, F85, K38, N84, 093, Q40

*Cowania mexicana* - *Cliffrose*, *Quinine bush* {S}. A refreshing tea can be made by steeping the leaves in hot water for a few minutes. Western North America. KIRK; B94, C4, C43V, D95{PL}, E66M, F63M, G66, G89M{PL}, 147, J25M, J25M{PL}, L13, L55J, P5

*Cowania stansburiana* - *Cowania mexicana*

*X Crataegosorbus miczurinii* (*Crataegus sanguinea* x *Sorbus aucuparia*) - {S}. Artificial hybrid. Hawthorn x mountain ash. Fruits are occasionally eaten, containing up to 300% vitamin P. Developed in 1925 by I.V. Michurin. X33, Y29

## CULTIVARS {GR}

**Ivan's Belle:** Wine-red fruit, about the size of a pie cherry; pleasant sweet-tart flavor. High in Vitamins A and C. Good fresh or in preserves, pastry, juice and wine. Small spreading tree, 10 to 15 feet tall when mature; very attractive, glossy dark-green foliage and white flowers tinged with pink; very haidy. Ideal for edible landscaping. Developed by I.V. Michurin. E87, H49,146,149?, I66T, 174

*Crataegus aestivalis* - *Mayhaw* {PL}. Fruits are eaten raw, pickled, stewed or made into jellies, jams, marmalades, tarts, and preserves. Mayhaw jelly is much prized in some areas of the Southern United States. It has been reported that the juice will keep in the refrigerator for months and still be good for making jelly. Southeastern North America. FREITUS [Re], HEDRICK 1919, LOGSDON 1981, MEDSGER; A80M, D81P{PD}, D95, H4, H14M, H35{PB}, J61M{PD}, L56M{m}, N37M, P38{S}

## CULTIVARS {GR}

**Big Red:** Fruits are bright shiny-red, crabapple-shaped; the largest of any cultivar, with some up to 1 inch in diameter. Tree is a rank grower and it takes a couple of years before it begins to bear regularly. Discovered deep in the Pearl River swamps of southern Mississippi by T.O. Warren, Hattiesburg, Mississippi. A88M, C54, F43M, G17,174, K67

**Big Sandv #4:** Very large, dark-red fruit, about 3/4 inch in diameter. Makes an excellent jelly. Very disease resistant tree, growing to 20 feet tall; a very heavy producer. H4

**Big "V":** (No. 1 Big) Red fruits, about 3/4 inch in diameter. Tree bears heavily; grows with an attractive branching habit. Selected from seedlings growing in the Pearl River swamps of southern Mississippi, by T.O. Warren. Named after the shape of the tree. F43M

**Golden Farris:** Golden yellow fruits, average about 5/8 inch in diameter. Excellent for making a golden yellow jelly. A precocious and prolific bearer. G17,174

**Heavy:** Fruits are red in color, 1/2 to 3/4 inch in diameter. The heaviest-bearing of any cultivar. Young growth is willowy and twiggy, but matures nicely and stiffens with age. Originated in the Pearl River swamp. Discovered by T.O. Warren. C54, F43M, H4, J61M

**Royalty:** Large, bright red fruit, 7/8 inch to 1 inch in diameter; tough skin. Showy white flowers, 1 to 1 1/2 inches in diameter. Leaves turn red in the fall. Late blooming tendency makes it ideal for areas with warm spells in winter. Selected by Billy Craft of Louisiana. D37, F43M

**Super Berry:** (Texas Super Berry) Large fruits, as large as Big Red; attractive shellac-red in color. Ripe fruits hang on the tree for a very long time. Earliest blooming of any cultivar. Tree is ornamental both in bloom and with ripe fruit. Selected from seedlings growing in Buna, Texas, by T.O. Warren. A88M, C54, G17, H4,174, K67

**Super Sour:** Red fruit, about 3/4 inch in diameter. Spur-type tree has a large, thick, bearing top; has borne 86 commercial gallons of fruit (approximately 3.5 pounds per gallon). Selected from the wild by J.S. Akin of Sibley, Louisiana. A88M, B74, C54, G17, H4,174, K67

**Texas Star:** One of the best of the newer cultivars. Intense red berries, 7/8 inch to 1 inch in diameter. A late blooming type that produces fruit clusters with seven or more berries. Showy white blossoms and good fall leaf color. D37, F43M

**The Gem:** Large fruit with dark red flesh, ripens in the spring. Very late bloomer. Consistent producer of fruits that ripen uniformly for faster harvest. Selected by Billy Craft of Louisiana. D37

**Turkey Apple:** Very large reddish fruits, up to 1 inch in diameter. Unusual in that the fruits mature in the fall instead of spring. Very ornamental plant, grows into a large, upright bushy shrub or small tree. D37

**Warren's C. Qpaca:** Bears both orange and red fruits on the same tree. Excellent flavor. Attractive, shapely tree. Selected by T.O. Warren of Hattiesburg, Mississippi. Has performed well in trials at Hidden Springs Nursery. F43M, G17,174

*Crataegus azarolus* - *Azarole, Mediterranean medlar* {S}. The small, apple-like fruits are eaten raw, preserved, or used in jellies, jams, butters, and compotes. In warmer climates the ripe fruit has a fragrant and sugary pulp with a slightly acid flavor, and can be eaten out of hand. When grown in more northerly areas, it is more suited for processing into confectionery and jelly as it needs a fairly long after-ripening period. Yellow, red, and white-fruited forms are known. Mediterranean region, Southwest Asia. HEDRICK 1919, JOHNS, SIMMONS 1972 [Cu], UPHOF; C27T{SC}, F43M{PL}, G66, 174{PL}, J61M, K63G, N61, N84, 053M, 071M{PL}, Q15G, R78

*Crataegus crenulata* - \**Pyracantha crenulata*

*Crataegus douglasii* - *Black hawthorn* {PL}. The sweet, juicy fruits can be eaten fresh, used for jams, sauces, drinks and jellies, or dried and stored for future use. Western North America. KIRK, TURNER 1979 [He], YANOVSKY; A2{S}, B74, B94{S}, C5J, D95, E15{S}, G66{S}, I47{S}, J26, K75M, N84{S}

*Crataegus flava* - *Summer haw* {PL}. The yellowish, somewhat pear-shaped fruits are esteemed for making jellies. Southern North America. UPHOF; H14M, N37M

*Crataegus laevigata* - \**Crataegus oxyacantha*

*Crataegus marshalli* - *Parsley haw* {PL}. The fruits are eaten. Also used as a dwarfing rootstock for *C. aestivalis*. Southern North America. A80M, H4, H14M

*Crataegus mexicana* - *Crataegus pubescens*

*Crataegus monogyna* - *Maytree, One-seeded hawthorn* {S}. Young, tender leaves have a pleasant nutty taste, and are a good addition to a tossed salad. The young buds are used in *spring puddings*. The flowers are mixed with sugar and brandy and made into a liqueur, and are also used in syrups and sweet puddings. Fruits are eaten fresh or used for jellies and wines. Dried leaves are brewed into a tea. Europe, cultivated. LEGGATT, MABEY [Re], MACLENNAN, MICHAEL [Re]; G66, G66{PL}, I4{PL}, K38, K63G, N71M, N84, 093, P49, R78

*Crataegus opaca* - *Crataegus aestivalis*

*Crataegus oxyacantha* - *English hawthorn* {S}. The fruits are eaten raw or fermented into a kind of wine. Young leaves are used as a substitute for tea. The dried fruit pulp can be added to flour. Seeds are used as a coffee substitute. A liqueur is made by mixing the berries with brandy. Southern Europe, cultivated. GRIEVE, HEDRICK 1919, UPHOF; E7M, G66, H8{PL}, K38, K63G, N61, N71M, N84, 093, R78

*Crataegus pentagyna* -+ *Crataegus pinnatifida*

*Crataegus pinnatifida* - *Chinese haw, Shan-cha, Hung-kuo* {PL}. The tasty fruits are eaten raw, dried, stewed, candied, preserved or made into drinks, sweetmeats and a jelly known as *Shanch'akao*. Candied fruits are often strung on sticks and sold in local markets. Also available at Oriental markets in the West. Eastern Asia. LEE, G., SIMMONS 1972, TANAKA, UPHOF; D95, F43M, G66{S}, H36{DF}, H36{PD}, 160,174, N73

#### CULTIVARS {GR}

**Autumn Golden Star:** Large, bright reddish fruits, 1 1/4 to 1 1/2 inches in diameter. Golden Star refers to the golden, star-like lenticels on the surface of the fruit. Grows about 20 feet tall; hardy to Zone 5. Recently introduced into the United States from China. F43M

**Big Ball:** Large, bright reddish fruits, 1 1/4 to 1 1/2 inches in diameter. Grows about 20 feet tall; hardy to Zone 5. Recently introduced into the United States from China. F43M, H4

**Golden Star:** Large, bright reddish fruits, 1 1/4 to 1 1/2 inches in diameter. Golden Star refers to the golden, star-like lenticels on the surface of the fruit. Grows about 20 feet tall; hardy to Zone 5. Recently introduced into the United States from China. C27T{SC}

**Little Golden Star:** Large bright reddish fruits, 1 1/4 to 1 1/2 inches or more in diameter. Little Golden Star refers to the small, star-like lenticels on the surface of the fruit. Grows about 20 feet tall; hardy to Zone 5. Recently introduced into the United States from China. C27T{SC}, F43M

**Purple Jian:** Large bright reddish fruits, 1 1/4 to 1 1/2 inches in diameter. Grows about 20 feet tall; hardy to Zone 5. Recently introduced into the United States from China. F43M

*Crataegus pubescens* - *Manzanilla, Tejocote* {S}. The mealy fruits are eaten in the form of jellies, jams and preserves. For stewing, they are first boiled with wood-ashes to remove the skin, then boiled in hot syrup with red coloring for a short time and hung on nails stuck into poles, much like candied apples. Sometimes added to *ponche de posada*, a tequila-and-tropical-fruit-laced punch served during holiday fiestas. Also used for flavoring rum or carbonated drinks. Mexico. HUTSON 1995 [Re], LATORRE 1977a, POPENOE, W. 1920, QUINTANA 1994 [Re], SIMMONS 1972, WILLIAMS, L.; G66, N84, 093, P5, S97M{PL}

*Crataegus succulenta* - *Succulent hawthorn* {S}. The small, bright scarlet fruits have sweet, juicy flesh and are excellent for making jelly. Western Indians pressed the berries into cakes and

dried them for winter use. North America. TANAKA, TURNER 1979 [Re]; G66, K63G, N84

*Crataegus tanacetifolia* - *Syrian hawberry* {S}. The fruit is pale-green to yellow touched with red, and has an apple-like aroma and taste that is relished by the Armenians. Asia Minor. HEDRICK 1919, SIMMONS 1972; 053M

*Crataegus* sp. - *Blue hawthorn* {GR}. The dark-red, crabapple-like fruits are the size and color of a Bigg cherry. They can be pushed through a sieve to produce a fragrant puree resembling apple butter. Self-fertile tree. Discovered in the Willamette Valley of Oregon. J61M

*Cydonia japonica* -> *Chaenomeles japonica*

*Cydonia oblonga* - *Quince* {S}. Occasionally used fresh, the aromatic fruits are primarily eaten stewed, preserved with pears, stuffed, or made into pies, marmalades, jams, jellies, fruit leather, candy, and conserves. *Cotognata* and *codonyat* are famous quince pastes from Lecce, Italy and Catalonia, respectively. In Iraq, a drink is made by adding crushed dried seeds to water, simmering for five minutes, and then sweetening to taste. In Azerbaijan, the leaves serve as wrapping for *dolmas*. The flowers are edible. The seeds yield a gum used as a stabilizer for ice cream. Eurasia, cultivated. AKHMEDOV, BIANCHINI, BRYAN [Cu, Cul], GRAY, P. [Cul], HANNEMAN, JOHNS [Cul], MACNICOL, SCHNEIDER 1986 [Pre, Re], SIMMONS 1972, UPHOF, VON WELANETZ; B71G{PD}. G47J{PD}, G66, P49. (for cultivars see Quince, page 498 and Rootstocks, page 510)

*Cydonia sinensis* -> *Pseudocydonia sinensis*

*Dasiphora fruticosa* - \* *Potentilla fruticosa*

*Docynia delavayi* - *Tao-yi, King haw* {PL}. When ripe, the apple-like fruit is eaten. The fresh fruit is also used in ripening persimmons. Fruits of each are arranged in alternate layers in large jars and covered with rice husks, and in ten hours the persimmons are bleeted and fit for eating. China. ALTSCHUL, WILSON, E.H.; 174

*Docynia indica* - *Indian crab apple, Mehul* {PL}. The fruits are eaten raw or cooked. In Burma, the tree is used as a rootstock for apples. Himalayan region. TANAKA, WATT; 174

*Dryas octopetala* - *Mountain avens* {S}. Leaves are used as a substitute for tea, called *schweizertee* or *kaisertee* in the European Alps. Alpine and Arctic regions. UPHOF; E67T{PL}, K79{PL}, N84, 053M, PIO, Q24

*Eriobotrya japonica* - *Loquat, Japanese medlar* {PL}. The juicy, subacid, refreshing fruits are eaten raw, preserved, stewed, in compotes and fruit salads, dried, made into jelly, pies, sauces, drinks, etc. Loquat pie, if made from fruit which is not fully ripe, is said to have the flavor of cherry pie. Roasted seeds are used as a substitute for coffee. China, cultivated. JOHNS [Cul], MORTON 1987a[Cu], POPENOE, W. 1920 [Cu, Pro], RICHARDSON, M. [Re], SCHNEIDER 1986 [Cul, Re], TANAKA, UPHOF; A41G, A79M{S}, C9M{S}, E13G{PR}, E29, H4, I77G, N40{PR}, N84{S}, 053M{S}. (for cultivars see Loquat, page 417)

*Filipendula hexapetala* - *Filipendula vulgaris*

*Filipendula ulmaria* - *Meadowsweet, Queen-of-the-meadow* {S}. The fragrant flowers and leaves are used as a flavoring for herb beers, mead, claret wine, liqueurs, and stewed fruit. Flowers are also made into a syrup which can be used in cooling drinks and fruit salads, or as a topping for ice cream. Young leaves, flowers, and roots are brewed into tea, while the leaves are added to other herb teas as a sweetener. One of over thirty different herbs and spices included in *Norfolk Punch*, a non-alcoholic herbal beverage formulated by Monks of Norfolk, England. Eurasia. MABEY, MACNICOL [Re], MARCIN, MICHAEL [Re], MORTON 1976, PAINTER [Re]; D92M, F80, K2{£D}, K85{PL}, M77M{PL}, N71M, N84, 053M, S55

*Filipendula vulgaris* - *Dropwort* {PL}. Young leaves are used in soups and salads. The tubers have been roasted and eaten in times of food shortage. Eurasia. MABEY, MORTON 1976, UPHOF; B77, D92M{S}, D95, J37M, L22, M65M, N71M{S}, N84{S}, 053M{S}

*Fragaria americana* - *Fragaria vesca van americana*

*Fragaria ananassa* (E *chiloensis* x F. *virginiana*) - *Garden strawberry, Pineapple strawberry* {DF}. Artificial hybrid, much cultivated. Fruits are eaten out of hand, with cream and sugar, stewed, preserved, used in cakes, pies, ice cream, pastries, made into jam and jelly, fermented into wine, etc. *Stemberries*, large strawberries on long stems, are often dipped in chocolate and eaten. CARCIONE, JOHNS [Cul, Re], TANAKA, UPHOF, VILMORIN [Cu]; C29, E97P, H73. (for cultivars see Strawberry, page 544)

*Fragaria californica* - *California strawberry* {PL}. The sweet, aromatic fruits are eaten fresh, dried or preserved. Fresh or dried leaves are used to brew an excellent tea. Western North America. CLARKE, GIBBONS 1962, MEDSGER, YANOVSKY; B92, D95, I98M

*Fragaria chiloensis* - *Beach strawberry* {PL}. The large, delicately flavored fruits are eaten raw, stewed, or used in cakes and jams. Leaves can be used for tea. Coastal North and South America. GIBBONS 1979, HEDRICK 1919, HELLER, POPENOE, W. 1924, WICKSON; E63M, G60, I8, I98M, L90M, N84

*Fragaria collina* - \* *Fragaria viridis*

*Fragaria moschata* - *Musk strawberry, Hautbois strawberry* {PL}. The fruit is eaten fresh as a dessert. It is deep violet-red or wine-colored, with white or faintly yellow, or occasionally, somewhat greenish flesh, and with a very strong musky flavor which is something like that of raspberries, or of black currants. Eurasia, cultivated. HEDRICK 1919, SIMMONS 1978, UPHOF, VILMORIN [Cu]; J29, R49

#### CULTIVARS

**Caoron:** Small, deep red fruit; flavor very good, aromatic, distinctively musky. Medium-sized, moderately vigorous plant; somewhat unproductive due to pollination difficulties. Probably the Le Chapiro cultivar, first named in 1576 and the Capron mentioned by Louis XIV's gardener, Quintyne. REICH; J61M

**Profumata di Tortona:** Small, deep red fruit, larger than Capron; flavor very good, aromatic, distinctively musky. More vigorous and productive than Capron. Plant with Capron for better pollination. Cultivated commercially near Tortona, Italy as recently as the middle of this century. REICH; J61M

*Fragaria ovalis* - *Rocky Mountain strawberry* {S}. The fruit is eaten fresh, dried, in shortcakes, made into preserves and jams, or used as a flavoring for other preparations. Dried leaves are used for tea. In breeding, it is hybridized with F. x *ananassa* to convey winter-hardiness, and also for producing everbearing or day-neutral cultivars. Western North America. BROOKS 1972, HARRINGTON, H., ZEVEN; X33. (for cultivars see Strawberry, page 544)

*Fragaria vesca* - *Wood strawberry, Fraise des bois* {S}. Fruits are eaten fresh with cream, coated with chocolate, as a filling for tarts or made into jam. Young leaves are eaten in salads, and are also parboiled and added to soups. Fresh or dried leaves are used for tea. Northern temperate region, cultivated. KRAFT [Cul, Re], MABEY, MARCIN, MICHAEL [Re], TANAKA; E9{PD}, E61{PL}, F88M, G68{PL}, G89M, I83M{PL}, J82, N71M, N84, 053M, Q24, R53M, R53M{PL}, S55

#### CULTIVARS {PL}

**Alba:** (White) A form with white berries. N9M, N84{S}, Q24{S}

**Variegated:** (Sow-Teat Strawberry) Deep green leaves, margined with white; white flowers; small, sweet pale-red fruit. D95, G96, H4, H51M, M82, N84

*Fragaria vesca* var. *americana* - *American wood strawberry* {PL}. The small, light red or pink fruit is eaten fresh, dried or

preserved. Leaves are used as a substitute for tea. North America. TANAKA, YANOVSKY; *G89M*

#### CULTIVARS

**Frost King:** Small, spoggy, white fruit, mostly bland in flavor. Plant small in size, moderately vigorous; susceptible to leaf spot; suffers from excessive runner production and low yields. U13

**Snow Kina:** Medium-sized, nearly round fruit; skin and flesh white; flesh very sweet with a wild strawberry flavor. Not attractive to birds due to the color. Mostly a novelty. Originated in Allegan County, Michigan by Burgess Seed & Plant Co. Introduced in 1922. BROOKS 1972; U13

*Fragaria vesca* <sup>4</sup> *Semper florens* - *Alpine strawberry* {PL}. The fruits are eaten fresh, dried, with sugar and cream, made into jam, mixed with cream for cake fillings, or served with cream cheese. They are also floated in wines and herb punches, such as *Maibowle*. FELL 1982b, HENDRICKSON, PAINTER [Re], SIMMONS 1972 [Cu], VILMORIN [Cu]; B92, J76, K2, K2{S}, K22, L56, N19M, N84{S}. (for cultivars see Strawberry, page 544)

*Fragaria virginiana* - *Scarlet strawberry*, *Virginia strawberry* {PL}. Fruits are eaten fresh, preserved, rolled in crepes and pancakes, dried, as a filling for open-faced French tarts, or made into jams and jellies. The leaves make a very pleasant tea. North America. CROWHURST 1972, FERNALD, MEDSGER, TURNER 1979 [Re]; C81M, D37, E33M, F88M{S}, G89, J39M, J42, J43{S}, M16, N9M, N9M{S}, N37M

#### CULTIVARS

**Christina White:** Unique white-fruited form with fruits that are larger and sweeter than the common Virginia strawberry. Plants run freely. Discovered by Bill Russell of College Park, Pennsylvania. D37

*Fragaria viridis* - *Green strawberry*, *Hill strawberry* {PL}. The edible fruits are greenish tinged with red, and have a rich, musky, pineapple-like flavor. They more closely resemble the hautbois strawberry than any other kind. Europe. HEDRICK 1919, TANAKA, VILMORIN; R49

*Geum canadense* - *White avens* {S}. Boiled roots are used as a substitute for chocolate. North America. MORTON 1963; B61M, D47M, N84

*Geum ciliatum* - \* *Geum triflorum*

*Geum rivale* - *Purple avens*, *Water avens*, *Chocolate root* {S}. The fresh or dried reddish-purple rootstock can be used to make a chocolate-like beverage. It is also employed as a flavoring for ale, wine and other liquors. North America. FERNALD, GIBBONS 1979, HARRINGTON, H., HEDRICK 1919, MEDSGER; A51M{PL}, B77{PL}, E61{PL}, F85, H21, M16{PL}, N71M, N84, 053M, Q24, S55

*Geum triflorum* - *Prairie smoke* {S}. A decoction of the roots can be used as tea. Western North America. KIRK, YANOVSKY; D95{PL}, G89{PL}, 147, J39M, J39M{PL}, J40, J41M{PL}, J42, J42{PL}, J43, Q24

*Geum urbanum* - *Clove root*, *Herb bennet* {S}. The rhizome has the scent of cloves, with a trace of cinnamon and is used as a spice in soups and broths, sauces, mulled cider, apple pie, and stewed fruit. It is combined with orange peel and put into wine. *Augsburg ale* is said to owe its peculiar flavor to the addition of a small bag of clove root in each cask. Northern temperate region. GRIEVE, HEDRICK 1919, MABEY, MICHAEL [Re], PAINTER [Pre, Re], ROOT 1980b [Cu, Cul], UPHOF; A2, E61{PL}, F85, J82, N71M, N84, 053M, Q24, R53M, S55

*Heteromeles arbutifolia* - \* *Photinia arbutifolia*

*Holodiscus discolor* - *Ocean spray* {S}. The small, dry fruits are eaten raw or cooked. Western North America. KIRK; A2, D95{PL}, E15, G59M, G60{PL}, G66, 147, J26{PL}, K75, N71M, N84, P49, R78

*Laurocerasus ilicifolia* - *Islay*, *Holly-leaved cherry* {S}. The reddish-yellow fruit is eaten fresh, dried, made into a beverage, or mixed with lemon and sugar to form a sauce. Seed kernels are ground into meal, and after leaching are used in breads, soups and *atole*. Southwestern North America. CLARKE, KIRK [Pre], MEDSGER, YANOVSKY; B94, C9M, D95{PL}, G60{PL}, H71, I8, 174{PL}, I98M{PL}

*Laurocerasus lyonii* - *Catalina Island cherry* {S}. Fruits are maroon to black in color, with tough, leathery skin and a very large stone. They can be eaten fresh and are usually of finer flavor than those of *L. ilicifolia*, some types being comparable to a good sweet cherry cultivar. Southwestern North America. THOMSON 1977; A41G{PL}, B94, C9M, D95{PL}, G60{PL}, G66, H4{PL}, H71, I8, 174{PL}, I98M{PL}

*Laurocerasus officinalis* - *Cherry laurel* {S}. Small amounts of the almond-flavored water distilled from the leaves have been used for flavoring puddings, creams, sweetmeats, and custards. Poisonous in large quantities. Eastern Mediterranean region. GRIEVE, HEDRICK 1919, UPHOF; B94, C9{PL}, D95{PL}, G66, K63G, N37M{PL}, N84, 053M, P49, R78

*Malus angustifolia* - *Southern crab* {PL}. The hard, sour fruits are often used for preserves, pickles, cider, sauces, and jellies. Eastern North America. HEDRICK 1919, MEDSGER, UPHOF; B32, G66, H4, H14M, M77M, N37M

*Malus baccata* - *Siberian crab* {PL}. The brilliant red cherry-like fruit makes excellent jelly, and can also be eaten fresh, dried, stewed or preserved. *Verjuice*, a very tart vinegar made from crab apples, is used widely in European cooking. Also used as a cold-hardy rootstock for *M. pumila*. Eastern Asia, cultivated. MASEFIELD, PROULX, TANAKA, UPHOF, ZEVEN; B32, B53, D95, G66, G66{S}, I47{S}, J26, K38{S}, K63G{S}, N84{S}, P49{S}. (for cultivars see Apple, page 267)

*Malus communis* - \* *Malus sylvestris*

*Malus coronaria* - *Garland crab* {S}. Fruits are hard and sour but are frequently used for making pickles, marmalades, and vinegar. The early settlers collected the crab apples in autumn and buried them until spring when they had lost much of their acidity, and were then made into cider, jelly, or preserves. Eastern North America, cultivated. FERNALD, HEDRICK 1919, MEDSGER, UPHOF; D95{PL}, G66, 159J{PL}, I60{PL}, J43, K63G, N84

*Malus domestica* - *Malus pumila*

*Malus fusca* - *Oregon crab*, *Western crab* {S}. The fruit is eaten raw or made into jelly, pies, preserves, and applesauce. The residual pulp that remains after making jelly can be sieved, pureed and fermented into cider or it can be added to breads, cakes, and cookies. Also a good source of pectin for jellymaking. Western North America. HELLER, KIRK, TANAKA, TURNER 1979 [Re]; A2, B74{PL}, B94, D95{PL}, F88M

*Malus hupehensis* - *Tea crab*, *Chinese crab* {S}. In China, the leaves are used for making a palatable, thirst-quenching tea. Much is exported from Shasi. The sour fruit is eaten. Central to Eastern Asia. ALTSCHUL, TANAKA, UPHOF; B9M{PL}, C9M, D95{PL}, G66, H8{PL}, I61M{SC}, K38, K63G, N84, P5

*Malus ioensis* - *Prairie crab*, *Iowa crab* {S}. The fruit is eaten raw or made into jelly, preserves, and pickles. American Indians used them for preparing fried crabapples and hot coal-roasted crabapples. North America. FREITUS [Rj], YANOVSKY; G66, G66{PL}, H44{PL}, K89

*Malus x micromalus* (*M. baccata* x *M. spectabilis*) - *Kaido crab* {S}. Probably a garden hybrid. The fruit is eaten. Also used as a rootstock for *M. pumila*, reportedly being the best dwarfing understock from seed. TANAKA; D95{PL}, G66, G66{PL}, K38, N84, P5

*Malus niedzwetzkyana* - \* *Malus pumila*



*Malus prunifolia* - *Plum-leaf crab*, *Chinese apple* {S}. Fruits are eaten when fresh, and are also preserved in sugar. The tree is highly resistant to frost and drought. Used by I. V. Michurin to breed hybrid cultivars such as *Kandil Kitaika*, *Bellefleur Kitaika*, *Saffran Peppin*, and *Saffran Kitaika*. Eastern Asia, cultivated. MICHURIN, TANAKA, UPHOF, ZEVEN; *G66*, *G66{PL}*, *I49G{PL}*, *K63G*, *093*, *P5*, *P49*

*Malus pumila* - *Apple* {S}. The fruits are eaten fresh, dried, baked, made into apple butter and apple sauce, candied, in pies and cakes, as juice and cider, fermented into *applejack*, *cidre*, *calvados*, etc. Apple butter and apple sauce are excellent fat substitutes in cakes and muffins. *Appenzeller*, a popular cheese of Switzerland, develops one of its distinctive flavors by being immersed in cider. The flowers can be dipped in batter, deep fried and served sprinkled with sugar, or added to fritter batter. They also yield a light amber honey with a fine aroma and an excellent delicate flavor. A tisane made from apple peels is very popular in Turkey. Applewood is the most popular fruitwood used for smoking foods. It adds a natural sweet, fruity flavor to any meat, fish or vegetable grilled or barbecued. Some connoisseurs claim that woods from different apple varieties have their own distinctive flavor. *Applewood* is also the name of a British Cheddar cheese smoked over apple wood. Eurasia, cultivated. BJORKMAN, BRYAN, CAMPBELL-PLATT, CRANE 1975, KREMEZI 1994, MACNICOL, PEDERSON, PELLETT, PROULX, ROBINSON, R. 1995, TANAKA, UPHOF, WOODRUFF [Re]; *C21M{PD}*, *C37M{PD}*, *D81{PO}*, *D81M{PO}*, *E63KIPD*, *F85J{PD}*, *G58{PD}*, *G66*, *H3{PD}*, *H45M{PL}*, *H49*, *I23M{PD}*, *I42G{PD}*, *J3{PD}*, *J21H{PD}*, *K38*, *K63G*, *L15G{PD}*, *M85{PD}*, *N19{PL}*, *N84*, *093*, *P5*, *R78*, etc. (for cultivars see Apple, page 267 and Rootstocks, page 510)

*Malus pumila* 'Niedzweckzyana' - *Redvein crab* {PL}. The edible fruit is purple-red inside and out, sour and astringent, and mostly suitable for cooking. Also useful in breeding red-fleshed apples. Originated in the Tien Shan mountains of Turkestan. FISHMAN, TANAKA; *G66{S}*, LI. (for cultivars see Apple, page 267)

*Malus x robusta* (*M. baccata* x *M. prunifolia*) - *Siberian crab* {PL}. Probably an artificial hybrid. Fruits are edible. Also a vigorous winter-hardy rootstock for *M. pumila*. Somewhat resistant to fireblight but slightly susceptible to crown rot. REHDER; *G66*, *G66{S}*, LI

#### CULTIVARS {GR}

**Red Siberian:** Small, roundish oblate to somewhat oblong fruit; skin smooth, pale yellow striped and blushed with lively red and overspread with blue bloom; flesh subacid, astringent; season September and October. Good for culinary uses. Originated in France. BEACH; 081

*Malus sylvestris* - *European crab apple*, *French crab apple*, *Wild apple* {S}. The fruits are mostly tart or sour and are used for making syrup, jelly, apple butter, spiced apples, and wine. They are also roasted and added to *wassail bowl*, a traditional Christmas Eve beverage. *Verjuice* is a very sour vinegar made from crab apples or unripe grapes, which is used in cooking, much like lemon juice. The flowers can be crystallized. Eurasia. MICHAEL [Re], ZEVEN; *C9M*, *D81P{PD}*, *E13G{PR}*, *F74M{PD}*, *G66*, *K38*, *K63G*, *N84*, *093*, *P49*

*Malus theifera* - *Malus hupehensis*

*Margyricarpus pinnatus* - *Pearl berry*, *Perilla*, *Romerillo* {S}. The fruits are pearl-like, somewhat reminiscent of the mistletoe, and have an agreeable acid flavor. Temperate South America. HEDRICK 1919, VALENZUELA; *D95{PL}*, *L55J*, *N84*

*Margyricarpus setosus* -+ *Margyricarpus pinnatus*

*Mespilus germanica* - *Medlar* {S}. Fruits are eaten, especially after having been exposed to frost and then stored until overripe or "Wetted", when they become soft and mellow, and have an agreeable acid flavor somewhat reminiscent of unsweetened apple butter. Fruits that have just begun to ripen make an excellent jelly, orange in

color and of a distinctive flavor. Ripe fruits can also be baked or made into jams and jellies. Occasionally used for cider. Eurasia, cultivated. BIANCHINI, JOHNS [Pre, Cul], MABEY, SIMMONS 1972 [Cu], UPHOF; *D95{PL}*, *G5M{PD}*, *G66,160{PL}*, *K38*, *K63G*, *N84*, *053M*, *093*, *P49*, *R47*, *R78*

#### CULTIVARS {GR}

**Breda Giant:** (*Bredasa Reus*) A medium to large fruited cultivar from Holland. Self-fertile shrub, grows 4 to 6 feet tall; very productive. Suitable for eating raw or it can be made into a delicious jelly. *C34*, *F43M*, *I49M*, *I49P*, *I66T*, *174*, *J61M*

**Dutch:** (Large Dutch) Large, roundish fruits, 2 1/2 inches in diameter with short sepals. Grayish green until ripe, and then russet brown. Ripens in October and is ready by Christmas. Makes a small, spreading, pendulous tree suitable for general cultivation. Heavy cropping. A very old cultivar. SIMMONS 1978; 081, *Q30{SC}*

**Larae Russian:** One of the largest fruited cultivars. An attractive small tree with very fine foliage. Winner of the Royal Horticultural Society Award of Merit. *F43M*, *174*, *R77*

**Nottingham:** Medium-sized, pear-shaped fruit, 1 inch in diameter with long sepals. Yellow-brown in color, touched with russet; considered the best-flavored medlar. The tree is less vigorous than Dutch, and is suitable for growing as a bush or pyramid. Cropping is very heavy and will produce a good crop when three years old. SIMMONS 1972, SIMMONS 1978; *D37*, *F43M*, *I49P*, *I66T*, *174*, *L12*, *081*, *Q30{SC}*, *R77*

**Royal:** Medium-sized, round fruits, 1 inch in diameter. They have a good flavor and are pleasantly acid. The tree is a good bearer, very shapely, and makes a good small standard tree. A newer cultivar. SIMMONS 1972, SIMMONS 1978; *H49*, *I49M*, *I49P*, *I66T*, *174*

**San Noyan:** (Stoneless) Small fruit with rather poor flavor; seedless. May have potential in breeding programs. SIMMONS 1978; *I66T*

**Supermol:** Developed in Italy where it is the current planting choice over all other medlars. Recently introduced into the United States. *F43M*

**Westerveld:** Improved type from Holland with flavorful fruit. Very productive tree. Recently introduced into the United States. *I49M*, *I49P*, *I66T*, *174*

*Oemleria cerasiformis* -\* *Osmaronia cerasiformis*

*Osmaronia cerasiformis* - *Osoberry*, *Indian peach* {S}. The fruit is eaten, either raw or cooled. Western North America. KIRK, YANOVSKY; *A2*, *B94*, *D95{PL}*, *E15*, *F85*, *F88M*, *N84*, *053M*, *093*

*Padus maximowiczii* - *Prunus maximowiem*

*Peraphyllum ramosissimum* - *Squaw apple* {S}. The fruits are sour when unripe, slightly bitter as they ripen, and when fully ripe are sweetish but with a bitter aftertaste. Fruits that dry on the plants are the sweetest and most desirable. Ripe fruits can be used for jelly or prepared like spiced crab apple. Western North America. GIBBONS 1979, HARRINGTON, H.; *B94*, *D35G*, *D95{PL}*, *E66M*, *G66*

*Persica davidiana* - *Amygdalus davidiana*

*Photinia arbutifolia* - *Tollon*, *Christmas berry*, *California holly* {S}. The bright red fruits are eaten raw, roasted, steamed or boiled, and are best with a little sugar added. Indians used them dried, ground, and made into mush. They can also be made into cider, in much the same way that manzanita cider is made. Southwestern North America. KIRK, MEDSGER, UPHOF, YANOVSKY; *B94*, *C9M*, *D95{PL}*, *G59M*, *G60{PL}*, *H71*, *I83M{PL}*, *I98M*, *I98M{PL}*, *K15*, *N84*, *053M*, *093*

*Potentilla anserina* - *Silverweed*, *Argentine*, *Tibetan sweet potato*, *Toma*, *Droma*, *Gro-ma* {S}. The long, crisp roots have a nut-like, somewhat sweet starchy flavor and can be eaten raw, candied, fried, roasted or boiled, and are also added to soups and stews. In Tibet and other areas of the Himalayas they are added to *dresil*, a sweet rice dish eaten at New Year's festivals, weddings and other special occasions. Natives of the Yakut region of Siberia sometimes mix the roots and leaves into *tar*, a concentrated sour milk product used as a reserve food for the winter months. Leaves are used for tea. Northern temperate region. ANGIER [Re], CROWHURST 1972, DORJE [Re], FERNALD, GIBBONS 1979, HARRINGTON, H., KIRK, KUNKEL, KURMANN, MABEY, POHLE; G27{DF}, L3J, N84

*Potentilla erecta* - *Tormentil* {S}. Rhizomes are used as a tea. Also one of the ingredients of a Russian vodka known as *Okhotnichya*. Eurasia. BROWN, G., UPHOF; A2, A61, D92M, F37TIPL}, F68T, F86G, J82, N7D{DF}, N71M, N84, Q24, R53M{PL}, R53M, S55

*Potentilla fruticosa* - *Bush cinquefoil* {PL}. Dried leaves are used as a substitute for tea, called *Kurile tea*. Northern temperate region. FERNALD, HEDRICK 1919, UPHOF; B9M, E61, G23, J25M, J25M{S}, R78/S}

*Potentilla rupestris* - *Rock cinquefoil* {S}. The leaves are used as a tea in some parts of Russia and Siberia, called *Siberian tea* or *prairie tea*, Eurasia. HEDRICK 1919, UPHOF; A61, A61{PL}, M77M{PL}, N84, Q24

*Potentilla tormentilla* - *Potentilla erecta*

*Poterium sanguisorba* - *Sanguisorba minor*

*Prinsepia sinensis* - *Cherry prinsepia* {PL}. Bright red fruits are edible, having a good flavor. They can be eaten out of hand or made into jellies. Manchuria. TANAKA; D95, E7M{S}, F67, G66, G66{S}, 174, K38{S}, K63G{S}, K81, K89, M35M, N84{S}, 053M{S}

*Prinsepia utilis* - *Bekar* {S}. Fruits are eaten. Seed kernels yield an oil used for cooking. Himalayan region, China. ALTSCHUL, POHLE, TANAKA, WATT; M7M, Q40, Q46

*Prunus alleghaniensis* - *Allegheny plum*, *Porter's plum*, *American sloe* {S}. Ripe fruits are purplish-black, pleasantly acid, and can be eaten fresh or made into jams, jellies, pies, and preserves. North America. CROWHURST 1972, MEDSGER, WAUGH; T41M

*Prunus americana* - *American wild plum* {PL}. The pulpy, pleasant-tasting fruits are eaten raw, dried, stewed or processed into preserves, jams, sauces and jellies. Seed kernels can be eaten raw. North America, cultivated. FERNALD, HARRINGTON, H. [Re], KINDSCHER, MEDSGER, UPHOF; A91, D45, D95, G66, H14M, H49, I47{S}, I49G, J25M, J26, K38{S}, K63G{S}, K89, M16. (for cultivars see Plum, page 484)

*Prunus amygdalus* - *Amygdalus communis*

*Prunus angustifolia* - *Chickasaw plum* {PL}. Fruits are large, thin-skinned, and have a soft, juicy, sweet pulp that is very good eaten out of hand and also makes excellent jellies and preserves. North America, cultivated. CROWHURST 1972, FERNALD, KAVASCH [Re], MEDSGER, UPHOF; D95, F91T{SC}, H4, H14M, 160, K63G{S}, L55J{S}. (for cultivars see Plum, page 484)

*Prunus angustifolia* var. *watsonii* - *Sand plum*, *Sand Chickasaw plum*, *Sandhill plum* {S}. The acid fruits are often used for making pies, sauces, puddings, preserves, and jellies. Western North America. KINDSCHER, MEDSGER, WAUGH; F85

*Prunus armeniaca* - *Armeniaca vulgaris*

*Prunus armeniaca* var. *mandshurica* - *Armeniaca mandshurica*

*Prunus avium* - *Sweet cherry*, *Wild sweet cherry*, *Mazzard cherry* {S}. Fruits are consumed fresh, dried, candied, stewed, in pies,

cakes, ice cream, and pastries, made into preserves and jellies, etc. Dried fruits are sometimes known as *cherry raisins* or *cherry prunes*. In Belarus, the leaves are added to pickled cucumbers, apples and tomatoes for flavoring. A gum that exudes from the trunk and branches can also be eaten. Cherry wood is one of the popular fruitwoods used for smoking foods. It adds a sweet, smoky flavor and is especially good with beef and pork. However, it has a tendency to turn meat a rich mahogany color. Barrels made from the wood age *balsamic vinegar*. The flowers yield a light-colored honey with a fine aroma and excellent flavor. Eurasia, cultivated. BJORKMAN, BOLOTNIKOVA, CRANE 1975, HEDRICK 1919, KASPER, TANAKA; B54M{PD}, C21M{PD}, C27T{SC}, D81{PO}, D81M{PO}, E68M{PD}, G66{PL}, I23M{PD}, I3{PD}, J21H{PD}, K63G, M85{PD}, N51M{PD}, N71M, N84, 053M, P49, R78, etc., (for cultivars see Cherry, page 327, and Rootstocks, page 510)

*Prunus besseyi* - *Western sand cherry*, *Rocky Mountain cherry* {PL}. The sweetish fruits are eaten raw, dried, or cooled. Western North America. MEDSGER, UPHOF, WAUGH, YANOVSKY; A16, C33, D65, D95, G54, G66, I49G, J25M, J25M{S}, J26, K38{S}, K63G{S}, L27M, L75{S}. (see also Rootstocks, page 510)

CULTIVARS {GR}

**Black Beauty:** Small, roundish fruit, 3/4 inch in diameter; skin thin, shiny black; flesh firm, juicy, sweet, quality fair to good. Good for canning and eating fresh. Ripens in early August. Bush upright, productive, hardy; height 3 to 4 feet. Originated in Charleswood, Manitoba, Canada by G.F. Chipman. Introduced in 1938. BROOKS 1972; F91T{SC}

**Hansen's:** Large, reddish-black to purple fruits; very good flavor. Can be used fresh, canned, or preserved. Compact shrub grows 4 to 5 feet tall; ornamental silvery-green leaves; white flowers in the spring. Two or more trees recommended for cross-pollination. Plant 2 to 4 feet apart. Hardy to Zone 3. A91, B15M, D76, E97, F89, G23, G65M, H44, H65, 178, L70

**Sioux:** A large sand cherry selected from many thousand seedlings. Not as large as some of the later cultivars but noteworthy for its mild flavor. Originated in Brookings, South Dakota by N.E. Hansen. Introduced in 1902. HANSEN; F91T{SC}

*Prunus bokhariensis* - *Bokhara plum* {PL}. Fruits are eaten dried, pickled, stewed, made into preserves, or used as stuffing for *koftes*. The dried product, called *sour plums* or *aloo bokhara*, is sometimes available in Indian and Middle Eastern stores. Cultivated in the Punjab and Kabul, Afghanistan. Himalayan region. JAFFREY, KUNKEL, MACMILLAN, MAJUPURIA [Re], MATTOO [Re], SABERI [Re]; F74{DF}, R50

*Prunus brigantina* - *Armeniaca brigantina*

*Prunus cerasifera* - *Myrobalan plum*, *Cherry plum* {S}. The fruits are cherry-like but somewhat larger, thin-skinned, and with flesh that is soft, very juicy, sweet to subacid and pleasantly flavored. They may be eaten fresh or used for pies, tarts and jam. Southwest Asia, cultivated. HEDRICK 1919, SIMMONS 1972 [Cu]; K38, K63G, M83{PL}, N71M, N84, 053M, P49, R78, (see also Rootstocks, page 510)

CULTIVARS {GR}

**1ER:** Large fruits, weighing 3/4 ounce to 1 1/2 ounces. Ripens very early, in late June. Hardy to Zone 6. Developed by Professor Gennadiy Eremin of Krymsk, Russia. Selected for size, flavor, and disease resistance. Recently introduced into the United States. F43M

**2P:** Large fruits, weight 3/4 ounce to slightly more than 1 ounce. Hardy to Zone 6. Developed by Professor Gennadiy Eremin of Krymsk, Russia. Selected for size, flavor, and disease resistance. Recently introduced into the United States. F43M

**3KC:** Large fruits, weighing 3/4 ounce to 1 1/2 ounces; ripens early. Appears to be more disease resistant than 1ER, 2P, and 4L. Hardy to Zone 5. Developed by Professor Gennadiy Eremin of

Krymsk, Russia. Selected for size, flavor, and disease resistance. Recently introduced into the United States. F43M

**Belciana:** Medium-sized, round fruit; skin papery, amber-yellow with a rose tint on the side exposed to the sun; flesh amber-yellow, melting, sweet; stone slightly clinging; ripens early. A wild plum resembling Myrobalan; selected by the Arabs and introduced into France from Algeria in 1878. HEDRICK 1911; Y83{SC}

**De Caradec:** Medium-sized, globular fruit; skin deep purplish-red with a slight bloom, thin; flesh yellow, soft, juicy, quality only fair; stone clinging; ripens early. Tree a rather large and erect grower; foliage very attractive. Originated near Aiken, South Carolina, between 1850 and 1854. WAUGH; T49M{SC}

**Red:** Very small, roundish fruit, about 1 inch in diameter; skin smooth, red; flesh firm, red; flavor good, distinctive; ripens the end of August. Suitable for either dessert or cooking. Tree moderately vigorous; round-headed with slender, upright branches; flowers very early; a poor bearer. SIMMONS 1978; U7G{SC}

**Yellow:** Very small, round fruit; cherry-like but larger; skin yellow, smooth; flesh yellow, firm, flavor distinctive; quality good for dessert or cooking; ripens the end of August. Tree moderately vigorous, round-headed; productive. Flowers later and is a more regular bearer than Red. SIMMONS 1978; U7G, Y83{SC}

*Prunus cerasifera* ssp. *divaricata* - *Wild cherry plum, Sour plum* {S}. The sour, yellow or reddish-violet fruits are eaten, fresh, dried or preserved. Widely used as a sour flavoring in the cuisines of the Middle East, Mediterranean and Central Asia. In Georgia, they are made into a famous sauce called *tkemali*, which seasons soups, stews, vegetable dishes and grilled meats. Often pureed and dried into a sour fruit leather, known as *tkalapi* in Georgia and *lavashana* in Azerbaijan, also employed as a flavoring material. Dried fruits are occasionally available in Middle Eastern stores. Southwest Asia. AKHMEDOV [Re], GOLDSTEIN [Cul, Re], HEDRICK 1919, MARGVELASHVILI [Re], OZTURK, WOLFERT 1994a [Re]; G66

*Prunus cerasifera* f. *purpurascens* - *Red-leaf plum, Purple-leaf plum* {S}. The fruits are eaten. Attractive ornamental trees with reddish-purple leaves. TANAKA; B32{PL}, F85

#### CULTIVARS {GR}

4Li(P. *cerasifera* f. *purpurascens* x *P. salicina*) Large fruits, weight 3/4 ounce to 1 1/2 ounces; ripens in midseason. Hardy to Zone 6. Developed by Professor Gennadiy Eremin of Krymsk, Russia. Selected for size, flavor, and disease resistance. Recently introduced into the United States. F43M

**Allred:** Fruit small, up to 1 1/4 inches in diameter; skin and flesh red, quality good, but very high in acidity; makes a delicious jelly. Tree with red leaves and bark; produces well; adapted over a wide area. A colorful ornamental. Originated in Amity, Arkansas by Ross Wolfe of Wolfe Nursery Inc., Stephenville, Texas. Introduced in 1941. BROOKS 1972; A19, B74, C54, D37{DW}, H4, L90, M83, N33

**Cochecho:** Small to medium-sized, red-blushed fruit; flesh yellow, of high quality for a red leaf plum; resembles Methley. Good fresh or for canning. Tree very disease resistant and hardy; self-sterile, requires a pollinator for fruit production, any Japanese plum being satisfactory. Originated in New Hampshire by Professor E.M. Meader. D37{DW}, H90M{SC}

**Elsie:** Medium to large fruit; skin dark purplish-red; flesh deep dark red, quality excellent, one of the best red leaf plums; resembles Santa Rosa. Tree self-sterile, somewhat of a shy beaier, should be planted with Gerth as a pollinator. Originated in Duarte, California. D57{OR}

**Gerth:** Medium to large fruit, 1 1/2 inches in diameter; skin dark deep purple; quality very good; resembles Santa Rosa but somewhat smaller; ripens 7 to 14 days before Santa Rosa. Tree self-fertile, has

a relatively low chilling requirement. Originated in Vista, California by Otto Gerth. D57{OR}

**Hollywood:** (*P. cerasifera* f. *purpurascens* x *P. salicina*) Small, red fruit with red flesh; dessert quality good, excellent for jelly and canning; ripens early, with Beauty; hangs well on the tree; resembles Satsuma. Tree very ornamental with early pink blossoms, and red leaves all season. BROOKS 1972; D28J, D37, H8, H90M{SC}, I8, I68, J61M, J93

**Purple Princess:** Relatively new cultivar with dessert quality fruit. Small to medium-sized fruit; wine red skin and dark red flesh; ripens in mid-June. Tall, upright tree, blooms very early and prolifically, flowers white. New foliage reddish-purple, turning greenish-purple as the season progresses. Developed by John D Young of Modesto, California. C54

**Shalom:** Small to medium, roundish, deep red fruits; flesh juicy, sweet, dessert quality excellent; resembles Santa Rosa. Ornamental, dwarfish tree with attractive reddish leaves. D57{OR}

**Thundercloud:** Dark coppery leaves. Flowers light-pink to white. Occasionally sets a good crop of red fruit. Tree grows 20 feet tall by 20 feet wide; somewhat rounded form. A74, B9M, B53, C54, D95, E47, E87, G23, H90, I9M, I68, HIM, M69M

*Prunus cerasoides* - *Padam, Wild Himalayan cherry* {S}. Fruits are acid and astringent and are only occasionally eaten raw, but are employed for making a well-flavored cherry brandy. The stem is the source of a gum used for adulterating *gum tragacanth*. Himalayan region. HEDRICK 1919, TANAKA, UPHOF, WATT; G66, Q40, Q46

*Prunus cerasus* - *Sour cherry, Pie cherry* {S}. The fruits are pleasantly acid and can be eaten out of hand or dried. They are widely used for making pies, preserves, cherry cider, puddings, syrups, jellies, glace fruits, and are also canned or preserved in brandy. Also used in the preparation of liqueurs and brandies, including *Kirsch*, *Maraschino* and *Ratafia*, and *kriek lambic* beers. Seeds are the source of *cherry kernel oil*, which is used as a salad oil when refined. In Italy, the seeds are put in a muslin bag, crushed and added to *Morello cherry* jam as flavoring. Leaves are used as a substitute for tea. Eurasia, cultivated. BIANCHINI, GRAY, P. [Cul], GUINARD, SCHNEIDER 1986 [Cul, Re], UPHOF; C60D{P£}, G40{PD}, G66, K63G, L50M{PD}, Q46. (for cultivars see Cherry, page 327)

*Prunus davidiana* - \**Amygdalus davidiana*

*Prunus dawycensis* - *Dawyc cherry* {SC}. The sweet fruits are eaten. China. KRUSMANN; F91T. (for cultivars see Rootstocks, page 510)

*Prunus divaricata* - \**Prunus cerasifera* ssp. *divaricata*

*Prunus domestica* - *European plum* {S}. Fruits are consumed fresh, dried into *prunes*, preserved, canned, or made into jam, juice, plum butter, pies, cakes, alcoholic beverages, liqueurs, etc. *Prunella* is a liqueur derived from the fruits, while a distilled product is known as *zwetschenwasser*, *slovovitz* or *slivovica*. Prunes have excellent moisture-holding capacity which makes them the most popular fat substitute in baking muffins, cookies, quick breads, cakes and brownies. *Wonderslim* is a commercial fat and egg substitute product used in baking that contains prunes and lecithin. The flowers are eaten, used as a garnish for salads and ice cream, or brewed into tea. Plum wood is sometimes used as a smoking wood, however it requires a certain level of expertise and can lose its flavor shortly after being cut. Eurasia, cultivated. BJORKMAN, MACNICOL, UPHOF, WOODRUFF [Cul, Re]; C67{PD}, D81{PO}, D81M{PO}, F17{PD}, G29{PD}, G66, I23M{PD}, J3{ED}, K63G, M63M{PD}, N71M, P49. (for cultivars see Plum, page 484 and Rootstocks, page 510)

*Prunus dulcis* - *Amygdalus communis*

*Prunus effusa* - *Prunus x gondouinii*

*Prunus fruticosa* - *Dwarf cherry, Mongolian cherry* {PL}. The tart fruits are eaten raw or dried, and also make excellent jelly, jams, and pies. Trees have withstood temperatures of -52° C. Eurasia. TANAKA, ZEVEN; A65, A91, D95, F67, G54, G66, G66{S}, 160, J89M, K63G{S}, K64, L27M, M35M, N24M, N84{S}, etc.

*Prunus glandulosa* - *Korean cherry* {S}. Fruits are eaten preserved or pickled. Eastern Asia. TANAKA; C47{PL}, E47{PL}, F85, F91T{SC}, G23{PL}, G66, K63G, N84

*Prunus x gondouinii* (*P. arium* x *P. cerasus*) - *Duke cherry, Royal cherry*. Garden hybrid. Sweet cherry x sour cherry. The fruits are eaten raw, stewed, preserved, dried, etc. TANAKA; (for cultivars see Cherry, page 327)

*Prunus grayana* - *Gray's chokecherry* {PL}. Salted flower buds and young fruits, having a pungent taste, are consumed in Japan. Eastern Asia. TANAKA, UPHOF; T41M

*Prunus hortulana* - *Hortulan plum, Hog plum* {S}. The fruits are bright red or yellowish-red, juicy, of an agreeable flavor, and are eaten raw or processed into pies, jellies, jams, and preserves. North America, cultivated. FERNALD, MEDSGER, UPHOF, WAUGH; F91TJSC}, G66. (for cultivars see Plum, page 484)

*Prunus ilicifolia* - \**Laurocerasus ilicifolia*

*Prunus insititia* - *Bullace plum, Damson plum* {S}. Fruits are eaten raw or made into preserves and conserves. Eurasia, cultivated. JOHNS [Cu], TANAKA; G66, N84. (for cultivars see Plum, page 484 and Rootstocks, page 510)

*Prunus jamasakuia* - *Yama-zakura* {S}. Flowers are pickled in salt and consumed in tea or with rice gruel. Also used as a garnish for bakery goods. The fruit is edible. Eastern Asia. TANAKA; F85

*Prunus japonica* - *Korean cherry* {S}. The red cherry-like fruits have a sweet, agreeable flavor. They are eaten out of hand and also make good pies. Eastern Asia. HEDRICK 1919, TANAKA; D95{PL}, F85, 160{PL}, K22{PL}, K63G, N84, 053M, P49

*Prunus laurocerasus* -> *Laurocerasus officinalis*

*Prunus lyonii* - *Laurocerasus lyonii*

*Prunus mahaleb* - *Mahaleb cherry, St. Lucie cherry* {S}. The leaves, or a decoction obtained therefrom, can be used for flavoring milk. Dried seed kernels, known as *mahlep*, are used in Middle Eastern and Mediterranean cooking to give an intriguing fruit flavor to *Tsoureki* and *Vassilopita* breads, cookies, confectionery, sweet pastries and *Nabulsi* cheese. Eurasia, cultivated. DAGHER, KREMEZI 1993 [Re], MALLOS [Re], ROBINSON, R. 1991, TANAKA, VON WELANETZ; A7{DF}, A49D{DF}, C9M, E47, J66M{DF}, K38, L16{DF}, L50M{DF}, N71M, 053M, P49, R78. (see also Rootstocks, page 510)

*Prunus mandshurica* -> *Armeniaca mandshurica*

*Prunus maritima* - *Beach plum* {PL}. The fruits are dull-purple, subacid to sweet, and are eaten raw, dried, preserved or used in jams, jellies, pies, sauces, soups, cakes, puddings, etc. They can also be mixed with cider vinegar, cloves, and sugar and made into "beach plum shrub". Eastern North America. ANGIER [Re], GIBBONS 1964 [Re], MEDSGER, MIREL [Cu, Re]; A74, B9M, C37M{PD}, D95, G66{S}, H8, J61M, K38{S}, K63G{S}, L12, M16, M92, N84{S}

CULTIVARS {SC}

**Eastham:** Large fruit of good flavor. Tree a heavy producer. Seedling discovered in Eastham, Massachusetts by J.M. Batchelor. Introduced in the 1940's. BROOKS 1972; T41M

**Hancock:** Blue-skinned fruit; flesh golden, sweet with little acidity, juicy, flavor excellent for eating fresh; pit small; ripens early. Originated in Fort Hancock, New Jersey by J.M. Batchelor. Introduced in the 1940's. BROOKS 1972; T41M

**Jersey:** Reddish fruits of good flavor; ripens in late summer and early fall. Vigorous, productive tree, taller and more upright growing than *Raribank* often reaching 13 feet in height. J61M

**Raribank:** Purplish-red fruit of good quality; freestone; ripens during early September at place of origin. Good for jelly or canning. Tree large, vigorous, very resistant to brown rot and Japanese beetle. Originated in New Brunswick, New Jersey by J.H. Clark. Introduced in 1949. BROOKS 1972; T41M

*Prunus maximowiczii* - *Miyama-zakura* {S}. Flowers are preserved in salt and stored for future use. The fruit is also edible. Central to Eastern Asia. TANAKA; G66

*Prunus melanocarpa* - \**Prunus virgifiuana van melanocarpa*

*Prunus mume* - *Armeniaca mume*

*Prunus munsoniana* - *Wild goose plum* {SC}. Bright red fruits are eaten, having thin skin and light or dark yellow, juicy, aromatic flesh, often of good dessert quality. Also used in jellies, jams and preserves. North America, cultivated. UPHOF, WAUGH; F91T. (for culti-vars see Plum, page 484 and Rootstocks, page 510)

*Prunus nigra* - *Canada plum, Canada black plum* {PL}. The fruits are eaten raw or stewed, and are also used for making jelly, preserves, pies, sauces, fruit juices, marmalades and plum butter. They can also be dried and used like raisins, or pureed, poured out on wax paper, and dried as fruit leather. North America. MEDSGER, TANAKA, TURNER 1979 [Re], YANOVSKY; D95, K63G{S}, N84{S}. (for cultivars see Plum, page 484)

*Prunus padus* - *European bird cherry, May day tree* {S}. The fruits are occasionally eaten raw but are primarily used for making jam and in the preparation of alcoholic beverages. In Korea, the young leaves are eaten as a boiled vegetable and the flowers are chewed. The bark is used for tea. Eurasia, cultivated. HEDRICK 1919, TANAKA, UPHOF; A65{PL}, C33{PL}, G66, G66{PL}, G89M{PL}, I60{PL}, K38, M35M{PL}, N71M, N84, 053M, P49, Q12, R78

*Prunus pensylvanica* - *Pin cherry, Bird cherry, Fire cherry* {S}. The fruits are usually too sour for eating fresh, but are often made into jellies, syrup, sauces, wines and pies. A gum that exudes from the trunk can be used as a chewing-gum. Eastern North America. ANGIER [Re], FERNALD, GIBBONS 1962, MEDSGER, TURNER 1979 [Re]; A74{PL}, C27T{SC}, D95{PL}, F85, G66, G66{PL}, H68M{PD}, J39M{PL}, K38, K63G, K89{PL}

CULTIVARS {GR}

**Jumping Pound:** Bright red fruit, about 1/2 inch in diameter. Grows about 13 feet tall, with a weeping habit. Excellent for jelly, juice, syrup and sauces. Also very ornamental. 146

**Marv Liss:** Bright red fruits, larger than those of Jumping Pound. Small, very hardy tree; has more of an upright growth habit. Hardy in the prairie regions of Canada. 146

**Mr. Lee #4:** Has the largest fruit size of any selection. Grows 5 or 6 feet tall. Produces clusters of fruit about 12 inches long. Bears fruit on the outside of the bush, making for easier harvesting. 146

*Prunus persica* - *Amygdalus persica*

*Prunus pissardii* - *Prunus cerasifera*

*Prunus pseudocerasus* - *Chinese sour cherry, Bastard cherry* {S}. Fruits are eaten fresh or preserved, and are also brewed into wine. The flowers are salted and used as a tea. Eastern Asia. TANAKA; U7G. (for cultivars see Rootstocks, page 510)

*Prunus puddum* - *Prunus cerasoides*

*Prunus pumila* - *Sand cherry* {PL}. The ripe fruits have a rich, pleasantly acid, sometimes slightly bitter but palatable flavor and are eaten fresh, dried or preserved. They can also be mixed with sour apple-juice to make a rich jelly. North America. FERNALD,

GIBBONS 1979, MEDSGER, TURNER 1979; D95, F91T{SC}, 160, J39M, J43{S}, J75, K81, N84{S}

*Prunus pumila* var. *susquehanae* - *Appalachian cherry* {S}. The small, purple-black fruits can be quite sweet and juicy and may be eaten fresh or used for pies, jams and fruit sauces. Eastern North America. CROWHURST 1972, GIBBONS 1979; F85

*Prunus salicifolia* - *Capulin cherry*, *Capuli* {PL}. Ripe fruits are deep purplish-maroon, thin-skinned, and have greenish flesh that is juicy, subacid to sweet, and with a somewhat astringent aftertaste. They are eaten fresh, stewed or made into jams and preserves. In Mexico, they are used as filling for special *tamales*. Very low chilling requirement, adapted to warm winter areas where true cherries are unable to produce. Mexico to Peru. FRIED [Re], MORTON 1987a, NATIONAL RESEARCH COUNCIL 1989, POPENOE, W. 1924, STEBBINS; A41G, D57, G66{S}, I83M, J29M{S}, L55J{S}, N84{S}, P38{S}, Q49M

CULTIVARS {GR}

**Ecuadorian:** Very large, round fruit, up to 1 1/2 inches in diameter; light green, sweetish flesh, free of astringency when ripe. Drooping tree, outbears many other cultivars. Originated in Ambato, Ecuador. D57{OR}

**Fausto:** Fruit large, 3/4 to 1 inch in diameter; flesh green, flavor rich and sweet; ripens late, August to September in Vista, California. Tree upright but drooping, a reliable annual bearer. Has excellent commercial potential. Originated in Ambato, Ecuador by Fausto Perez. D57{OR}, 174

**Harriet:** Large, flattened globe-shaped fruit, 3/4 to 1 inch in diameter; skin deep purple-black; flesh green, more or less free of astringency, flavor good; seed relatively small. Tree a genetic dwarf, somewhat of a shy bearer which appears to be related to rootstock selection. Seedling of Lomeli. D57{OR}

**Huachi Grande:** Large to very large, roundish fruits, 1 inch or more in diameter; very mild flavor, lacks the astringency of other capulins; ripens early to midseason. Appears to require high temperatures to develop good flavor. Tree a very heavy producer, tends to over produce in heavy clusters. Originated in Ecuador. D57{OR}, 174

**Werner:** Small fruit with very good flavor. Tree a light producer, appears to bear better on certain rootstocks; extremely vigorous, can grow 15 feet or more in one year. Originated from seed collected by Wilson Fopenoe in Ecuador. Named after Andrew Werner of Santa Cruz, California. 174

*Prunus salicina* - *Japanese plum* {S}. The sweet, juicy fruits are eaten fresh, dried, canned, stewed, made into jams, jellies, fruit leather, puddings, cakes and sauces, or brewed into wine. Eastern Asia, cultivated. CARCIONE, CREASY 1982 [Cu], TANAKA; D81{PO}, D81M{PO}, F91T{SC}, G66, K38, K63G, N84. (for cultivars see Plum, page)

*Prunus salicina* 'Mandshurica' - *Manchurian plum*, *Ussurian plum* {PL}. The fruits are sweet and juicy and can be eaten fresh. They also make excellent jams, preserves, and plum sauce. Also used as a rootstock for European and Japanese plums and their hybrids, being the most cold-hardy understock for this purpose. In breeding, it is a source of good fruit flavor and cold resistance. ZEVEN; A91, G66, G66{PL}, H42, K63G{S}, L27M, M35M, N84

*Prunus serotina* - *Wild black cherry*, *Rum cherry* {PL}. Fruits have a slightly bitter but rich, wine-like flavor and are eaten fresh, stewed or made into pies, jellies, sherbet, and *cherry bounce*. Also used for flavoring cider, bandy, rum and liqueurs. The bark is the source of an extract employed by the food industry for flavoring soft drinks, candy, syrups, and baked goods. The wood is used for making cooking planks, which impart a pleasant woody flavor to foods cooked on them. Also a very desirable smoking wood which is especially good for smoking thick cuts of meat or large fish, the wood imparting a mildly tart, fruity flavor. North America.

ANGIER [Re], FERNALD, GIBBONS 1962 [Re], LOGSDON 1981, MEDSGER, MESSINA, MORTON 1976, UPHOF; A80M, A91, C11M, C27T{SC}, D45, D65, D95, H4, 14, I23M{PD}, J3{PD}, K38{S}, K63G{S}, L15G{EQ}, M16, M35M, M82M{DF}, 053M{S}, R47{S}, etc.

*Prunus serotina* var. *salicifolia* - *Prunus saUcifolia*

*Prunus simonii* - *Apricot plum*, *Simon plum* {SC}. The edible fruits are variable in quality, some having an agreeable flavor while others are bitter with an almond-like astringency. Widely used in hybridizing, especially in crosses with *P. salicina*. China, cultivated. UPHOF, WAUGH, ZEVEN; F91T

*Prunus spinosa* - *Sloe*, *Blackthorn* {S}. Ripe fruits are sometimes eaten raw, especially after having been mellowed by frost. They are also made into jellies, syrup, conserves, and *kissel* or used as a flavoring for *sloe gin* and other liqueurs such as *Prune lie*, *Crème de Prune lie*, and *Pacharan*. In France, the unripe fruit is pickled like olives, and in Azerbaijan the ripe fruits are pickled with onions or garlic. Leaves are used as an adulterant of tea. The dried fruits can be added to herbal teas. The flowers are edible and may be crystallized or sugared. In Transylvania, the juice and seeds have been added to stomach-remnet in curdling milk. Eurasia. AKHMEDOV [Re], CAMPBELL-PLATT, DOMINGO, GUNDA, HEDRICK 1919, LAUNERT, MABEY [Re], MICHAEL [Re], MORTON 1976, RAY, G, TANAKA; D95{PL}, E14T{DF}, F85, G66, G73{DF}, K54{PD}, K63G, M35M{PL}, N71M, N84, 053M, P49, R78

CULTIVARS {SC}

**Godshill Bia:** An exceptionally large-fruited type. Highly recommended for home winemakers. Originated at Deacons Nuisery, Godshill, Isle of Wight. 081

*Prunus subcordata* - *Sierra plum*, *Pacific plum*, *Klamath plum* {PL}. The fruits are pleasantly acid and are eaten fresh, dried, or made into delicious preserves, sauces, wines, syrups and jellies. The best types have a slight astringency which imparts a distinctive flavor to culinary products made from the fruit. Considered one of the best native fruits of the Pacific Coast region. Western North America, cultivated. HEDRICK 1919, KIRK, MEDSGER, ROBERTS [Cu, Pro], UPHOF, WICKSON; B94{S}, C60D{PD}, D95, K63G{S}, L47M{PD}

CULTIVARS {SC}

**G.M. Clark:** An improved type apparently selected in northern California or Oregon for its superior fruit qualities. U7G

**Kelley's Sierra #2:** An improved type apparently selected in northern California or Oregon for its superior fruit qualities. U7G

*Prunus subhirtella* - *Rosebud cherry* {S}. Flowers are preserved in salt and added to tea. The fruit is eaten. Japan. TANAKA; C54{PL}, D95{PL}, /65{PL}, K38, K63G, N84, P49

*Prunus susquehanae* - *Prunus pumila* var. *susquehanae*

*Prunus tenella* - *Amygdalus besseriana*

*Prunus tomentosa* - *Nanking cherry*, *Manchu cherry* {PL}. Ripe fruits are juicy, subacid to sweet, and are eaten raw or preserved. Unripe fruits are pickled or boiled in honey and served as a delicacy. The buds are cooked and eaten. Eastern Asia, cultivated. HEDRICK 1919, TANAKA, UPHOF; A16, C9M{S}, D65, G16, G66, H42, 14, 147{S}, I49G, I83M, K38{S}, K63G{S}, K64, L79

CULTIVARS {GR}

**Drilea:** Round fruit, up to 5/8 inch in diameter; skin bright scarlet, thin, tender; flesh red, firm to melting, tender, sweet, pleasant, quality very good; pit small; season last half of July. Good for dessert, canning, jelly and jam. Bush upright, large, vigorous, dense, spreading; a very heavy annual bearer; tolerant to dry conditions. ANDERSEN, BROOKS 1972; F91T{SC}

**Orient:** Fruit about 1/2 inch in diameter, flat, depressed; skin bright medium dark-red, attractive, moderately tough; flesh light red, meaty, juicy, pleasantly subacid; stone small, free; quality very

good for dessert and jelly; ripens in mid-July. Tree bushy, vigorous; productive, self-fertile, bears second year after planting; ornamental. ANDERSEN, BROOKS 1972; F91T{SC}

**Red Marble:** Improved type with superior fruit. Begins bearing in one year. Selected by Windmill Point Farm and Nursery. N24M

**White:** One of the sweetest and best flavored of all the Nanking cherries. Creamy-white fruit, above average in size Very haidy, bush-type plant, grows only 6 to 8 feet tall. Best in full sun as a foundation plant or as a fruitful hedge. Can also be grown as a container plant. D37

**White Rubv:** Improved type with superior fruit. Begins bearing in one year. Selected by Windmill Point Farm and Nursery. N24M

*Prunus umbellata* - *Black sloe*, *Flatwoods plum*, *Southern sloe* {PL}. The fruit is pleasantly acid and is frequently employed for making preserves, jams, and jellies. Southeastern North America. HEDRICK 1919, UPHOF; H14M, N37M

*Prunus ussuriensis* - \**Prunus salicina*

*Prunus virginiana* - *Common chokecherry* {S}. The astringent fruits are eaten raw, dried, or processed into jams, jellies, juice, syrup, wine, and pies. Green twigs are stripped of their bark and inserted into roasting meat for flavoring. Nutritious kernels were added to *pemmican*. The bark and twigs are used as a substitute for tea. North America. ANGIER [Re], FERNALD, HEDRICK 1919, KINDSCHER, MEDSGER, TURNER 1979 [Re], YANOVSKY; A16{PL}, C55{PL}, D96, H68M{PD}, H92{PD}, 147, J25M, J25M{PL}, J26{PL}, K63G, K89{PL}, L75, P49

CULTIVARS {GR}

**Bouahen Sweet:** Selected for its large, mild fruit, so much milder in flavor than normal that it might be called a sweet or "chokeless" chokecherry. Excellent for jams, jellies and wines. Originated in Valley River, Manitoba by W.J. Boughen, prior to 1923. HANSEN; B47

**Bouahen's Golden:** Attractive ornamental with distinctive yellow fruit. Quite haidy. Flavor of the fruit is similar to the black native chokecherry, but lacks the normal astringency. Originated in Valley River, Manitoba by W.J. Boughen. B47

**Garrinaton:** Selected for its large fruits. Grows about 8 feet tall. A consistent and heavy bearer. Bears fruit on the outside of the bush, making for easier harvesting. 146

**Mission Red:** Identical to the common chokecherry in all traits except for the color of the fruit which is quite unusual and has good ornamental value. It is excellent for winemaking, producing a rich, red-colored wine. F67,146

**Robert:** Very heavy producer of purple-black, grape-size fruits. Excellent for wine, jams, jellies, or eating out of hand. Attractive shrub to 10 feet; rich, reddish-purple foliage. Originated in Barrhead, Alberta, Canada by Lloyd Lee. 146, L79

**Yellow:** Identical to the common chokecherry in all traits except for the color of the fruit which is quite unusual and has good ornamental value. It is excellent for winemaking, producing a beautiful, amber-colored wine. F67,146

*Prunus virginiana* var. *demissa* - *Western chokecherry* {S}. Fruits are eaten fresh, dried, or made into syrup, jams, jellies, soups, and wine. Indians and early settlers ground the fruits (stones and all) and dried them into cakes which were later soaked in water, mixed with flour and sugar, and used as a sauce. Western North America. CLARKE [Re], KIRK, YANOVSKY; B94, D95{PL}, G60{PL}, I98M{PL}, L55J

*Prunus virginiana* var. *melanocarpa* - *Rocky Mountain cherry* {S}. The fruits are purplish-black when ripe, and are generally larger and less astringent than those of the common or western chokecherries. They can be eaten raw, dried, or processed into jams, jellies, and preserves. Western North America. GIBBONS 1962,

MEDSGER, UPHOF, YANOVSKY; A74{PL}, B94, G66, G89M{PL}, K38, N40M

CULTIVARS {GR}

**Schubert:** (Red Canadian Cherry, Canada Red Chokecherry) Large, purplish-black fruit; produced in abundance; make excellent jams, jellies or wines. Leaves turn a deep reddish-purple color in late spring and early summer. Mature summer foliage is reddish-purple, fringed with lime-green. Selected from the wild, and introduced by Oscar Will of North Dakota. A65, B9M, B15M, B74, C33, D65, D95, F67, G54, G66, K38{S}, K64, K89

*Prunus watsonii* - *Prunus angustifo* *Ua van watsonii*

*Prunus* x sp. (*P. besseyi* x *P. spp.*) - *Prairie cherry-plum*. Artificial hybrids. Sand cherry x various plums. Fruits are eaten fresh or canned, and are also good for sauces, pies, and preserves. Many people use the juice for wine. Grown primarily in the dry prairie states and provinces of the United States and Canada. CREASY 1982, LOGSDON 1981; (for cultivars see Cherry Plum, page 331)

*Prunus* x sp (*P. cerasifera* x *P. salicina*) - *Cherry-plum* {GR}. Artificial hybrid. Myrobalan plum x Japanese plum. The hybrids are characterized by low-chilling requirements and a later blooming period than Japanese plums. STEBBINS, ZEVEN.

CULTIVARS

**Delight:** Small, round fruit. Blackish skin with thick, blue-gray bloom. Amber, clingstone flesh. Flavor intermediate between a plum and a cherry - mild, tangy, tart at skin. Midseason harvest. Fruit holds well on tree without loss of quality. Pollinate with Sprite. Low chilling requirement, 300 to 400 hours. Originated by Floyd Zaiger, Modesto, California. STEBBINS; A88M, I49M, I83M, J61M, N20

**Sprite:** Small, round fruit. Blackish skin with thick, blue-gray bloom. Juicy, yellow flesh with a sweet, rich flavor. Midseason harvest. Fruit holds well on tree without loss of quality. Semi-dwarf tree; upright; vigorous. Pollinate with Delight. Low chilling requirement, yet cold-haidy. Originated by Floyd Zaiger, Modesto, California. STEBBINS; A88M, I49M, I83M, J61M, N20

*Prunus* x sp (*P. jacquemontii* x *P. japonica*) - *Fall-fruiting bush cherry* {GR}. Artificial hybrid. Fruits are eaten fresh, cooked or dried. The hybrids are small bushes, highly disease resistant, and not susceptible to insect problems. The fruits ripen late and are therefore not bothered by birds. They are easily harvested.

CULTIVARS

**Jan:** Large fruit, similar to a Montmorency sour cherry. Ripe fruits hang on the tree well and if left to become overripe will begin to dry naturally like raisins, enhancing their fresh-eating quality. Ripens mid August to early September. Bush-like growth habit, 3 to 4 feet high; hardy; productive. Flowers profusely in the spring; ornamental. Pollinate with Jcy. Developed by Professor E.M. Meader of New Hampshire. D37, F16, J61M

**Joel:** The latest cultivar in the series developed by Professor E.M. Meader of New Hampshire. Bright red fruit; ripens late in the season. Delicious fresh, also makes excellent jam and pies. Ornamental shrub, covered with white flowers in the spring; often bears the first season. May be planted 3 feet apart to create a fruitful hedge. The best variety if planting only one bush. D37, F16

**Joy:** Large fruit, similar to Jan; ripens in late summer and fall. Suitable for fresh use and pies. Ripens mid to late September. Vigorous, ornamental bush, 3 to 4 feet tall; cross-pollinates with Jan; haidy to -30° F. Highly resistant to powdery mildew, Japanese beetles and cherry worms. Developed over a period of 25 years by Professor E.M. Meader. D37, F16, J61M, L27M

*Pseudococcydonia sinensis* - *Chinese quince*, *Oriental quince* {PL}. The fruit is eaten as a sweetmeat, candied, preserved in syrup, or made into a liqueur. Its juice is mixed with ginger and used as a beverage. China, cultivated. SIMMONS 1972, TANAKA; D95, F85{S}, G66{S}, H4, K63G{S}, N37M, N51

*Pyracantha coccinea* - *Firethorn* {S}. Berries are used for making jellies, sauces, and marmalades. Eurasia, cultivated. BRYAN [Cul, Re], CLARKE [Re], ZEVEN; C9M, D95{PL}, G66, K38, K63G, N84, 053M, 093, P5, P49, R78

*Pyracantha crenulata* - *Cha-kou-tzu* {S}. Leaves are manufactured into a tea-like beverage. Eurasia. TANAKA; 174, N84, 093, Q32, Q40, Q46

*Pyrus angustifolia* -+ *Malus angustifoUa*

*Pyrus arbutifotta* - *Aronia arbutifolia*

*Pyrus betulifolia* - *Birch-leaved pear*; *Yeh-li*, *Manshu-mame-nashi* {S}. The flowers, leaves, and fruits are all edible. Also used as a rootstock. China. HEDRICK 1919, ZEVEN; G66, G66{PL}, K38, K63G, N71M, N84, 093, P49

*Pyrus calleryana* - *Cattery pear*; *Mame-nashi* {S}. Fruits are eaten after having been exposed to frost. Also widely used as a rootstock. China. ALTSCHEUL, TANAKA, ZEVEN; £52{PL}, C9M, F5i{PL}, G66, G66{PL}, H4{PL}, H45M{PL}, K38, K63G, M69M{PL}, N71M, N84, 093

*Pyrus communis* - *Pear* {S}. Fruits are eaten fresh, dried, preserved in brandy, baked, served with cheese, spiced, made into sweet pickles, marmalades and pies, canned, etc. Some types are used for making pear cider or *perry*. *Pear wafers* are a delicious gourmet dried pear product produced by thinly slicing fruits lengthwise to maintain the pyriform shape, and then very slowly drying them without sulphur dioxide to preserve the rich pear flavor. Williams or Bartlett pears are used in the production of a very fragrant brandy called *Poire Williams* or *Williamine*. Pear wood is used as a smoking wood, but requires a certain level of expertise. The core is processed into vinegar. Cultivated. BJORKMAN, CARCIONE, JOHNS [Cul], RAY, C, TANAKA, UPHOF; C9M, C17{PD}, C60D{PD}, D81{P0}, D81M{P0}, E63K{PD}, G66, H45M{PL}, I23M{PD}, I58P{PD}, J3{PD}, J66M{PD}, K63G, M89G{PD}, N71M, 093, P49, R78, etc. (for cultivars see Pear, page 463 and Rootstocks, page 510)

*Pyrus coronaria* - *Malus coronaria*

*Pyrus fusca* - \* *Malus fusca*

*Pyrus ioensis* - *Malus ioensis*

*Pyrus Japonica* *Chaenomeles Japonica*

*Pyrus x lecontei* (*P. communis* x *P. pyrifolia*) - *Southern-cross pear* {PL}. Artificial hybrid. Common pear x Asian pear. The fruit is occasionally eaten fresh, but is primarily cooked. Hybrids generally have greater resistance to fireblight than either parent, but the quality of the fruit is poorer. REHDER; 160. (for cultivars see Pear, page 463)

*Pyrus pashia* - *Indian wild pear*, *Himalayan pear* {S}. Fruits are eaten when in an overripe state, much like the medlar (*Mespilus germanica*), or after drying. They are sweet or somewhat astringent. Can also be used as a rootstock for the common pear. Temperate Southern Asia. ALTSCHEUL, HEDRICK 1919, PARMAR, C., TANAKA, WATT; D95{PL}, F85, G66, N73{PL}, Q40, Q46

*Pyrus pyrifolia* - *Asian pear*, *Nashi*, *Apple pear*, *Salad pear*, *Pae* {S}. The fruits are firm, crisp and juicy when ripe and are eaten out of hand, in fruit and vegetable salads, poached, baked, coated with honey, or sauteed. In Asia, where they are thought to be a digestive aid, they are canned, or processed into fruit nectar and preserves. Southeastern Asia. CUSUMANO [Cul, Re], GRIGGS, NOH [Cul, Re], SCHNEIDER 1986 [Re], TANAKA; C9M, E13G{PR}, G5M{PD}, G66, G66{PL}, I49M{PD}, J61M{PD}, K38, K63G, N84, 093, P49, R47. (for cultivars see Asian Pear, page 289)

*Pyrus ussuriensis* - *Chinese pear*, *Chinese white pear*, *Harbin pear* {PL}. Fruits are eaten fresh. Also used as a rootstock. Eastern Asia. TANAKA; C27T{SC}, C58, G66, G66{PL}, H45M, H85, 149G,

K38{S}, K63G{S}, M35M, N84{S}, 093{S}, P49{S}. (for cultivars see Pear, page 463 and Asian Pear, page 289)

*Quillaja saponaria* - *Soapbark*, *Bois de Panama*, *Halava wood* {DF}. An extract of the bark is used as a foaming and heading agent in beer, root beer and cocktail mixes. It is also employed for flavoring commercial ice cream, baked goods, candy, beverages, etc. In the Middle East, the dried bark is mixed with citrus-flavored sugar syrup and made into a curious, frothy marshmallow-like confection known as *natife cream* or *natif mousse*. It has a delicious, aromatic bittersweet flavor that is much appreciated. Often served with Middle Eastern pastries such as *mamool* or *karabij*. Chile, Peru. BURDOCK, DWIDSON 1994, DER HAROUTUNIAN 1989 [Re], HELOU [Re], LEUNG; A20M{PD}, D95{PL}, F37T, GO, J82{S}, K18M, K63G{S}, N7D, N84{S}

*Rosa acicularis* - *Prickly rose* {PL}. The vitamin-rich fruits are eaten raw in salads, sandwich fillings and desserts, made into purees and syrups, or dried and used in soups and teas. Seeds contain high concentrations of vitamin E, and can be ground and used in baking or cooking as a vitamin supplement. Subarctic regions. HELLER, TURNER 1979 [Pre, Re]; D95, E84, G66{S}, 160, K49Q{S}, N84{S}

*Rosa arkansana* - *Low prairie rose* {S}. Fruits are rich in vitamin C and are eaten raw, stewed, dried, or used for jellies and syrups. The young shoots can be peeled and eaten. Flowers, roots, fruits, stems, bark and petals are all used for tea. North America. KINDSCHER, TURNER 1979 [Pre, Re]; D82, D95{PL}, E7M, G66, H61M, J39M, J39M{PL}, J41M{PL}, K38, K63G, M34M, N84

*Rosa blanda* - *Labrador rose*, *Meadow rose* {S}. Fruits are eaten raw, cooked, or dried and used for tea. The flowers can be processed into *rose water*, cakes, candies, desserts and *rose-petal nectar*, vinegar and honey. Eastern North America. TURNER 1979 [Pre, Re]; D95{PL}, F85, G66, H6{PL}, H61M, I60{PL}, J39M, J39M{PL}, J40, K63G, N84

*Rosa canina* - *Dog rose*, *Brier rose* {S}. The fruits, or *rose hips*, are made into jams, syrup, soups, wine, tea, liqueurs and jellies. Leaves are used as a substitute for tea. The flowers are eaten in salads, and are also candied, preserved, crystallized, added to vinegar, honey, brandy, etc. One of the principal commercial sources of seedless rosehips and rosehips powder. Eurasia. HEDRICK 1919, LAUNERT, LEUNG, MABEY; A49D{DF}, E14T{DF}, F80, G66, 160{PL}, I41G{PD}, J82, K18M{DE}, K38, K63G, L36M{DF}, N71M, 053M, 093, R78, S55, etc.

*Rosa Carolina* - *Pasture rose* {S}. The fruits are processed into syrup and jam. Flower petals can be eaten in tossed green salads, or made into jelly and wine. Eastern North America. CROWHURST 1972 [Re]; D95{PL}, F45{PL}, G66, H6{PL}, H61M, J40, J43, K63G, N71M, N84, P49

#### CULTIVARS {GR}

**Walters:** One of the best shrub roses for the quantity of hips. Excellent compact shrub to 3 feet. Pink flowers followed by half-inch red hips. Origin unknown but thought to be a natural hybrid of pasture rose and another native species. Discovered by Cliff Walters. 160

*Rosa centifolia* - *Cabbage rose* {PL}. Flowers are used for flavoring and scenting tea, wine, vinegar, and honey. The buds can be pickled in white vinegar and sugar, or ground up with sugar to make a conserve. Petals are preserved in syrup, or placed under the crust of cherry pies before baking. One of the principal sources for the *red rose buds* and *pink rose buds* of commerce. Eurasia, cultivated. HEDRICK 1919, MORTON 1976, TANAKA; A7{DF}, E14T{DF}, E84, F54, F86G{DF}, G0{DF}, G73{DF}, H6, K18M{DF}, L34{DF}

*Rosa chinensis* - *China lose* {S}. Young shoot tips, flower-buds, and opened flowers are parboiled and eaten as potherbs, stir-fried, added to soups, or preserved. China. TANAKA; E84{PL}, G66, H4{PL}, H14{PD}, K63G, N84, 093

## CULTIVARS {GR}

**Cecile Brunner:** (Sweetheart Rose) Exquisite, warm pink buds open to small pale-pink double blooms. Delicate fragrance that carries on the air. Vigorous, bushy growth, to 4 feet in mild areas. Rated one of the best-tasting rose cultivars by Mudd's restaurant of San Ramon, California who use the flowers for flavoring honey, confections and sorbets. CREASY 1990; A47, A88M, C9, C54, D95, E84, F97, G96, H4, H78, M77, N78, N84, R83

Rosa x damascena - *Damask rose* {PL}. Petals are the source of *attar of roses*, *rose absolute*, and *rose water*; used as a flavoring for beverages, candy, ice cream, bakery goods, etc. Dried young flowers are the source of *rosebuds*, an ingredient of *ras el hanout*. Rosebuds are also used for flavoring sausages such as *merguez* and *bastirma*. The young shoots, while still red-colored, are eaten raw or steamed, as a side-dish with rice. Leaves are used as a seasoning. DAGHER, MORTON 1976, OCHSE, TANAKA, UPHOF, WOLFERT 1973 [Cul]; E84, F54, N84{S}

## CULTIVARS {GR}

**Kazanlik:** (Kazanlyk) Most important source of commercial Bulgarian attar of roses. In Azerbaijan, the petals are considered superior for making jam. Produces rose-pink, very fragrant, semi-double flowers in June and July. Grows about 5 feet tall. Originated prior to 1700. AKHMEDOV [Re]; A47, E84, H6, J82, N78

*Rosa eglanteria* *Rosa rubiginosa*

Rosa gallica - *French rose*, *Apothecary rose*, *Rose de Provence* {PL}. Flower petals are crystallized or preserved in syrup, and are also dried and used to impart flavor and fragrance to teas, beverages, cakes, honey and liqueurs. Retains its fragrance even when dried and powdered. Europe, cultivated. FOX, H., MORTON 1976, TANAKA; E14T{DF}, E61, E84, F54, G73{DF}, H6, H29M, J82, L90J, M77, N84, R53M

Rosa gigantea - *Manipur wild tea-rose*, *Giant rose of the Himalayas* {PL}. The large yellow fruit, as large as a small apple, is eaten and sometimes sold in the markets of India. Himalayan region. TANAKA; 174

## CULTIVARS {GR}

**Belle Portuaaise:** (Belle of Portu<sup>al</sup>) Hybrid. Very long, pointed buds open to flesh-pink blossoms, 4 or 5 inches in diameter with long petals. Nicely fragrant, with long cutting stems. Rated one of the best-tasting rose cultivars by Mudd's restaurant of San Ramon, California who use the flowers for flavoring honey, confections and sorbets. Originated in 1903 by Monsieur Cayeux in the Botanic Garden of Lisbon. CREASY 1990, FAIRCHILD 1930; A47, A57, N78

Rosa laevigata - *Cherokee rose*, *Jinyingzi* {PL}. A major source of commercial rosehips. Available either whole or sliced, the latter form being of higher quality. Widely used in various herbal preparations including drinks and soups. Eastern Asia, naturalized in North America. LEUNG; A47, C36, D95, G19P{DF}, G66{S}, H4, H36{DF}, I74{S}, L21T{DF}, N37M, N78, P5{S}

Rosa macrophylla - *Bhaunra kujoi* {S}. The fruit is eaten, and is said to become very sweet when black and overripe. Himalayan region. TANAKA, WATT; D95{PL}, N78{PL}, 046, Q40, Q46

Rosa moschata - *Musk rose* {S}. Young shoots are eaten, either raw or cooked, as a side-dish with rice. Flowers are consumed fresh or cooked. Cultivated. OCHSE; E84{PL}, F85, G66, K63G, N78, 053M, Q40, Q46

## CULTIVARS {GR}

**Belinda:** Lightly fragrant, bright pink, semi-double flowers; 1 inch in diameter. Has little or no fragrance in filtered light, a light, sweet odor when grown in full sun. Rated one of the best-tasting rose cultivars by Mudd's restaurant of San Ramon, California who use the flowers for flavoring honey, confections and sorbets. CREASY 1990; A47

Rosa moyesii - *Moyes rose* {S}. The fruits are eaten fresh, preserved, pureed, made into jams, syrups, soups, etc. Dried fruits can

be ground to a powder and added to drinks, waffles, and pancakes. Fruits are very rich in vitamin C, having 1058-1130 milligrams per 100 grams and may be used as a food supplement. Western China. KUNKEL, NOBBS; D95{PL}, E7M, E84{PL}, G66, H6{PL}, 174{PL}, K63G, N71M, N78{PL}, N84, 093, P49, R78

Rosa multiflora - *Multiflora rose* {S}. Young leaves and budlings are parboiled and eaten. The fruits are eaten raw, or processed into syrup, jam, jelly, and wine. Eastern Asia, naturalized in North America. CROWHURST 1972 [Re], TANAKA; C9M, F45{PL}, G66, G66{PL}, K38, K63G, M69M{PL}, M74M, N71M, N84, 053M, 093, R78

Rosa nutkana - *Nutka rose* {PL}. The fruit is juicy, pleasantly acid and is a good source of vitamin C. It is dried, powdered and added to tea. The juicy, young shoots can be peeled and eaten in the spring, when still tender. Northwestern North America. HEDRICK 1919, NORTON, TURNER 1979; A2{S}, C33, F85{S}, G66, I47{S}, 160, 174, J26, K47M{S}, K49Q{S}, K63G{S}, N78, N84{S}

*Rosa odorata* - *Rosa gigantea*

Rosa pimpinellifolia - *Burnet rose*, *Scotch rose* {S}. The small, purple-black fruits are eaten fresh, being unusually sweet and pleasant-tasting. Eurasia, cultivated. GESSERT, HEDRICK 1919; A74{PL}, B9M{PL}, D95{PL}, E7M, G66, I74{PL}, K63G, M98{PL}, N78{PL}, N84, 053M, P49, R78

*Rosa pomifera* - *Rosa villosa*

Rosa rubiginosa - *Eglantine*, *Sweet briar* {PL}. The hips are used for making jelly. In the Middle East, a mixture of the flower petals and honey, called *gulangabin*, is used in confectionery. Sprigs were added to Queen Elizabeth's recipe for mead—along with rosemary, bay leaves, and thyme. Eurasia, naturalized in North America. GAYRE, JOHNSTON, J., MEDSGER, UPHOF; B9M, E7M{S}, E84, F45, F54, G66, H6, 174, K38{S}, K63G{S}, N71M{S}, 053M{S}, S55{S}

Rosa rugosa - *Rugose rose*, *Tomato rose*, *Mei gui* {PL}. Fruits are eaten fresh, stewed, pureed, or made into jelly, jam, soup, tea and wine. The flowers are nibbled, prepared as a salad, candied or used for jam, tea and syrup. In China the petals are added to *mei-kuei-lu*, a kaoliang spirit that flavors cakes, confectionery, marinades, and the master sauce for flavor-potting, and *meigui hongcha* or *rose congou tea*. Unripe fruits can be peeled, cooked and eaten. The young shoots are boiled or steamed and served as a potherb. Eastern Asia, cultivated. CHOW, COTTERELL, FERNALD, GIBBONS 1966b [Re], HARRINGTON, H., SO; B9M, C9M{S}, C47, D92M{S}, F45, F51, F80{S}, G23, I49G, J16, J61M{PD}, K38{S}, K63G{S}, N78, 053M{S}, etc.

## CULTIVARS {GR}

**Alba:** (White) Very large, deep red hips. Good for all culinary purposes. Large, pure white sweetly scented flowers reminiscent of Gallica and Damask roses. Attractive, rugose or wrinkled foliage. One of the hardiest of all roses. A74, B9M, C45M, D37, E7M{S}, F35M, H6, H8, H29M, 160, K38{S}, M92, N78, N84{S}, P49{S}, R83, etc.

**Fru Daamar Hastruo:** Very large, round deep crimson fruits that have good flavor. Sprawling bush, 4 to 5 feet tall, very productive of hips. Disease resistant. Pale satin pink single flowers with soft yellow stamens, produced until autumn when the fruits are ripening. Originated in Denmark, in 1914. A47, C9, C58, E84, 191, J61M, M77, M98, N78, 053M{S}, R83

**Hansa:** Large, tomato-shaped fruits, about 1 inch long; brick red skin and creamy orange pulp with a pleasing flavor. Excellent for making jams, marmalades and teas. Double purplish-red flowers. Originated in Holland, in 1905. A47, A65, A74, C58, D37, D65, E84, FI, G89M, H6, H8, H29D, H44, H90, 174, K89, L70, M77, M92, etc.



**Scabrosa:** Grown primarily for the large red hips, somewhat reminiscent of cherry tomatoes. Produces large pink flowers, about 5 inches in diameter, that bloom for months. Spreading bush, about 5 feet tall, disease resistant and very productive of hips. Introduced in 1960. C58, E84, J61M, N78

**Yellow Daamar Hastruo:** Similar to Fru Dagmar Hastrup in habit and fruit size but with tightly pointed buds and yellow flowers that are produced all season. J61M, N78

*Rosa spinosissima* -> *Rosa pimpinellifolia*

*Rosa villosa* - *Apple rose* {PL}. The leaves are used as a substitute for tea, called *Deutscher tee*. Fruits are large, up to an inch in diameter, have a pleasant, acid pulp and are eaten fresh or processed into preserves, wines, puddings, sauces, sweetmeats, and beverages. Eurasia. HEDRICK 1919, JOHNS [Cul, Re], SIMMONS 1972 [Cu], UPHOF; A74, C95{S}, D37, D95, E61, E84, G66{S}, 174, K63G{S}, N78, N84{S}

CULTIVARS {GR}

**Wollev Pod's:** (Double Apple Rose, Duplex) Fruit crimson-colored, ranging in size from 3/4 inch to 1 1/4 inches in diameter, sometimes larger; flavor good. Can be used fresh, dried or candied. Semi-double, clear rosy-purple flowers; heavily-scented, sweetly-fragrant. N78

*Rosa virginiana* - *Virginia rose* {S}. The buds are eaten by the Chippewa Indians Eastern North America. YANOVSKY; B9M{PL}, D95{PL}, G66, H4{PL}, H6{PL}, K63G, N71M, N78{PL}, N84, 053M, P49, R78

*Rosa woods*» - *Wood's rose* {S}. Fruits are eaten raw, pureed, made into §rup and jelly, or dried for use in soups and teas. North America. TURNER 1979 [Re]; B74{PL}, C53{PL}, D92M, D95{PL}, E15, G66{PL}, 147, J25M, J25M{PL}, J26{PL}, K38, K63G, N84

*Rosa* 'Blaze' - *Blaze rose* {GR}. Recommended for candying by candied flower expert Jill Ann Williams. Small, bright scarlet, semi-double, cupped blossoms; recurrent. The buds and sturdy, full blossoms are excellent for candying, especially when a rich red color is wanted—such as for Christmas, school colors, etc Works well with gel-based candying kits. Popular climber. WILLIAMS, J.; A88M, B9M, F45, F89, H29D, H44, J83

*Rosa* 'Buchi' - *Carefree beauty rose* {GR}. Recommended for candying by candied flower expert Jill Ann Williams. Semi-double, coral pink blossoms, 2 inches in diameter; everblooming. Elegant, tapered, medium-pink buds. Candied buds are good for wedding cakes. Works well with gel-based candying kits. Tall shrub. WILLIAMS, J.; A74, H29D

*Rosa* 'Rhonda' - *Rhonda rose* {GR}. Recommended for candying by candied flower expert Jill Ann Williams. Double, lightly perfumed blossoms; mid-pink with shades of coral. Petals are of good substance and size for candying. Works well with gel-based candying kits. Large-flowered climber. WILLIAMS, J.; H29D, Mil

*Rosa* 'Sea Foam' - *Sea foam rose* {GR}. Recommended for candying by candied flower expert Jill Ann Williams. Medium-sized, double, slightly fragrant, creamy-white flowers with a hint of pink; blush-pink buds; recurrent. Suitable for candying when in bud or full bloom. Good for white on white wedding cakes. Works well with gel-based candying kits. Excellent ground cover. WILLIAMS, J.; A74, B9M, F45, H29D, M77

*Rosa* 'The Fairy' - *The Fairy rose* {GR}. Recommended for candying by candied flower expert Jill Ann Williams. Tiny, double, light pink blossoms produced in clusters; 3/4 inch to 1 1/2 inches in diameter; everblooming. The candied blossoms or buds combine well with pansies or candied sprigs of Artemisia 'Silver King'. Works well with gel-based candying kits. Good container plant. WILLIAMS, J.; A74, B4, B9M, E84, F45, F89, H29D, M77, N78

*Rubus albescens* - *Rubus niveus*

*Rubus allegheniensis* - *Allegheny blackberry* {S}. Berries have a pleasant, somewhat spicy flavor and are eaten fresh, or made into jams, preserves and compote. The young shoots can be used in salads. Eastern North America. BRACKETT, CROWHURST 1972, MEDSGER, UPHOF; D47M, D95{PL}, K63G, L55J, N84

*Rubus arcticus* - *Arctic bramble*, *Arctic raspberry*, *Alaska berry*, *Plumbo*, *Nagoonberry*, *Fieldberry* {PL}. The fruit is reddish to dark-purple, very sweet, juicy, highly flavored, and has a pineapple-like aroma. It is delicious when eaten out of hand, and can also be employed for making cakes, jams, sherbet and a liqueur known as *Mesimarja*. Leaves are used as a tea in some parts of Norw<sup>^</sup>. Circumpolar. CAMPBELL-PLATT, HEDRICK 1919, HELLER, TANTTU [Re], TURNER 1979 [Re], UPHOF; P68M, R53M, S30, S69. (for cultivars see Raspberry, page 504)

*Rubus arcticus* ssp. *stellatus* -> *Rubus stellatus*

*Rubus argutus* - *Tall blackberry*, *Highbush blackberry* {S}. The fruits vary in si§ and quality, but generally have rather large and juicy drupelets. They are eaten fresh or cooked. North America. CROWHURST 1972, MEDSGER; U7D

*Rubus caesius* - *European dewberry* {S}. Fruits are consumed raw, used for making jellies and preserves, or brewed into wine. Leaves are used as a substitute for tea. Eurasia, cultivated. HEDRICK 1919, MABEY, TANAKA, UPHOF; U7D

*Rubus calycinoides* - *Creeping raspberry*; *Hime-fuyu-ichigo* {PL}. The fruit is edible. Taiwan. TANAKA; B28, D95, F85{S}, H14M, I37M, J37M, K22, K85, L55, M75

CULTIVARS {GR}

**Emerald Carpet:** Orange berries resembling small raspberries that ripen in July. Ornamental, evergreen groundcover grows only a few inches tall in sun or partial shade, and somewhat taller in full shade. Leaves turn an attractive coppery color in the autumn. Evergreen in British Columbia, in colder climates it may lose its leaves. Thornless. Developed at the University of British Columbia. B74, D95, E87, 174, J61M, N51

*Rubus canadensis* - *American dewberry*, *Canadian blackberry* {S}. Fruits are sweet, juicy, richly-flavored and may be eaten raw, served with cream or made into pies, jams, wine and preserves. North America. CROWHURST 1972, HEDRICK 1919, HENDRICKSON; U7D. (for cultivars see Blackberry, page 304)

*Rubus chamaemorus* - *Cloudberry*, *Baked-apple berry* {PL}. The berries are consumed raw, stewed, preserved, served with cream and sugar or processed into tarts, confections, jellies, vinegar, wine, and liqueurs such as *Lakka*. In Lapland, the berries are preserved by burying them in the snow. Fresh-frozen berries are sometimes available in Nov York and other large cities. Northern temperate region. CAMPBELL-PLATT, FERNALD, HEDRICK 1919, HELLER, HENDRICKSON, MEDSGER, RAY, C., SIMMONS 1972 [Cu], TANTTU [Re], TURNER 1979 [Re]; H15T{PD}, I41G{m}, N84{S}, R53M, R53M{S}

*Rubus crataegifolius* - *Kuma-ichigo* {S}. Fruits are large, transparent, scarlet, and have a sweet agreeable flavor. They are eaten fresh or brewed into wine. China. HEDRICK 1919, TANAKA, UPHOF; U7D, Z25M

CULTIVARS {SC}

**Jinfu Jenaal:** A cultivar selected in Korea after a study of wild material collected from farms and hilly areas. Notable for its high yield and relatively large (2 grams) firm fruit. JENNINGS; U7D

*Rubus deliciosus* - *Rocky Mountain flowering raspberry*, *Boulder raspberry* {PL}. The fruit is eaten, but in spite of its specific epithet, is not highly valued. Western North America. HARRINGTON,^; D95, G89M

*Rubus ellipticus* - *Yellow Himalayan raspberry*, *Golden evergreen raspberry* {S}. The fruit has a very good raspberry-like flavor, and is eaten fresh or used for making jams and preserves. Yields an attractive and rich-flavored juice that can be used for making squash.

India, Himalayan region. PARMAR, C., SIMMONS 1972, UPHOF, WATT; I74{PL}, Q40

*Rubus flagellaris* - *Northern dewberry*; *Field dewberry* {S}. Fruits are eaten raw, and are also used in pies, jams, jellies, sauces, fruit juices and wines. Dried leaves make a fine tea. The young shoots are peeled and eaten raw. Eastern North America, cultivated. CROWHURST 1972, HENDRICKSON, KINDSCHER, MEDSGER, SIMMONS 1972, UPHOF; U7D. (for cultivars see Blackberry, page 304)

*Rubus fraxinifolius* - *Palawan* {S}. The fruits are large, red, juicy, sweetish and can be consumed fresh or mixed with ice or milk. New Guinea to the Philippines. RIFAI, TANAKA; F85

*Rubus fruticosus* - *European blackberry*, *Bramble* {S}. Fruits are consumed fresh, brewed into wine, made into jam, fruit juice, pies, vinegar, syrup, blackberry liqueur, junket, used for coloring wine, etc. Young leaves are used as a substitute for tea. Eurasia, cultivated. The young, purple shoots can be eaten in omelettes or with olive oil and lemon juice. Produces a light-colored honey with a medium flavor reminiscent of clover honey. CRANE 1975, GRAY, P. [Cul], HEDRICK 1919, MABEY, MICHAEL [Re], UPHOF; B54M{PD}, C67{PD}, G66, N71M, N84, P49, R78

*Rubus glaucus* - *Andes black raspberry*, *Mora de castilla* {PL}. The fruit is light-red to dark-purple, and when fully ripe has a rich, aromatic, pleasantly subacid raspberry-like flavor. It is excellent when eaten with sugar and cream, and is also used to prepare a sweet conserve or syrup, called *jarope de mora*, from which a *refresco* is made. Central America to Ecuador. KENNARD, NATIONAL RESEARCH COUNCIL 1989, POPENOE, W. 1924, WILLIAMS, L.; 174

#### *Rubus hillii* - \**Rubus moluccanus*

*Rubus idaeus* - *European red raspberry* {S}. The fruit is eaten raw, dried, or preserved, and is also processed into jam, pastries, compote, syrup, raspberry liqueur, vinegar, wine, brandy, etc. In Belgium, *framboise lambic* is one of the most popular of the fruit-flavored lambic beers. Raspberry juice is traditionally added to the red-colored version of *Berliner weisse*, the wheat beer of Germany. Dried leaves are used as a substitute for tea. When raspberry leaves are used in brewing *kombucha*, the resulting beverage is said to have the flavor of apple juice. *Raspberry shrub*, a colonial era beverage, is made from raspberries, water, vinegar and sugar. Produces a light, mild honey with a very fine flavor and aroma. Yellow-fruited forms are available. Northern temperate region. BROWN, J., CRANE 1975, FORGET, FRANK, GUINARD, JACKSON, M., JOHNS [Cul], MABEY, MICHAEL [Re], TANAKA, TIETZE, UPHOF; B54M{PD}, C94M{PD}, C95, D74M{PD}, E56{DF}, H47IPD}, 147, I66M{PD}, K63G, L79J{PD}, M97M{PD}, N40{DF}, N84. (for cultivars see Raspberry, page 504)

*Rubus illecebrosus* - *Strawberry-raspberry*, *Baloon berry* {S}. The bright-red berries are sour, bitter and unpalatable if eaten out of hand. When cooked, they have a pleasant flavor, reminiscent of a mixture of strawberries and raspberries, and can be used for syrup, pies or jam. Eastern Asia. HENDRICKSON, SIMMONS 1972 [Cu]; U7D

*Rubus laciniatus* - *Oregon evergreen blackberry*, *Cut-leaved blackberry* {S}. Fruits are large, sweet, juicy, jet-black when ripe, and are eaten out of hand or used for jellies, jams and pies. Naturalized in Western North America. HEDRICK 1919, HENDRICKSON, SIMMONS 1972; 147

#### CULTIVARS

**Oregon Thornless:** Large, roundish, juicy, jet black fruit; quality and flavor good. Ripens in September and October. Very productive, vining plant, 14 feet long; entirely thornless. Very attractive, parsley-leaved foliage. One of the most popular blackberries in England. Discovered in Oregon in 1927. SIMMONS 1978; 081, P68M

**Parsley-Leaved:** Large, roundish to oval, juicy, dark reddish-black fruit with very good flavor. Ripens in August and September. Strong growing, very productive plant. Highly ornamental, parsley-leaved foliage. Excellent for growing on pergolas. An old heirloom that is popular in England. SIMMONS 1978; 081, R83

#### *Rubus lasiocarpus* - *Rubus niveus*

*Rubus leucodermis* - *White-bark raspberry*, *Western raspberry* {S}. The pleasant-flavored fruit is eaten fresh, dried or made into jams and sauces. A refreshing tea can be made from the leaves, which are high in vitamin C. Young, tender shoots are eaten. Western North America. CLARKE [Re], HEDRICK 1919, MEDSGER, YANOVSKY; A2, F88M, 147, J26{PL}

*Rubus moluccanus* - *Ceylon blackberry* {S}. The fruit is eaten fresh or made into jams. Southeast Asia to Australia. BROWN, W., BURKILL, TANAKA, WATT; P38

#### CULTIVARS {GR}

**Keri:** (Keriberry) Large black fruit; flavor mild, blackberry-like but lacks the distinctive flavor of the wild blackberry. Plant evergreen; strongly armed, thick-stemmed; very vigorous, plant 5 feet apart with 12 to 15 feet between rows. Leaves bright green, rough, ivy-shaped. Fruiting stems are grey-green, darkening with age to almost black. H4,174, J61M, K67

#### *Rubus morifolius* - \**Rubus crataegifolius*

*Rubus x neglectus* (*R. occidentalis* x *R. strigosus*) - *Purple raspberry* {PD}. Natural and artificial hybrids. Black raspberry x red raspberry. Fruits are eaten fresh, preserved, made into jams and jellies, etc. MEDSGER, UPHOF, ZEVEN; F42M, M97M. (for cultivars see Raspberry, page 504)

*Rubus niveus* - *Ceylon raspberry*, *Hill raspberry*, *Piled* {GR}. The fruit is purple-black when ripe, juicy, and of a sweet, rich black-raspberry flavor. It is eaten raw, served with sugar and cream or ice cream, and is also made into juice, tarts, pies, jellies and jams. Southern Asia. HEDRICK 1919, KENNARD, MACMILLAN, MORTON 1987a [Cu], PARMAR, C, STURROCK; N84

#### CULTIVARS

**Mysore:** (Mysore Raspberry) Black fruit, covered with soft hairs; flavor mild, slightly sweet, good; seeds small; similar to western native black raspberry; main crop ripens March to May in Florida. Bush evergreen; canes vigorous, growing 10 to 15 feet per season; adapted only in subtropical regions. Very suitable for home gardens. Originated in India as a seedling selection. Introduced into the U.S. in 1948. BROOKS 1972; E29, G2M, L55J{S}, 053M{S}, S97M

*Rubus occidentalis* - *Black raspberry*, *Blackcap* {ED}. Fruits are eaten fresh, dried, in jams, jellies, pies, sherbet and ice cream, canned, served with sugar and cream, preserved, made into vinegar, etc. Young shoots are eaten like rhubarb. The leaves and the bark of the root are used for making a tea-like beverage. North America. MEDSGER, TANAKA, YANOVSKY; A38M, C67, E63K, F42M, K63G{S}. (see also Raspberry, page 504)

#### CULTIVARS {GR}

**Thornless:** Thornless form of the common wild black raspberry. K89

*Rubus odoratus* - *Rose-flowering raspberry* {PL}. The somewhat tart and dry fruits are consumed raw, and are also made into pies, jams, and jellies. North America. CROWHURST 1972, GIBBONS 1979, MEDSGER; A74, D95, E33M, J48, L59P, M16, N7T, N24M

*Rubus parviflorus* - *Thimble berry* {PL}. Berries are eaten fresh, or dried and stored for later use. Tender, young shoots are peeled, and consumed raw or boiled. Both the berries and shoots are good sources of vitamin C. North America. CLARKE, FERNALD, HELLER, MEDSGER, NORTON, YANOVSKY; A2{S}, A91, B74, B92, D95, E15{S}, F88M{S}, G60,147{S}, 160,198M, J26, J61M, N84{S}

*Rubus parvifolius* - *Japanese raspberry* {PL}. The juicy fruits are eaten raw, made into jam, and brewed into wine. Eastern Asia, Australia, cultivated. CRIBB, HEDRICK 1919, TANAKA; N79. (for cultivars see Raspberry, page 504)

*Rubus phoenicolasius* - *Japanese wine berry*, *Wine raspberry* {PL}. The fruit is cherry-red, soft, very juicy, mildly sweet and can be eaten fresh, made into jams and jellies or brewed into wine. Japan, naturalized in North America. GIBBONS 1962, HENDRICKSON, JOHNS, SIMMONS 1972 [Cu], TANAKA, UPHOF; B19, C61, C95{S}, D37, D95,174, J61M, M16, M92, N84{S}, P68M

*Rubus procerus* - *Himalaya berry* {S}. Large, black, thimble-shaped fruits that are eaten raw, dried, or used for cakes, pies, drinks, etc. Temperate Asia, naturalized in North America. CLARKE, HENDRICKSON, ZEVEN; F74M{PD}, N84

*Rubus procumbens* - \**Rubus flagellaris*

*Rubus rosaefolius* - *Mauritius raspberry*, *Bramble of the Cape* {S}. Fruits are eaten raw, stewed with sugar, served with coconut cream, or made into jam. The leaves are also edible. Tropical Asia, cultivated. CRIBB, GIBBONS 1967, KENNARD, MARTIN 1975, TANAKA; F85, N79{PL}, N84

*Rubus roseus* - *Mora de Rocoto* {PL}. The juicy, raspberry-like fruits are eaten raw or made into jams, jellies, preserves, wines, aguardiente and refreshing drinks. Sold in local markets of Bolivia, Peru and Ecuador. Andean region. NATIONAL RESEARCH COUNCIL 1989, POPENOE, W. 1920, UPHOF; 174

*Rubus rubrisetus* - Fruits are eaten. North America. TANAKA; (for cultivars see Blackberry, page 304)

*Rubus rugosus* - *Rubus moluccanus*

*Rubus saxatilis* - *Roebuck berry*, *Stone bramble* {S}. Acid fruits are eaten raw, with sugar, or fermented into an alcoholic beverage. Arctic and temperate regions. HEDRICK 1919; N84, 053M

*Rubus shankii* - *Shank's blackberry* {S}. The large fruits are eaten, being of excellent quality with small, soft seeds. Central America. KENNARD; U7D

*Rubus spectabilis* - *Salmon berry* {S}. Fruits are consumed raw, dried or made into tarts and jelly. They are juicy and of very good flavor. Indians often ate the berries with half-dried salmon eggs, hence the common name. Young shoots are peeled and eaten raw, roasted, or cooked like asparagus and served with hollandaise sauce. The leaves are used as a tea substitute. Northwestern North America. CLARKE, GIBBONS 1979, HEDRICK 1919, HELLER, TURNER 1979, YANOVSKY; A2, A15M{PD}, B74{PL}, D95{PL}, E15, F88M, 147, J61M{PL}, K63G, N84

*Rubus stellatus* - *Arctic raspberry* {PL}. The raspberry-like fruits are eaten or used for making cakes, jams, jellies, etc. They are juicy, fragrant and very sweet. North America. TURNER 1979 [Re]; N84

*Rubus strigosus* - *American red raspberry* {PD}. The fruit is eaten raw, preserved, made into jams, pies, and syrups, used in sherbets, ice cream, compote, pastries, confectionery, fermented into wine, etc. Young shoots are peeled and eaten raw, or cooked like asparagus. A substitute for tea can be made from the leaves or twigs. Also produces a light honey of superior quality. Yellow-fruited forms are available. North America, cultivated. GIBBONS 1962 [Re], HARRINGTON, H., MEDSGER, PELLETT, TANAKA, TURNER 1979 [Re], UPHOF, YANOVSKY; F42M, L68, M97M. (for cultivars see Raspberry, page 504)

*Rubus trivialis* - *Southern dewberry* {S}. The berries are large, black and well-flavored and are eaten raw, or used for jams and preserves. Southern North America. HEDRICK 1919, MEDSGER, SIMMONS 1972, UPHOF; U7D. (for cultivars see Blackberry, page 304)

*Rubus ursinus* - *Pacific dewberry*, *California dewberry* {S}. Fruits are consumed fresh or dried, and are also made into pies, sauces, jellies and cakes. The half-ripe berries can be soaked in water to make a pleasant drink. Fresh or dried leaves are used for tea. Young shoots are boiled and eaten. Western North America. CLARKE [Re], TURNER 1979 [Re]; A2, E15, F88M, G60{PL}, 147,198M{PL}, J26{PL}, N84. (for cultivars see Blackberry, page 304)

*Rubus vitifolius* - *Pacific blackberry* {PL}. The sweet, black fruits have a pleasant flavor and are eaten fresh or used for jellies and preserves. Indians dried them for future use, and pounded the fresh fruit to form cakes and *penmican*. One of the parents of the Loganberry and Luther Burbank's Primus berry. Western North America. CLARKE [Re], SIMMONS 1972, WICKSON; F85

*Rubus* x sp. (*R. arcticus* x *R. stellatus*) - *All fieldberry* {PL}. Artificial hybrid of the Nordic fieldberry and Arctic raspberry. The delicious, aromatic bright red fruits are eaten, both raw and cooked. Somewhat larger and more productive than the fieldberry. Developed in Sweden by noted horticulturist Gunny Larsson. J61M

CULTIVARS {GR}

Linda: Dark red fruit of very good quality; ripens over a 6 week period in Ally. Vigorous, hardy plant, forms an attractive groundcover only 12 inches high. Self-sterile, must be planted with another cultivar such as Sophia. One of the first cultivars to be introduced. Developed by Gunny Larsson. J61M, P68M

Sophia: Relatively new improved cultivar. Juicy, reddish fruits with very good flavor. Hardy and vigorous plant, forms an ornamental mat-like groundcover; fragrant pink flowers. Self-sterile, must be planted with another cultivar such as Linda. Developed by Gunny Larsson. J61M, P68M

*Sanguisorba canadensis* - *American great burnet* {S}. The leaves are boiled, washed with water to remove the bitterness, and eaten with salt and miso. North America. ALTSCHEUL; B77{PL}, C9{PL}, F85, G47M, J39M{PL}, M77M{PL}, N84

*Sanguisorba minor* - *Salad burnet* {PL}. The leaves, having the taste of cucumber, are eaten in salads, used as a garnish, or added to soups, cooling drinks, vinegar, and *claret cups*. Chopped leaves are often mixed with butter, cottage cheese and cream cheese. Dried leaves can be steeped for tea. Young seedlings are boiled and eaten. Eurasia, naturalized in North America. FERNALD, HALPIN [Cu, Cul], MARCIN, MEDSGER, MICHAEL [Re], MORTON 1976, REILLY, TANAKA, VILMORIN [Cu]; C3{S}, C16{S}, C67M, F80{S}, I47{S}, I77M, K22, K85, L90J, M53, M82, N19M, N84{S}, R47{S}

*Sanguisorba officinalis* - *Garden burnet*, *Great burnet* {S}. Young leaves and flower-buds are consumed in salads, and are also parboiled and eaten fried, oil-roasted, added to soups, or preserved in salt. Leaves are also used as a tea substitute and are added to herb beers. The seeds are used in the preparation of vinegar. Young shoots are mixed with other greens and used as a potherb. Northern temperate region. GRIEVE, MACNICOL, MORTON 1976, TANAKA; D92M, F80, L66{PL}, M82{PL}, N71M, N84, 053M, Q24

X *Sorbaronia* sp. (*Sorbus aucuparia* x *Aronia melanocarpa*) - {GR}. Artificial hybrid. Chokeberry x Mountain ash. The fruit is eaten.

CULTIVARS

Ivan's Beauty: Small, dark purple fruit, about 1/2 inch in diameter; intense tart-sweet flavor. Excellent for jams, wine, jelly or sauces. Very high in Vitamin C. Can be stored under refrigeration until spring. Small spreading tree, 8 to 12 feet tall; striking, large, glossy dark-green leaves and large clusters of pinkish flowers. Ideal for edible landscaping. Developed by I.V. Michurin. C34, 146, I49P, I66T, 174, J61M

X *Sorbopyrus auricularis* (*Sorbus aria* x *Pyrus communis*) - *Bollwillerpear*, *Bolwyller pear* {S}. Artificial hybrid. White-chance x pear. Fruits are eaten. BEAN, W., REHDER, TANAKA.

## CULTIVARS

**Shipova:** Roundish to slightly pear-shaped fruit, about the size of a large apricot; skin deep yellow; delicious flavor and delicate rose-like aroma; seedless. Excellent for eating out of hand. Blooms in mid-April and ripens in August. Small to medium-sized tree with a pyramidal shape and dark silver-gray foliage; productive, hardy and scab resistant. Ornamental as well as useful. Originally from the former Yugoslavia. B74, E87, F43M, H49, I46, I49M, I49P, I66T, I74, J61M

*Sorbus americana* - *American mountain ash* {S}. Fruits are processed into jams, jellies, beverages, wines and marmalades. When mellowed by frost, they become palatable and may be eaten raw. Eastern North America. FERNALD, GIBBONS 1979, MEDSGER, TURNER 1979; C55{PL}, D45{PL}, E33M{PL}, G66, I4{PL}, J39M{PL}, K38, K63G, L91M, N84, O93

*Sorbus aria* - *Whitebeam*, *Chess apple* {S}. The fruit is made into brandy, jellies, preserves and vinegar. When ripe, it is brown and speckled with red spots, and can be eaten raw after being "Wetted", like the medlar. Eumsia. MABEY, SIMMONS 1972, UPHOF; D95{PL}, G66, K38, K63G, L91M, N71M, N84, O53M, P49, R78

*Sorbus aucuparia* - *European mountain ash*, *Rowan tree* {PL}. Fruits are processed into preserves, jellies, compotes, wine, bitters, liqueurs, *perry*, brandy, syrups, added to soups, etc. In Poland, they flavor a vodka known as *Jarzebiak*. Also used as a substitute for coffee. Leaves and flowers are used to adulterate tea. Eurasia, cultivated. BROWN, G., CAMPBELL-PLATT, GRIEVE, LAUNERT [Pie], MABEY, MICHAEL [Re], TANAKA, TANTTU [Re], UPHOF; A65, A74, C33, C58, D95, E47{S}, G16, G23, I47{S}, K38{S}, K63G{S}, L49, M35M, O53M{S}

## CULTIVARS {GR}

**Rabina:** Russian cultivar with very large, reddish-orange fruit selected for its excellent flavor. Good for fresh eating, juice and preserves. Also a fine ornamental with large clusters of attractive white flowers produced in abundance. Hardy to -40° F. Has good resistance to pests and diseases. B74, I49P, I66T, I74

**Rosina:** Very ornamental selection of mountain ash. Long, slender foliage complements the abundant harvest of bright orange, tasty fruit. Developed in the former East Germany. I66T

*Sorbus aucuparia* 'Edulis' - *Rowanberry* {PL}. The fruits are preserved, and can also be used for jams, jellies, ketchups, sweetmeats, liqueurs, or wine making. JOHNS [Re], SIMMONS 1972 [Cu], TANAKA; NO

## CULTIVARS {GR}

**Navezhenskava:** Attractive tree growing to about 25 feet tall. Hardy to USDA Zone 3. Produces a profusion of red fruits that are used for making jellies and sauces. Introduced to the United States from St. Petersburg, Russia. J61M

*Sorbus aucuparia* 'Moravica' - *Mährische eberesche* {PL}. The fruits are high in vitamin C and make delicious jellies and preserves. They are larger and sweeter than the type. An improved strain, discovered in the former Czechoslovakia in 1810. ZEVEN; P68M

*Sorbus aucuparia* 'Rossica' - *Russian mountain ash* {PL}. The large orange fruits are eaten, being sweeter than the type and an important source of vitamin C. Trees are immune to fire blight. Cultivated in the former U.S.S.R. since before 1810. TANAKA, ZEVEN; A65, B47, G54, G89M, J61M, K37M

*Sorbus domestica* - *Service tree*, *Sorb apple* {S}. The fruit is eaten fresh after it has been exposed to frost, or when overripe and "bled", like the medlar (*Mespilus germanica*). Also fermented into wine. In France, it is used for making *perry* or is dried like prunes. Apple-shaped and pear-shaped forms are known. Eurasia, cultivated. BIANCHINI, SIMMONS 1972, UPHOF; G66, I60{PL}, K38, K63G, N71M, N84, O53M, O93, P49, R78

## CULTIVARS {GR}

**Apple:** (Malifera) Roundish, apple-shaped fruits, about 1 1/4 inch in diameter; reddish-brown in color with much spotting. Selected at the Nikita Botanical Gardens in Yalta, Crimea. I66T

**Pear:** (Pyrifera) Small, pear-shaped fruits, normally much smaller than the apple-shaped form; reddish-brown in color with much spotting. Selected at the Nikita Botanical Gardens in Yalta, Crimea. I66T

*Sorbus edulis* - \**Sorbus aucuparia*

*Sorbus latifolia* - *French hales*, *Fontainbleu service tree* {S}. The fruit is russet-yellow with conspicuous black dots, and has been sold and eaten in Devon, England. Also used for making jelly that is rich in pectin. Europe MABEY, SIMMONS 1972; D95{PL}, G66, I60{PL}, J61M{PL}, K63G, N71M, N84, P49, R78, S69

## CULTIVARS {GR}

**Devoniensis:** Was grown for its fruits 50 years ago in Devon, but had been lost since then until recently. Fruits were sold as *sweets* in the "old days". Attractive copper-colored foliage. Tree grows to about 40 feet. J61M

*Sorbus scopulina* - *Western mountain ash* {S}. Fruits are eaten raw, cooked, or dried and are also made into pies, jams, jellies, marmalades and a bitter-sweet wine Western North America. KIRK, MEDSGER; A2, D95{PL}, G66, I47, J26{PL}, K38, K63G, K81{PL}, M35M{PL}, N84, O93

*Sorbus sitchensis* - *Sitka mountain ash* {S}. The fruits are primarily used in the preparation of jellies, marmalades, jams, wines and liquors. They can also be placed in the top of the jar, as a flavoring, when canning blueberries. Western North America. TURNER 1979 [Re]; D96, F88M, G66, I47

*Sorbus torminalis* - *Checker tree*, *Chequers* {S}. When ripe, the fruit is brown, checkered or speckled with lighter-colored spots, and has soft, fairly sweet flesh that is rich in vitamin C. It can be eaten like the medlar, and is also processed into jellies, preserves, wine, brandy and vinegar. Eurasia. GRAY, P. [Cu], MABEY, SIMMONS 1972 [Cu], UPHOF; D95{PL}, G66, K38, K63G, N71M, N84, O53M, O93, P49, R78, S69{PL}

*Spiraea chinensis* - {S}. Leaves are processed into a tea, called *tsui-lan-cha*. China. TANAKA; T41M, W3M

*Spiraea x pyramidata* - *Pyramid spiraea* {S}. A tea-like beverage can be made by boiling the stems, leaves, and flowers. Western North America. YANOVSKY; C82

## RUBIACEAE

*Asperula odorata* - \**Galium odoratum*

*Borojoa patinoi* - *Borojo* {S}. The sweet, delicious fruit is eaten out of hand or used for *refrescos*, *licuados*, jellies, preserves, cocktails, sauces, ice cream and sherbets. Prized in parts of Colombia and Panama, where it brings high prices when sold in local markets and larger cities. Northwestern South America. DUKE, PEREZ-ARBELAEZ, RICKER, SCHERY; N84, R78M

*Burchellia bubalina* - *Wild pomegranate* {S}. The flowers are sucked for their rich nectar. Southern Africa. PALMER; N84, O53M, P5, S28M

*Casasia clusiifolia* - *Seven-year apple* {PL}. When fully ripe the fruit is soft, wrinkled, and prune-like, with black, jelly-like pulp somewhat licorice flavored. It is eaten by making a hole in one end of the fruit and sucking the pulp out. Florida, West Indies. MOR-TON 1977; D87G

*Catunaregam spinosa* - \**Randia dumetorum*

*Cinchona succirubra* - *Red cinchona* {S}. One of the sources of *cinchona bark*, an extract which is used to flavor bitters, liqueurs such as *Campari* and *Dubonnet*, soft drinks, condiments, baked

goods, candy, relishes and ice cream. *Tonic water* or *quinine water* is a popular mixer for cocktails, such as *gin and tonic*. Contains quinine and other compounds which have astringent and bitter tonic properties. Ecuador. CAMPBELL-PLATT, DOMINE, HERBST, S., LEUNG, MORTON 1976; L55J, N7D{DF}, N84

*Coffea arabica* - *Coffee, Arabian coffee* {S}. Roasted seeds, often called coffee beans, are the source of a stimulating beverage. It is served hot, cold, fortified, spiced, with milk or cream, etc. *Peaberry* or *caracol* coffee occurs when one small round seed forms inside the fruit instead of the usual two flat seeds. It is preferred by some connoisseurs for its flavor and because it roasts more uniformly. Another unique grade of coffee, *Maragogipe*, has very large, rather porous beans. Coffee extract is used for flavoring ice cream, candies, pastries, soft drinks, yogurt, and liqueurs such as *Kahlua* and *Tia Maria*. Dried, roasted green seeds are mixed with spiced butter and salt and eaten as an appetizer in Ethiopia. Chocolate-covered roasted seeds are eaten as a gourmet snack. The red fruits and leaves are chewed for their stimulating properties. Coffee juice, expressed from the ripe fruits, is a popular beverage in Central Africa where the juice is also brewed into wine. The leaves, which contain more caffeine than the fruits, are used as a tea substitute, called *qut'i* in Ethiopia. Eastern Africa, cultivated. DWIDS [Re], GRIEVE, HEDRICK 1919, MESFIN [Re], RAY, C., SMITH, N., TANAKA, UPHOF, WRIGLEY; A79M, C9M, C17{PD}, C29{PD}, E29{PL}, E38M{PD}, E53M, G96{PL}, H44M{PD}, H72{PD}, I34{PD}, I34J{PD}, I81M, I83M{PL}, N84, 093, P5, P17M, P38,

**Caturra:** More compact, with larger dark-green leaves, and more cold hardy than the species. A precocious bearer and high yielder, thus of great economic importance. Easy to harvest. Tends to overbear. Used as a parent in many current breeding programs. A mutant that probably originated in Minas Gerais, Brazil. WRIGLEY; A79M, D56M, D57{PL}, D92M, F73D, G73, J22{PL}, N40M, N84

**Kona:** Leaves shiry, 3 to 6 inches long; flowers white, fragrant, when in bloom they make a fine display massed in clusters along the branches. Makes a good houseplant and is a good candidate for bonsai. The berries make a very richly flavored, fairly acid, and overwhelmingly aromatic beverage. Originated in Kona, Hawaii. A28{PL}, A79M, C94M{DF}, D57{PL}, D92M, F73D, G73, H44M{DF}, I81M, J58{DF}, J86M{PD}, N84, 093

**Nana:** (Dwarf) Leaves dark, glossy green, wavy-edged; flowers white, fragrant, borne in clusters. Makes a good house plant. This is a dwarf form, particularly useful for pot culture. C9M, L55J, N81, N84, O1, O53M

**Yellow:** A yellow-fruited form. Collected in Hawaii. D57{PL}, F85

*Coffea canephora* - *Robusta coffee, Quillow coffee* {S}. Roasted seeds are brewed into an alkaloidal beverage. Mostly used in inexpensive blends and instant coffees. Has the highest caffeine content of the *Coffea* species. The fully formed but unripe berries are boiled whole with herbs, dried in the sun, and used as a masticatory. Tropical Africa, cultivated. TANAKA, WRIGLEY, ZEVEN; A79M, F73D, F85, G73, N84

*Coffea liberica* - *Liberian coffee* {S}. Roasted seeds are the source of Liberian or *Liberica coffee*, considered inferior to Arabian, Robusta and Sierra Leone coffees. Adapted to warmer and moister climates than *C. arabica*. West Tropical Africa, cultivated. MACMILLAN, UPHOF, ZEVEN; F85

*Coffea racemosa* - *Inhambane coffee* {S}. The roasted seeds are ground and used as coffee. Sometimes a bit of salt is sprinkled over them while roasting. Southern Africa. TREGOLD, UPHOF; A79M, F73D, G73, N84

*Coffea robusta* - *Coffea canephora*

*Coffea stenophylla* - *Sierra Leone coffee, Highland coffee* {S}. The roasted beans produce coffee of superior quality, claimed to be equal to that of Mocha. Occasionally cultivated in preference to Liberian coffee. West Tropical Africa. DALZIEL, MACMILLAN, TANAKA; P38

*Galium aparine* - *Cleavers, Goose-gnss* {S}. Young leaves and stems are steamed and eaten as a vegetable or used in soups, stews, and *Lenten pottage*. Seeds are dried, roasted slightly, and used as a very good substitute for coffee. Dried leaves are used as a tea. Eurasia, naturalized in North America. FERNALD, GIBBONS 1966b, MABEY, MICHAEL; A2, J82, N84, 048

*Galium mollugo* - *White bedstraw, Revala* {PL}. In Friuli, Italy, the leaves are added to *pistic*—a mixture of fifty six wild greens eaten as an early spring ritualistic dish. This tradition may be derived from pre-Roman Celtic cultures who once populated the Friuli region. Eurasia, naturalized in North Eurasia. PAOLETTI; D92M{S}, E61, J5M, N71M, N84{S}, Q24{S}

*Galium odoratum* - *Sweet woodruff Waldmeister* {PL}. The coumarin-scented herb is used for flavoring fruit cups, cooling drinks, liqueurs and spiced wines, especially the *Maibowle* or *Maywine* of Germany. Also in Germaiy, it is traditionally used in the green-colored version of *Berliner Weisse* (wheat beer). Dried leaves are used as a tea substitute. The sweet-scented flowers are eaten or used for garnishing. Eurasia, cultivated. FORGET, JACKSON, M., LEGGATT [Re], MACNICOL, MARCIN, MORTON 1976, PAINTER [Re], UPHOF, VILMORIN [Cu]; B77, C9, C25P{DF}, C67{PD}, C67M, F64{DF}, F80, G40{DF}, H46{DF}, K22, K54{DF}, K85, L36M{DF}, M65M, N19M, N84{S}, etc.

*Galium verum* - *Yellow bedstraw, Lady's bedstraw, Cheese rennet* {PL}. Leaves and flowers contain an enzyme used to curdle milk for cheese and junket. Stems and leaves yield a yellow dye that was used to color *Cheshire* cheese and butter. The flowering tops are used in the preparation of a refreshing, acid beverage. Eurasia, naturalized in North America. FERNALD, GRIEVE, GUNDA, HEDRICK 1919, MABEY, MORTON 1976; C43M, C67M, D92M{S}, F15M, F80{S}, J5M, J76, K22, K85, N19M, N84{S}, O53M{S}

*Gardenia augusta* - \**Gardenia jasminoides*

*Gardenia jasminoides* - *Cape jasmine* {PL}. The fragrant flowers are used to scent *jasmine tea*. They are also eaten raw as a delicacy, pickled, or preserved in honey, when they are called *mi-ts'ai*. Fruits are eaten or used as a yellow coloring for other foods, such as candied chestnuts. Southern China, cultivated. ALTSCHUL, CHOW, BROUK, TANAKA, TSUJI [Re]; B32, D95, E14T{DF}, F85{S}, G96, H4, 174, I83M, K18M{DF}, O93{S}, P17M{S}, Q32{S}

*Genipa americana* - *Genipa, Marmalade box* {S}. The fruits, like the medlar, sorb, and Indian wild pear, are edible only when soft and overripe, when the flavor then resembles dried apples or quinces. They are mostly used in lemonade-like drinks, jellies, sherbets, ice cream, preserves, syrups, soft drinks, liqueurs, or are pickled with vinegar and onions. Tropical America. DUKE, MORTON 1987a, POPENOE, W. 1920 [Cu]; N84, R88

*Heinsia benguelensis* -> *Leptactina benguelensis*

*Ixora coccinea* - *Pitkuli* {S}. Ripe fruits are edible. The flowers are used as a condiment. Tropical Asia, cultivated. ALTSCHUL, BURKILL; F85, J27{PL}, N84, 093, Q32

*Ixora javanica* - *Khem* {PL}. The young flowers and the young fruit are both ingredients of the Thai mixed vegetable soup known as *kaeng Hang*. Southeast Asia. JACQUAT; G96, N84

*Leptactina benguelensis* - *Mulangu, Ngobole ngoshai* {S}. Fruits are edible, having a very strong sweet scent. The flowers are sucked for their sweet nectar. Southern Africa. ALTSCHUL, VON REIS; F85

*Mitchella repens* - *Partridge berry*, *Squaw vine* {PL}. The pleasant, slightly aromatic fruits are sometimes eaten out of hand. North America. FERNALD, GIBBONS 1979, MEDSGER, SIMMONS 1972 [Cu]; C9, C76, D75M, E33M, F51,144, M77M, N7T, Nil  
CULTIYARS

**White:** (*Leucocarpa*) Similar to the above in most respects, except the fruits are white instead of red. C76

*Morinda citrifolia* - *Indian mulberry*, *Noni*, *Cheesefruit* {S}. Unripe fruits are used in sambals and curries. In Thailand, they are used as a digestant and substitute for papaya in making *som tam* (papaya salad). Ripe fruits are made into a beverage with sugar or syrup. In Australia, the juice of the fruit is a popular bushfoods ingredient of dressings, sauces and marinades. Young leaves and blanched shoots—containing 4.5 to 6% protein—are eaten raw, steamed, in curries, or used as a wrapping in fish dishes. The seeds of some forms are toasted and eaten. Tropical Asia, cultivated. DUKE, JACQUAT, OCHSE, ROBINS, TANAKA; A79M, C95, F85, K8{PL}, N84, 032M{PD}, 093, R15M

*Paederia foetida* - *Kasembukan* {S}. Leaves are eaten raw as a side-dish with rice, grated coconut and chili peppers. Minced leaves are steamed and eaten, added to soups, or mixed with various vegetables and spices, wrapped in a banana leaf, and cooked over a fire. The offensive smell disappears when the vegetable is cooked. Tropical Asia. HEDRICK 1919, OCHSE; F85

*Posoqueria latifolia* - *Monkey apple*, *Fruta de mono* {S}. The juicy, yellow fruits are edible. Tropical South America. ALTSCHUL, DUKE; F85, N84

*Psychotria nervosa* - *Wild coffee* {PL}. The seeds are used as a substitute for coffee. Pulp of the fruit is edible. Florida. D87G, G73, G73{S}, 112,181M, 181M{S}, N84

*Randia dumetorum* - *Maindal* {S}. Ripe fruits are eaten after cooking or roasting. An important honey plant in India, yielding a golden yellow honey with medium granulation. Tropical Asia. CRANE 1984, HEDRICK 1919, UPHOF, WATT; Q46

*Randia echinocarpa* - *Kakwara*, *Papache* {S}. The chopped, ground, and boiled bark is used as a catalyst in the preparation of *tesguino*, an indigenous alcoholic beverage. Edible fruits are much appreciated by the natives. Mexico. ALTSCHUL, STEINKRAUS; F85

*Randia formosa* - *Raspberry bush*, *Blackberry-jam fruit*, *Genipapo do campo* {PL}. The sweet fruits are yellow outside, black inside, and are said to taste like molasses or blackberry jam. They are eaten fresh or used in beverages. Tropical America. MARTIN 1987, TANAKA, VON REIS; E29, F85{S}, N84

*Tapiphyllum parvifolium* - *Mountain medlar* {S}. The dark brown fruit splits easily into segments like those of an orange and has the flavor of *Vangueria* spp. It is eaten raw or dried for future use. Southern Africa. FOX, R, TANAKA; F85

*Tocoyena formosa* - *Randia formosa*

*Vangueria edulis* - *Vangueria madagascariensis*

*Vangueria infausta* - *False medlar* {S}. The fruits are eaten raw, dried for later use, made into a drink, or used to flavor puddings and porridges. They have an acid, somewhat sweetish-sour flavor. Often used as a substitute for applesauce. In Transvaal a brandy is distilled from the fruits. Seed kernels are eaten fresh or made into a relish. Tropical Africa. FOX, F, TREGOLD; N84, S28M

*Vangueria madagascariensis* - *Voavanga of Madagascar*, *Spanish tamarind* {S}. The fruits are sweet, subacid, yellowish-green when ripe, with the taste of unripe apples. They may be eaten raw or stewed. If eaten when overripe, like the medlar, the flavor is suggestive of the tamarind. Tropical Africa, Madagascar. KENNARD, MACMILLAN; N84, P5

*Vangueriopsis lanciflora* - *Wild medlar* {S}. The yellow fruits are eaten fresh. They are sweetest when very ripe, and are usually left in the sun for a few days to soften. Central to Southern Africa. FOX, R, TREGOLD, UPHOF; F85

#### RUSCACEAE

*Ruscus aculeatus* - *Butcher's broom*, *Sicilian asparagus* {S}. The pungent, somewhat bitter, young shoots are cooked and eaten like asparagus. In Sicily, they are often dressed with olive oil and lemon juice. Seeds are used as a substitute for coffee. Eurasia, cultivated. BIANCHINI, LANZA 1993 [Re], NIEBUHR, TANAKA; G66, N84, 048, 053M, R53M{PL}

#### RUTACEAE

*Acronychia acidula* - *Lemon aspen* {PD}. The refreshing, acidulous fruits are eaten raw, cooked with seafood or poultry, or made into syrup, jam, cakes, sauces, juice, preserves, and salad dressings. They have a delicious, aromatic lemon-like flavor with overtones of eucalyptus and honey. One of the more popular fruits of the emergent bushfoods industry. Australia. CHERIKOFF, CRIBB, ROBINS [Re]; N79, N79{PL}, N79{PR}, 032M, P38{S}

*Acronychia oblongifolia* - *Southern lemon aspen*, *Yellow wood* {PL}. The fleshy, rather acid fruits are eaten raw or made into jams, preserves, syrups, sauces, salad dressings, etc. Similar to *A. acidula*, but grows in cooler climates. Australia. CHERIKOFF, ROBINS [Re]; N79

*Aegle marmelos* - *Bael fruit*, *Bengal quince* {S}. Ripe fruits are orange, hard-shelled, with an aromatic, pleasant-flavored pulp. They are eaten out of hand, pickled, or used in marmalades, jams, jellies, confectionery, and drinks. The young leaves and shoots are eaten as a vegetable or used as a condiment. An infusion of the flowers forms a refreshing beverage. Twigs serve as chewsticks. Southeast Asia. BURKILL, MORTON 1987a, REUTHER, SIMMONS 1972, STURROCK, UPHOF, WATT; E29{PL}, F68T, F85, G73, I12{PL}, M17{PL}, N84, P5, Q12, Q18, Q45M, Q46, R50{PL}, S36

*Agathosma betulina* -> *Barosma betulina*

*Agathosma crenulata* - *Barosma crenulata*

*Atalantia buxifolia* - *Severinia buxifolia*

*Barosma betulina* - *Round-leaf buchu* {DF}. The strongly aromatic leaves are used in the preparation of a brandy that forms the base of highly popular cocktails in Tunisia. An extract of the leaves is one of the ingredients of a South African herbal wine. Also the source of an essential oil with a camphor-peppermint odor, used by American food manufacturers to flavor candy, ice cream, baked goods, and condiments. Southern Africa. MORION 1976; B21P, E14T, L34, N84{S}, S28M{S}

*Barosma crenulata* - *Oval buchu* {S}. Aromatic leaves are used like those of *A. betulina* for flavoring Tunisian brandy, South African herbal wine, American processed foods, and to enhance the black currant aroma of *cassis*. Often combined with *Artemisia afra*. Southern Africa. BOWN, MORTON 1976; J82, N84, P5, R60, S28M

*Boronia megastigma* - *Brown boronia* {S}. The fragrant flowers are the source of an essential oil having an aroma of cinnamon and tobacco. Sold as *boronia absolute*, it is employed in food manufacturing to create a black currant flavor and to enrich other fruit flavors in beverages, ice creams, candy, and baked goods. Australia. MORTON 1976; D95{PL}, N79M, N84, 033, 053M, 093, P5, P17M, Q32, R33M, R47, S92

*Casimiroa edulis* - *White sapote*, *Matasano* {S}. The fruits are yellow or green when ripe, soft, usually thin-skinned, and have a melting, custard-like pulp with a very sweet flavor. They are best eaten out of hand but can also be dried, frozen, served with cream and sugar, or used in ice cream, milk shakes, and salads. The seeds

are reported to be toxic if eaten raw. Other authors state that they may be roasted and eaten like nuts. Central America, cultivated. MORTON 1987a, POPENOE, W. 1920 [Cu, Pro], RICHARDSON, M. [Re], SCHNEIDER 1986 [Cul, Re], SIMMONS 1972, STURROCK, THOMSON 1973; A41G{PL}, B60M{PR}, D3M{PR}, E13G{PR}, E29{PL}, F15{PR}, F85, I12{PL}, N40{PR}, N84, P38, Q46. (for cultivars see White Sapote, page 575)

*Casimiroa tetramera* - *Woolly-leaf white sapote, Yellow sapote* {S}. The ripe fruits have a firm, golden-yellow pulp with a sweet, spicy flavor. They can be eaten out of hand, baked in pies, chilled and served in fruit salads, or made into a butter similar to apple butter. When dried, the fruit retains its color and flavor very well and has a nice chewy texture. Mexico. KENNARD, MOWRY, RAMSAY, STURROCK, UPHOF; E29{PL}, I77G{PL}, N84, P38 CULTIVARS {SC}

**Mac's Golden:** (Max Golden) Large round fruit, weight 6 to 7 ounces; flesh dark yellow. Excellent, aromatic, mango-like flavor. Tends to have few seeds. Superior to fruits of other cultivars of this species. Originated in Carlsbad, California, by Charles W. Ramsay. Named after Charles McBride. Introduced about 1932. BROOKS 1972; T49M

X *Citremocitrus* sp. (*Citrus* x *limon* x *Eremocitrus glauca*) - *Eremolemon* {GR}. Natural hybrids. Australian desert kumquat x Meyer lemon. The fruits are occasionally eaten.

## CULTIVARS

**Razzlequat:** Small, round fruits that have pleasant sweet-tart, lemon-lime flavored pulp. They can be eaten fresh, sweet skin and all. Or they can be used to make an excellent jam. Very cold hardy and drought resistant. 174, K67

X *Citrofortunella mitis* (*Citrus reticulata* x *Fortunella* sp.) - *Calamondin, Kalamansi, Panama orange, Golden lime* {S}. Natural hybrid. Very acid fruits are pickled, preserved, or used in drinks, tea, marmalades, sauces, chutneys, jellies and for flavoring the Philippine soy sauce known as *toyo mansi*. Whole fruits, fried in coconut oil with various seasonings, are eaten with curry. The preserved peel is used for flavoring other foods. Philippines, cultivated. COST 1988, GELLE [Re], JOHNS [Cul], MORTON 1987a [Cu], ORTIZ 1992, REUTHER, RICHARDSON, M. [Pre, Re], UPHOF; A79M, D23M, E3M{DW}, F43M{PL}, F85, G17{PL}, G49{PL}, G96{DW}, H55{PD}, I83M{PL}, J61M{DW}, N18{SC}, N84

## CULTIVARS {GR}

**Variiegated:** Small, spherical fruit; rind striped when immature, orange to orange-red when ripe, thin, smooth, edible; flesh orange, tender, juicy, very acid; seeds few, small; holds on the tree nearly year-round. Tree moderately vigorous, upright, slightly smaller than the standard calamondin; highly productive; very cold-hardy. Foliage variegated with green and creamy white, attractive. A63, G49, G96{DW}, H4, I83M, N18{SC}, N84, Q93, R77, S59, S97M

X *Citrofortunella* sp. (*Citrus* x *aurantifolia* x *Fortunella* spp.) - *Limequat* {S}. Artificial hybrids. The pleasantly acid fruits are used as a substitute for limes in ades and for flavoring. Limequat hybrids are much more cold hardy than their lime parent. Grown on a small scale in California for the specialty foods market. RAY, R., REUTHER, STURROCK, UPHOF; F16{PL}, G2M, G17, N40{PR}

## CULTIVARS {GR}

**Eustis:** (*C.* x *aurantifolia* x *F. japonica*) Mexican lime x round kumquat. Medium-sized, nearly oval fruit; rind light yellow, very sweet, smooth, thin; flesh light greenish, tender, juicy, in 6 to 9 segments, of fine quality; nearly everbearing but main crop borne in late fall and winter. Tree prolific, haidy, with numerous small thorns; resistant to withertip. BROOKS 1972; A63, E3M{DW}, G49, I83M, N18{SC}, N84, R77, S97M

**Lakeland:** (*C.* x *aurantifolia* x *F. japonica*) Mexican lime x round kumquat. Fruit similar in shape to Eustis, but larger; rind deep yellow, smooth, thin; flesh juicy, of fine quality, with few seeds.

Tree nearly thornless, haidy, resistant to withertip. Originated in Eustis, Florida by Walter T. Swingle. BROOKS 1972; K67, N84, R77

**Tavares:** (*C.* x *aurantifolia* x *F. margarita*) Mexican lime x oval kumquat. Medium-sized, obovate to oval fruit; rind pale orange-yellow, smooth, thin, tender, edible; flesh buff-yellow, in 7 to 8 segments, juicy, acid. Tree vigorous with short spines and pink flower buds. MORTON 1987a; G49, N84, R77, S97M

X *Citrofortunella* sp. (*Citrus* x *junos* x *Poncirus trifoliata*) - *Yusvange* {SC}. Artificial hybrid. Yuzu x trifoliolate orange. Cold hardy citrus with fruits that are considered more palatable than either parent, and also other hybrids with one-half trifoliolate orange in their parentage. The pulp is mildly sour with a lemon-like flavor and can be used in lemonade, lemon pies, marmalade, on fish or eaten out of hand. Hybridized in 1964 by J.R. Brown. CHAPMAN; U13

X *Citrofortunella* sp. (*Citrus reticulata* x *Fortunella* x *crassifolia*) - *Orangequat* {GR}. Artificial hybrid. The fruits may be eaten like a kumquat or used in marmalades. RAY, R.; Q93

## CULTIVARS

**Nippon:** Satsuma mandarin x Meiwa kumquat. Fruit red-orange, small (but larger than the kumquat), broadly oval to obovate; rind sweet, relatively thick and spongy; pulp juicy, slightly acid. Matures early but holds well on tree for several months. Tree slow growing, medium-small, spreading. RAY, R., REUTHER; G17, H4, I53M, N37M, S97M

X *Citrofortunella* sp. (*Citrus reticulata* x *Fortunella margarita*) - *Mandarinquat* {GR}. Nagami kumquat x mandarin. The fruits are eaten out of hand. Combines the hardness of the kumquat with the eating qualities of the mandarin.

## CULTIVARS

**Indio:** Nagami kumquat x Dancy mandarin. Large, pyriform fruit; bright reddish-orange, medium-thick skin. The whole fruit is edible, including the skin. Ripens December through April in southern California. Attractive, ornamental tree. A63, C29M{SC}, D23M, G49, N18{SC}

X *Citrofortunella* sp. (*Citrus aurantifolia* x *Fortunella* spp.) - *Procimequat* {GR}. Artificial hybrid. Eustis limequat x Honk Kong wild kumquat (*Fortunella hindsii*). The fruits are occasionally eaten. Similar to Hong Kong wild kumquat, but somewhat larger and much paler orange when ripe. REUTHER; N37M

X *Citroncirus webberi* (*Poncirus trifoliata* x *Citrus* x *sinensis*) - *Citrang* {GR}. Artificial hybrid. Trifoliolate orange x sweet orange. The acid fruits can be used for drinks and marmalades. Generally the hybrids combine the cold hardness and bitterness of the trifoliolate orange with the larger, more orange-like fruits of the sweet orange. Most cultivars are used as rootstocks. REUTHER, UPHOF; (see also Rootstocks, page 510)

## CULTIVARS

**Morton:** Medium-sized fruit, 3 to 3 1/2 inches in diameter; fragrant, very juicy flesh, nearly seedless. Said to be the best of the citranges for culinary use. Valued for ade and mixed drinks. Also good for pies, jams and marmalade. Ornamental tree; particularly adapted to Texas soils and climate. Much harder than Satsuma; observed in Texas at 12° F. with 90% defoliation. Also used as a rootstock, although it has limited commercial value. H4, I74, K67

**Rusk:** Trifoliolate orange x Ruby blood orange. Fruit rather small, oblate to spherical, color deep orange with reddish flush. Rind thin; segments about 10. Flesh orange-yellow, very juicy; flavor sprightly acid and only slightly bitter. Tree vigorous, tall-growing, productive, and haidy. An attractive ornamental whose juicy fruit approaches edibility more closely than most citranges. MORTON 1987a, REUTHER; H4, N18{OR}, N37M

**Snow Sweet:** Citrange and grapefruit hybrid. Large fruit, the size of a Valencia orange; sweet and juicy, with the quality of a first class sweet orange. Ripens in late October, but green fruit picked earlier may still be sweet. Vigorous, fast growing tree; adapted to

mild northerly climates. Has produced good crops even after being exposed to temperatures of 10° F. Developed by the USDA. 174

**Soaneet:** Small fruit, similar to Rusk except deeply furrowed at the stem end, deep orange in color; very juicy and nearly seedless. Tall, vigorous tree; hardy and productive. 174

X Citroncirus sp. (Poncirus trifoliata x Citrus x limon) - *Citremom* {PL}. Artificial hybrid. Trifoliolate orange x lemon. The fruits are edible. Primarily used as a rootstock. D95, N37M. (see also Rootstocks, page 510)

X Citroncirus sp. (Poncirus trifoliata x Citrus x paradisi) - *Citrumelo*. Artificial hybrid. Trifoliolate orange x grapefruit. Fruits are occasionally eaten. Mostly used as a rootstock. 174. (for cultivars see Rootstocks, page 510)

Citrus x amblycarpa - *Djeruk limau* {S}. In Indonesia, the extremely fragrant juice of the young or half-ripe fruits is used as a condiment. It is also added to rice flour in the preparation of *ragi* yeast cakes. The leaves are mixed with meat dishes to give them a pleasant taste. Also used as a rootstock. Cultivated. HESSELTINE, OCHSE, ROM; N18

Citrus x aurantifolia - *Lime* {S}. The acid fruits are cut in half and used as a garnish, pickled, preserved in syrup, made into jam, jelly, and marmalade, or juiced. Lime juice is used in ades, alcoholic drinks, sauces, made into syrup, or employed for flavoring fish, meats, beverages, confectionery, etc. In India, it is used as a coagulant in the manufacture of fresh cheeses such as *paneer* and *chhana*. Dried limes, called *limu omani*, are widely used in Persian cuisine. In the Philippines, the chopped peel is made into a sweetmeat with milk and coconut. The minced leaves are sometimes eaten together with roasted meat in Indonesia, and in Kenya they are added to soups. Tropical Asia, cultivated. GACHATHI, JOHNS [Cul], MORTON 1987a [Cu], OCHSE, REUTHER, ROBINSON, R. 1991, SIMMONS 1972, STURROCK, UPHOF; A7{DF}, F85, K60D{DF}, L50M{DF}, L55J, N84, Q12, Q18

#### CULTIVARS {GR}

**Bearss:** Fruit size similar to a small lemon. Rind thin, shiyy, pale yellow at maturity. Flesh pale, greenish yellow, very juicy; mild, acid lime flavor. Does not require much heat to reach ripeness. Tree vigorous, roundheaded; some thorns but less than Mexican lime. The most valuable lime for Western gardeners. Similar if not identical to Tahiti lime. RAY, R.; A63, A71, B93M{DW}, D23M, D23M{ES}, E3M{DW}, E8M, F53M, G49, I49M{DW}, I83M, J61M{DW}, N18{SC}

**La Valette:** Compact growing lemon x lime hybrid with medium-sized fruit of good acidity. A prolific cropper and easy to grow. N84, R77

**Mexican:** (Mexican Lime, Key Lime, West Indian Lime) Fruit very small, round, obovate, or short-elliptical. Rind very thin; surface smooth, leathery, tightly adherent; color greenish-yellow at maturity. Flesh color greenish yellow; fine grained, tender, juicy; highly acid with a distinctive aroma. Moderately seedy. Tree medium in vigor and size, spreading and bushy, densely armed with spines. Sometimes called the *bartender's lime*. REUTHER; A63, B60M{PR}, C34G{PD}, D23M, D23M{ES}, E3M{DW}, G29{PD}, G49, G96{DW}, H4, H35{PD}, H55{PD}, I49M{PD}, I83M, L54{PD}, M82, N18{S}, N18{SC}, Q93, etc.

**Tahiti:** (Persian Lime, Tahitian Lime) Medium-small fruit; oval, oblong, or short-elliptical. Seeds rare or lacking. Rind thin; surface smooth, tightly adherent; color pale lemon-yellow at maturity. Flesh pale greenish-yellow; tender, juicy, very acid and with true lime flavor. Tree vigorous, broad-spreading, drooping, medium to medium-large. C89M, D37, D76{DW}, G2M, G96{DW}, H4, I77G, 777, J22, L33M{PR}, M82, Q93, S59

**Thornless Key:** (Newell's Thornless Key) Small to medium-sized fruit; skin smooth; flesh seedless, flavor similar to Mexican; resembles Mexican or Key lime. Tree more frost resistant than Mexican,

thornless, everbearing. Originated in Orlando, Florida. Introduced in 1945. BROOKS 1972; D37, E29, I77G

**Thornless Mexican:** Medium to small, thin-skinned fruit; seedless. Tree thornless and everbearing. Bud mutation of a Mexican thorny lime. Originated in Weslaco, Texas. Introduced in 1930. BROOKS 1972; C29M{SC}, I83M

Citrus x aurantium - *Sour orange, Bitter orange, Seville orange, Bigarade, Daidai* {S}. In Mexico the fresh fruits are cut in half and served with salt and hot chili paste. The juice is used in ades, sauces, for flavoring fish, or fermented to make wine. Considered the best orange for making *marmalade*. The dried peel, sometimes called *Curagao orange peel*, is used in *bouquet garni* and for flavoring certain Belgian white beers, such as *Orange Muscat*. An essential oil derived from the dried peel of immature fruits flavors *Grand Mamier, Cointreau, Shrob Shrub, Triple Sec*, and *Curagao liqueurs*. Immature fruits are pickled in salt or vinegar or fried in coconut oil. The flowers are used for scented tea. Southeast Asia, cultivated. GRAY, P. [Cul], MORTON 1987a [Cu, Cul], ORTIZ 1973 [Cul, Re], RAY, G, REUTHER, TANAKA, UPHOF, VON WELANETZ; A20M{DF}, C17{PD}, C60D{PD}, E3M{DW}, E13G{PR}, G66, I83M{PL}, J66M{PD}, J73M, K54{ffi}, L34{DF}, L36M{PD}, N18, L55J, N40{PR}, N84, Q12, Q93, etc. (see also Rootstocks, page 510)

#### CULTIVARS {GR}

**Bouquet:** (Bouquet de Fleurs) Small, somewhat flattened fruit; rind deep-orange, moderately pebbled and well colored, medium-thick, loosely adherent; flesh juicy, sour, seeds few. Small tree with a spreading top consisting of thornless branchlets. A heavy flowering, ornamental cultivar especially suited for use as a hedge plant. I83M, N84, R77

**Bouquetier de Nice:** Unusual variety that produces both double flowers and fruits. Double flowers with a very large pistil. Flat, medium-sized fruit, deeply embedded with a well-developed secondary fruit. Vigorous, upright growing tree with very large, broad leaves. Used in France for essential oil production. REUTHER; N84, R77

**Chinotto:** Small, oblate to round fruit, with more or less rough rind surface, and an orange to deep orange color. Small tree with thornless branchlets. Growth habit more or less dense and compact. Grown primarily as an ornamental, although the fruits are also prized and used for candying, preserving, pickling, or crystallizing whole. RAY, R., REUTHER, TANAKA, UPHOF; A63, D37, G17, G96{DW}, I83M, N84, Q93, R77, S59, S97M

**Nansho-daidai:** Medium-large, obovate fruit; broadly necked and narrowly collated; seedy. Rind medium-thick but easily peeled; somewhat pebbled; color lemon-yellow. Flesh color dull yellow; juicy, acid flavor with bitter aftertaste. Tree vigorous, upright-spreading, and very thorny. Cold hardy. Nansho is the name of a town in Taiwan, where this fruit was discovered. REUTHER, TANAKA; B58M{SC}, 174, K67, N18{S}, N37M

Citrus x bergamia - *Bergamot* {GR}. The peel is the source of a strongly pungent and agreeably aromatic essential oil used as a flavoring for hard candy, baked goods, chewing gum, desserts, and *Earl Grey* tea. In America, Earl Grey tea is occasionally known as *Governor Gray* tea. The highly acid fruit juice is occasionally used as a vinegar or lime juice substitute. In Morocco, the flowers are preferred for making *orange flower water*. Cultivated. MORTON 1976, REUTHER, TANAKA, UPHOF, WOLFERT 1973. A63, C22{PE}, H44M{PD}, I83M, L34{PD}, L88D{PD}, N18{SC}, N84

#### CULTIVARS

**Castanaro:** Round to obovate fruit, frequently with a short neck, sometimes slightly ribbed. Rind surface commonly rougher and the oil somewhat less aromatic than Femminello. The tree is more vigorous and upright and attains larger size than Femminello, but is somewhat less fruitful. REUTHER; 04



**Femminello:** Nearly spherical fruit with smooth rind. Oil somewhat more aromatic than that of Castagnaro, and hence preferred. Apparently a superior selection of Castagnaro, Femminello is considered to be the best bergamot cultivar. The tree is somewhat less vigorous and smaller than Castagnaro, but earlier and more regular in bearing. REUTHER; 04, R77

*Citrus x depressa* - *Shikwasha*, *Hirami lemon*. The pulp of the fruit is sweetish, high in pectin, and rather poor-flavored. Mostly used as a rootstock. Cultivated. REUTHER, TANAKA; (for sources see Rootstocks, page 510)

*Citrus grandis* - *Pummelo*, *Shaddock*, *Pamplemousse* {S}. Fruits are large, thick-skinned, resembling a grapefruit but with firmer, non-bitter flesh and less juice. Excellent to eat out of hand, the pummelo can also be added to fruit salads, preserved, or made into juice, jams, and marmalades. The candied peel is similar to that made from citron and is called *consève de chadec* in Martinique. *Forbidden fruit*, a liqueur, is partly derived from pummelo which is infused in fine brandy. Source of an aromatic flower water used for flavoring pastry and other foods. The flowers are used for scenting tea. Southeast Asia, cultivated. CHOW, CUSUMANO [Cul, Re], MARTIN 1977 [Cu, Pro], MORTON 1987a, REUTHER, ROUTHIER 1989 [Re], SCHNEIDER 1986 [Pre; Cul], UPHOF, VAN DUONG; B60M{PR}, E13G{PR}, F85, N40{PR}, N84, 093, Q12

#### CULTIVARS {GR}

**Carters Red:** Red-fleshed type. Excellent quality, shape, flavor and skin thickness. Vigorous, upright tree. Selected by John Brady from the Egan's Property at Carters Ridge, Queensland, Australia. Q93

**Chandler:** Fruit similar to a large grapefruit, globose to oblate; rind medium-thick, light yellow, mostly smooth; core solid, segments 14 to 16; membranes medium thick, seedy. Flesh pink, firm but tender, moderately juicy; juice pleasing but weakly aromatic, medium in soluble solids and acids. Ripe fruit is first harvested in December but lasts until March. Tree vigorous, spreading, with few thorns. A41G, A63, A71, B58M{SC}, E8M, D23M, G49, H78, I83M, J22, N18{SC}

**Chov:** (Choy Pamplemousse) Round fruit, somewhat flattened on the stem end; skin yellow, thin; flesh pale yellow, melting, juicy, subacid with a sweet grapefruit-like flavor; dessert quality excellent; seedless; ripens in winter-spring. Spreading tree with large, glossy, dark green foliage; large, very fragrant blossoms; grows and bears best in hot climates. Brought to Hawaii from Tahiti. J22

**Flicks Yellow:** Does not have the appearance of a true pummelo. May be a hybrid. Thick, puffy skin. Has somewhat the flavor of the Lemonade Fruit. Q93

**Hirado:** (Hirado Buntan) Large, oblate fruit, slightly depressed at both ends; seedy; color bright yellow when mature; rind medium-thick, tightly adherent; flesh light greenish-yellow, tender and moderately juicy; flavor a pleasant blend of sugar and acid with a trace of bitterness. Ripens medium-early, keeps well. Tree unusually cold tolerant. Originated in Nagasaki Prefecture, Japan. Introduced in 1910. MORTON 1987a, REUTHER; G17, I77G

**Red Shaddock:** Large round fruit, slightly pointed at the stem end; smooth, glossy yellow rind, somewhat thick; deep red flesh reminiscent of Star Ruby grapefruit, smooth-textured, very tender and juicy. Excellent flavor, with a high sugar content and low acidity. Developed by S. Burdette and O. Skaarup at Tambuti Estate, Swaziland. SAUNT; I83M, N18{SC}

**Reinkina:** Large fruit; rind smooth, yellow, moderately adherent for a pummelo. Flesh pale yellow, firm but tender, moderately juicy, seedy; good sugar-acid flavor. Fruit tends to fall after maturity. Tree vigorous, with denser foliage than Chandler. Originated in Indio, California. A63, G49, I83M, N18{SC}

**Siamese Sweet:** Non-acid type. Oblate to broadly obovate fruit; large, crisp segments, lacking in juice; insipidly sweet, with a trace

of bitterness. Dwarf, drooping tree. The seed parent of the Chandler cultivar. Introduced into the United States in 1930. REUTHER; I77G

**Tahitian:** (Moanalua, Sarawak) Roundish, yellow, thin-rinded fruit of excellent quality. Very juicy, greenish to faintly amber flesh. Unique, agreeable, spicy-sweet flavor with lime-like overtones. Of unknown origin, but probably developed in Tahiti from seed obtained in Borneo. Of local importance in Tahiti and Hawaii. REUTHER; A63, C29M{SC}, G49, N18{SC}

**Webber:** The fruit is large, pink-fleshed, of good quality, and early maturing. This cultivar was collected as a cutting in 1925 by H.J. Webber in Java and introduced to the United States. Grown at David Fairchild's home, the Kampong, in Coconut Grove, Florida, the cultivar was named in honor of Webber by Fairchild. U7P{SC}

*Citrus hystrix* - *Kaffir lime*, *Ichang lime*, *Makrut*, *Djeruk purut* {PL}. The fresh or dried leaves impart a pleasant citrus flavor when added to soups and curries. In Indonesia, fresh leaves are often pounded into a jelly and mixed with hot chili pastes. They also flavor an Indonesian soy sauce known as *kecap*. The rind is candied, or dried and used in curry pastes. The lemon-scented fruits are eaten with fish or made into drinks. Philippines COOK, CRAWFORD [Re], OCHSE, SHURTLEFF 1979, STEINKRAUS, TANAKA, UPHOF; A7{DF}, A45{DF}, D23M, D37, E3M{DW}, E48, F93G, G49, 174, I77G, I83M, L90G{DF}, M82, N18{SC}, P38{S}, etc.

*Citrus ichangensis* - *Ichang papeda* {GR}. The juicy, acid fruits are sometimes eaten. China. TANAKA; 174

#### CULTIVARS

**Ichana Lemon:** (Hsiang-Yuan, Shangyuan) Large, broadly obovate fruit; peel thick, lemon yellow when ripe, very fragrant. Pulp very acid, but with a strong, aromatic aftertaste. Tree erect, much branched with lower branches short. Very resistant to winter cold. The fruit has been used to make lemon pie; some who have made pies from the juice prefer them to regular lemon pies. Probably *C. ichangensis* x *C. grandis*. REUTHER, TANAKA; H4, I74

**Sudachi:** Small, orange fruit; flesh light orange, seedy, with a tart mandarin-like flavor. Ripens early and should be picked soon after, as it tends to dehydrate in warm climates. The juice of the fruit is used in Japan to add a pleasantly sour taste and aroma to Japanese-style dishes, as lemons are in Western cookery. It is also an ingredient of *Ponzu* sauce. Possibly an *ichandarin*, *C. ichangensis* x *C. reticulata*. REUTHER, TANAKA, TSUJI [Re]; E56{PD}, 174, N49M{PD}

**Yuko:** Large, well-shaped fruit; skin orange; flesh mild, with a mandarin-like flavor. Membrane sections tougher than those of mandarins, but easily peeled. Ripens with Yuzu, holds well on the tree. Used as a substitute for Yuzu. Said to be the least hardy of the *C. ichangensis* hybrids. Possibly an *ichandarin*, *C. ichangensis* x *C. reticulata*. TANAKA; U7Z{SC}

*Citrus x jambhiri* - *Rough lemon*, *Jambhiri orange*, *Mazoe lemon*, *Citronelle*. Natural hybrid. Perhaps *C. x limon* x *C. medica*. The fruit is occasionally used as a substitute for lemon, for which purpose it is not very suitable due to its scant pulp and moderate flavor and aroma. In the Middle East, the rind is used in the production of a special preserve. DAGHER, MORTON 1987a, REUTHER, TANAKA; (for cultivars see Rootstocks, page 510)

*Citrus x junos* - *Yuzu* {PL}. Possibly an *ichandarin*, *C. ichangensis* x *C. reticulata*. The grated or slivered rind and the juice are used for their distinctive, refreshing fragrance and flavor in Japanese-style dishes, among which soy sauces, miso toppings, *Ponzu* sauce, soups, *chiri-nabe*, and *kawari soba*. Occasionally added to *kinugoshi* *tofu* before solidification. Juice of the fruit is also processed into a distinctive citrus-flavored vinegar. The young, dark-green fruit is comparable to citron or lime, the mature yellow fruit to a lemon. A fairly expensive citrus fruit in Japan. Also used as a cold-hardy rootstock. REUTHER, SHURTLEFF 1975 [Re],

SHURTLEFF 1976 [Re], TANAKA, TSUJI [Re], UDESKY; E8M, E56{PD}, G20M{PD}, H91{PD}, 174, N37M, N49M{PD}

*Citrus latifolia* - \**Citrus x aurantifolia*

*Citrus x latipes* - *Khasi papeda*, *Hampur arong* {GR}. A large, grapefruit-like fruit having seedy white flesh with a very acid, spicy flavor. It is eaten fresh or processed. May be picked while still green, but after reaching full size and juice content, and held two to three months in cold storages Very cold-hardy tree. REUTHER, TANAKA; 174

*Citrus x limetta* - *Limetta*, *Lumia* {S}. The fruit has acid to acidless flesh, the acid cultivars being used as a substitute for lemon. REUTHER, TANAKA; F85, N84

#### CULTIVARS {GR}

**Mediterranean Sweet:** (Limetta Romana, Limoncello) Medium-sized, flattened fruit with a prominent nipple; rind thin, light yellowish-orange, adherent; flesh pale yellow, juicy, acidless, insipidly sweet; segments about 11. Tree large, vigorous, upright-spreading; highly productive. Blooms somewhat throughout the year but mainly in spring. REUTHER; 04

*Citrus x limettioides* - *Sweet lime*, *Lima* {S}. The fruit is eaten raw, cooked or preserved. It is very much appreciated in Central America, where it is made into a popular soft drink called *Lim-Jay*. MORTON 1987a, REUTHER, TANAKA, WILLIAMS, L.; L55J, N84, P38. (see also Rootstocks, page 510)

#### CULTIVARS {GR}

**Gloria Gold:** Large fruit; acidless flesh with a distinctive sweet flavor; very pleasing, lime-like aroma. Small to medium-sized tree; a heavy producer throughout the year. Originated in Mexico. Introduced by Atkins Nursery. A63, 183M

**Palestine:** (Indian) Fruit medium in size, subglobose to oblong or short-elliptic, sometimes faintly ribbed. Seeds few. Rind thin to very thin; surface smooth to very smooth; tightly adherent; color greenish to orange yellow at maturity. Flesh straw-yellow, tender, very juicy; flavor insipid because of lack of acid, and with a slightly bitter aftertaste. REUTHER; A71, D23M, G49{DW}, I83M, J73M{S}, N18{S}, N18{SC}

*Citrus x limon* - *Lemon* {S}. The acid fruits and their juice are commonly used in ades, tea, ice cream, sauces, salad dressings, marinades, etc. The peel or *zest* is grated and used as a seasoning, covered with chocolate, or candied in syrup. Inner parts of the peel and the pulp are used for manufacturing low-methoxyl pectins such as *L.M. Pectin* or *Pomona's Universal Pectin*, popular among natural foods enthusiasts for making sugarless fruit jams and jellies. Also the source of an essential oil, *cedro oil*, used commercially in beverages, pastries, candies, and *liqueur d'or*. Dried leaves are sometimes mixed with tea leaves for flavoring. Preserved lemons are one of the indispensable ingredients of Moroccan cooking. The flowers are eaten in ice cream, fritters, jams and *lemon flower butter*. Lemon juice is used as a coagulant in the manufacture of directly acidified cheeses such as *paneer* and *chhana*. In Italy, lemons are pressed together with olives to produce a lemon-flavored olive oil called *Limonato*. Tropical Asia, cultivated. JOHNS [Cul], LEYEL 1987b, MACNICOL [Re], MORTON 1987a [Cu], REUTHER, ROBINSON, R. 1991, TANAKA, UPHOF, WEINZWEIG 1995, WOLFERT 1973 [Pre, Re]; A7{PD}, F85, L55J, M63M{PD}, N39{PD}, N54{PD}, N84. (for cultivars see Lemon, page 408)

*Citrus x limonia* - *Mandarin lime*, *Lemandarin* {S}. Natural hybrids. Probably *C. x limon* x *C. reticulata*. The juice of the fruit is used to add a sour taste to foods. MORTON 1987a, REUTHER, TANAKA; (see also Rootstocks, page 510)

#### CULTIVARS {GR}

**Otaheite:** (Otaheite Orange, Otaheite Rangpur) Fruit oblate to spherical, furrowed and rounded or slightly necked at the base. Peel orange with small oil glands; thin; pulp orange, juicy, slightly lime-like in aroma and flavor but bland with scarcely any acidity; seedless, or with 3 to 6 small, abortive seeds. Tree dwarf, spreading,

thornless. Considered to be a non-acid form of Rangpur. MORTON 1987a; C89M, E97{DW}, G96{DW}, I78{DW}

**Rangpur:** (Rangpur Lime, Canton Lemon) Small to medium-sized fruit, resembles a mandarin orange. Rind yellowish to reddish-orange, thin and moderately loose. Flesh orange, tender, juicy, strongly acid. Seeds fairly numerous. Fruits hold on tree for a long period. Makes excellent marmalade. Also said to be good for pink limeade. Tree usually vigorous and productive; comparatively few and small thorns; cold hardy. REUTHER, STURROCK; E3M{DW}, G5M{PD}, G17, G49, G66{S}, I77G, I83M, J73M{S}, R77

*Citrus x macrophylla* - *Alemow*, *Colo*. Possibly *C. x limon* x *C. grandis*. The strongly acid fruits are sometimes eaten. Cultivated. REUTHER, TANAKA; (for sources see Rootstocks, page 510)

*Citrus madurensis* - *X Citrofortunella mitis*

*Citrus maxima* - \**Citrus grandis*

*Citrus medica* - *Citron* {S}. Cultivated primarily for the thick rind of the fruit which is sliced and added to salads, or candied and used in fruit-cakes (*Panettone*), cannoli, puddings, confectionery, sweet rolls, etc. It is also made into the liqueurs *kitrinos* and *cedratine*. Candied citron can be mixed with nuts to form a stuffing for dates and figs. The juice of some improved cultivars can be utilized in beverages and desserts. Tropical Asia, cultivated. BIANCHINI, HESSELTINE, JOHNS [Cul], MORTON 1987a [Cu], RAY, R., REUTHER, VON WELANETZ; F85, 194{PD}, L55J, N18, N84, Q46

#### CULTIVARS {GR}

**Corsican:** Large, ellipsoid fruit; rind very thick and fleshy, lemon-yellow, rather rough and bumpy; flesh crisp and solid, lacking in juice, seedy; flavor sweet, without acid. Tree small, open and spreading, moderately thorny. Said to be the best and most important citron in Corsica. REUTHER; T73M{SC}

**Diamante:** Large, long-oval to ellipsoid fruit, broadly nipped at the apex; rind smooth, very thick and fleshy, lemon-yellow at maturity; flesh crisp, lacking in juice, but acid, like lemon; seedy. Tree small, open and spreading, moderately thorny. The principal cultivar of Italy. REUTHER; 04

**Earle:** Large, ellipsoid to oblong fruit; rind smooth, very thick and fleshy, light orange-yellow; flesh white or very light yellow, sour; seeds numerous, 60 to 70; season more or less throughout the year; closely resembles Diamante. Tree small, spreading, open, thorny. Originated in Herradura, Cuba by F.S. Earle. Introduced into California in 1914. REUTHER; I83M

**Etroa:** Fruit medium-small, ellipsoid or lemon shaped; seedy. Lemon yellow at maturity. Rind thick and fleshy; surface slightly ribbed, somewhat rough and bumpy. Flesh crisp and firm, low in juice content; flavor acid. Tree smaller and less vigorous than most citrons. The official citron used in the Jewish Feast of the Tabernacles ritual. The entire fruit is eaten. MORTON 1987a, REUTHER; A63, D23M, E3M{DW}, E29, 183M, J17, N84, R77, S97M

**Fingered:** (Buddha's Hand, Buddha's Fingers, Bushukan) The fruit is corrugated, wholly or partly split into a number of finger-like sections. Usually pulp is lacking, or if present is very scanty; seedless or with loose seeds. It is highly fragrant and is used in China and Japan for perfuming rooms and clothing and as an offering on temple altars. Also candied or made into sweetmeats. MORTON 1987a, REUTHER, TANAKA; A63, A71, D23M, D37, E3M{DW}, G2M, G17, G49, H78, 153M, 174, 183M, M17, M82, N18{SC}, etc.

*Citrus meyeri* - *Citrus x limon*

*Citrus mitis* -+ *X Citrofortunella mitis*

*Citrus myrtifolia* - *Citrus x aurantium*

*Citrus x natsudaidai* - *Natsu-mikan*, *Japanese summer-graftfruit* {SC}. Natural hybrid. Possibly *C. grandis* x *C. reticulata*. The fruit

is eaten fresh or in salads. In Japan, its juice is mixed with that of mandarin, diluted with sweetened and flavored water, and made into ades. Also canned or bottled. The pulp is sometimes canned in syrup or made into candies. Peel is made into marmalade, jam, or candies. REUTHER, TANAKA; U7Z

*Citrus x nobilis* (*C. reticulata* x *C. x sinensis*) - *Tangor* {S}. Natural and artificial hybrids. Mandarin x sweet orange. The fruit is usually eaten out of hand. MORTON 1987a; F85

CULTIVARS {GR}

**Dweet:** Artificial hybrid. Mediterranean Sweet orange x Dancy mandarin. Medium-large, reddish-orange fruit; rind peels poorly and tends to puff; very juicy, of rich flavor, but seedy. Does not hold well on the tree, therefore more suitable for home garden use. Originated in Riverside, California by H.B. Frost. REUTHER; A63, C29M{SC}, J22, N84, R77

**King:** (King Mandarin, King of Siam) Fruit large, oblate to depressed globose. Rind thick, moderately adherent but peelable. Deep yellowish-orange to orange at maturity. Segments 12 to 14, readily separable. Flesh deep orange, tender, moderately juicy; flavor rich, of very fine quality. Seeds few to many. Late to very late in maturity and stores well on the tree. Tree moderately vigorous, upright and open in growth habit. E8M

**Kivomi:** Miyagawa satsuma x Trovita orange. Medium-large, flattish, orange-like fruit; smooth, extremely thin rind, easily peeled; deep orange flesh, tender, juicy and sweet; ripens from February to early April; stores well. Moderately productive tree; similar to a satsuma in cold-hardiness. Much appreciated in Japan. Originated at the Okitsu Fruit Tree Research Station. SAUNT; C29M{SC}

**Mencv:** Medium-small, slightly oblate, necked fruit; rind reddish-orange, peels readily; flesh sprightly, acid, seedy; ripens early. Sensitive to sunburn and does not hold well on the tree, but good for home use. Mediterranean Sweet orange x Dancy tangerine. Originated by H.B. Frost. REUTHER; N18{OR}

**Murcott:** (Honey Murcott) Medium-sized, oblate to subglobose fruit. Rind thin, rather tightly adherent and not readily peelable; color yellowish-orange at maturity. Segments 11 to 12, moderately adherent. Flesh orange, tender, very juicy; flavor very rich and sprightly. Seeds small, few to numerous\* Medium-late in maturity. Tree medium in vigor and size, upright growing. REUTHER; A71, D23M, D23M{ES}, E3M{DW}, E8M, E99G{PR}, G2M, G49, I77G, I83M, L33M{PR}, L60M{PR}, Q93

**Ortaniaue:** Large, very broadly obovoid to slightly oblate fruit. Rind thin, leathery, rather tightly adherent but peelable; color bright yellowish-orange at maturity. Segments 10 to 12. Flesh orange, juicy; distinctive rich, acid-sweet flavor. Late midseason in maturity and holds well on the tree. Tree moderately vigorous, medium-large, spreading and drooping, almost thornless WALSH [Re]; I83M, N84, 097, R77

**Temple:** (Temple Orange, Royal Mandarin) Medium-large, very broadly obovate to slightly subglobose fruit. Rind deep reddish-orange, medium-thick, moderately adherent but readily peelable. Segments 10 to 12. Flesh orange, tender, juicy; flavor rich and spicy. Medium-late in maturity. Tree of medium vigor, spreading and bushy, somewhat thorny. More cold-sensitive than any of the mandarins or oranges. A63, B23P{PR}, D3M{PR}, E63J{PR}, E99G{PR}, E99G{PD}, G2M, G49, I77G, I83M, J17, J22, K68{PR}, L56M{PR}, L60M{PR}, etc.

**Umatilla:** Medium-large, broadly ovate fruit; rind medium-thick, reddish-orange, moderately adherent; flesh orange, tender, very juicy, flavor rich but acid, of fine quality; ripens medium-late. Tree slow growing, spreading, productive; resembles Satsuma. Ruby orange x Satsuma mandarin. Grown as a specialty fruit for gift-boxes in Florida. MORTON 1987a, REUTHER; T73M{SC}

*Citrus x paradisi* (*C. x sinensis* x *C. grandis*) - *Grapefruit* {PD}. Natural hybrid. Sweet orange x pummelo. Fruits are widely eaten out of hand as a breakfast fruit, used in fruit salads, or made

into juice and marmalade. An elegant dessert can be prepared by adding honey or brown sugar, butter, and some sherry or rum to grapefruit halves and broiling until browned. Grapefruit juice can be made into excellent vinegar or fermented into wine. The peel is candied and its essential oil is employed in soft-drink flavoring. In Vietnam, grapefruit flower water is often used for flavoring sweet drinks and desserts. Grapefruit seed oil, when bleached and refined is used as a culinary oil. CARCIONE, JOHNS [Cu], MORTON 1987a [Cu], REUTHER, ROUTHIER 1989, UPHOF; C4M, F85{S}, H90G. (for cultivars see Grapefruit, page 384)

*Citrus x pennivesiculata* - *Gajanimma, Carabao lime* {S}. The pleasantly acid juice can be used as a condiment. Also used as a tristeza resistant rootstock. ROM, TANAKA; N18{OR}

*Citrus pyriformis* - *Citrus x limon*

*Citrus reticulata* - *Mandarin, Tangerine, Satsuma* {S}. The fruits are eaten out of hand, juiced, preserved in syrup, added to salads, or used in confectionery, gelatins, puddings, cakes, liqueurs, etc. When dried, the peel has a sweet, spicy flavor and is used as a condiment and to cut die odors of certain dishes. In China it is known as antique tangerine peel or *kuo pei* and often flavors *tea-smoked duck* and *Chinese five-spice powder*. Mandarin peel oil is employed commercially in flavoring haid candy, ice cream, chewing gum, and bakery goods. Southeast Asia, cultivated. CHANG, W. [Re], JOHNS, MORTON 1987a, REUTHER, SO, UPHOF, WALDRON [Re]; B71G{PD}, C27G{DE}, F85, G66, L55J, N37M{PL}. (for cultivars see Mandarin, page 418, and Rootstocks, page 510)

*Citrus x sinensis* - *Sweet orange* {S}. Fruits are eaten fresh, juiced, added to fruit salads, or made into wine. Orange juice is canned or bottled, or used in sherbets, ice cream, jellies, confectioneries, cocktails, etc. The peel is candied, used for flavoring, covered with chocolate, or processed into marmalade. In Kenya, the roots are used for flavoring soup. Flowers are eaten as a vegetable or made into tea. Also one of the sources of *orange blossom honey*, an aromatic, heavy-bodied, light-colored honey of excellent quality and delicious flavor. In Italy, oranges are pressed together with olives to produce orange-flavored olive oil. Authentic Spanish *paella* is smoked over a fire of grape vines or orange twigs. Cultivated. DOMINI, GACHATHI, JOHNS [Cu], MACNICOL [Re], MORTON 1987a [Cu, Pro], PELLETT, REUTHER, TANAKA, UPHOF; A20M{DE}, B70{PQ}, F85, G58D{ED}, H34M{ffi}, H80M{PD}, I66M{ffi}, J73M, K37P{ED}, K54{ED}, L36M{EQ}, N7D{DF}, N18, N54{PD}. N84, 093. (for cultivars see Orange, page 445 and Rootstocks, page 510)

*Citrus sudachi* - *Citrus ichangensis*

*Citrus x sunki* - *Sunki, Suenkat*. The fruit has a strong, spicy rind with a distinctive aroma, and acid flesh. Mostly used as a rootstock. REUTHER, TANAKA; (for sources see Rootstocks, page 510)

*Citrus taiwanica* - *Citrus x aurantium*

*Citrus trifoliata* - *Poncirus trifoliata*

*Citrus yuko* - *Citrus ichangensis*

*Citrus x sp.* (*C. x paradisi* x *C. grandis*) - *Pummelit* {GR}. Artificial hybrid. Grapefruit x pummelo. Fruits are eaten as a breakfast or salad fruit. Most cultivars are the result of a breeding program at the University of California, Riverside in which an essentially acidless pummelo, which imparts low acidity to its progeny, was crossed with a seedy, white tetraploid grapefruit. SOOST 1980.

CULTIVARS

**Melogold:** (Melogold Grapefruit) Fruit resembles white-fleshed grapefruit cultivars but is more pummelo-like than Oroblanco; larger than Marsh grapefruit and Oroblanco. Exterior rind color is slow to develop but is comparable to Marsh late in the season; thickness is equal to Marsh, thinner than Oroblanco. Flesh tender and juicy, separating well from the membranes; juicier than Oroblanco; flavor

more like a pummelo. SOOST 1986; A63, A71, G49, H78, H78{DW}, I83M, N18{SC}

**Oroblanco:** (Oroblanco Grapefruit) Fruit size and shape similar to Marsh grapefruit. Peel color is paler than Marsh; peel thickness is greater. Exterior color is not well developed in fruit harvested in November at Lindcove, California. Flesh is slightly paler with a larger hollow core; tender and juicy, separating well from segment membranes. Lacks the bitterness of grapefruit, particularly grapefruits grown in cooler areas. Recommended for indoor citrus growers. SOOST 1980; A63, A71, B58M{SC}, D23M, D23M{ES}, E3M{DW}, E13G{PR}, G49, H78,, I83M, J22, N18{SC}, N40{PR}

**Puma:** (Puma Grapefruit) Sweet and juicy grapefruit-like fruit completely free of the bitterness characteristic of true grapefruits. Developed by the University of Hawaii Department of Horticulture by crossing a Tahitian grapefruit, a juicy pummelo, and the Marsh Seedless grapefruit. E8M

Citrus x sp. (C. x paradisi x C. x sinensis) - *Orangelo* {GR}. Natural hybrid. Grapefruit x sweet orange. The fruit is cut in half and eaten with a spoon like a grapefruit, peeled and the sections eaten individually, or they can be squeezed for their juice. Sections can be canned in syrup and the rind can be candied successfully. MORTON 1987a, REUTHER.

#### CULTIVARS

**Chironja:** Fruit round to pear-shaped, necked, equal to grapefruit in size; peel a brilliant yellow, slightly adherent, easy to remove; the inner peel non-bitter. Pulp yellow-orange, with 9 to 13 segments having tender walls and much juice; the mild flavor reminiscent of both orange and grapefruit, hardly bitter or acid even when immature. Seed count averages 11, with some fruits having as few as 2. Tree productive. Discovered in Puerto Rico in 1956. MORTON 1987a, REUTHER; A63, I83M, M17

Citrus x sp. (C. x paradisi x C. reticulata) - *Tangelo* {PD}. Natural and artificial hybrids. Grapefruit or pummelo x mandarin. The fruits are generally highly colored, aromatic, distinctively and richly flavored, with thin, smooth, and only moderately loose rinds. Most of them are eaten out of hand. On the whole, they comprise the most important group of interspecific hybrids in the genus Citrus. REUTHER; H3, E99G

#### CULTIVARS {GR}

**Allspice:** Fruit medium-small, slightly oblate to globose; color orange-yellow; seedy. Rind thin, slightly pebbled, and rather adherent. Flesh tender and juicy; rich, tart, spicy flavor and aroma. Mid-season in maturity and loses quality if left on the tree much past maturity. Tree and foliage mandarin-like in appearance. I83M

**Cocktail:** (Cocktail Grapefruit) Tangelo x sweet orange. Medium-sized, rather seedy fruit; very juicy, deep yellow-orange flesh; very sweet flavor, similar to a grapefruit but with orange, lime and mandarin overtones. Easy to peel. Produces good-sized fruit even along coastal areas of southern California. Bears 2 to 3 crops a year in Hawaii. A63, D23M, D23M{ES}, H78, I83M

**Minneola:** (Honeybell) Large, oblate to obovate fruit; neck usually fairly prominent; seeds comparatively few. Rind deep reddish-orange, medium-thin, smooth, moderately adherent. Segments 10 to 12. Flesh orange, tender, juicy, aromatic; flavor rich and sweet when fully ripe. Medium late in maturity. Tree vigorous and productive. Cross-pollination recommended. REUTHER; A63, A71, B23P{PR}, D2JM, D23M{ES}, E3M{DW}, E99G{PR}, G49, I77G, I83M, J21M{PR}, J22, L33M{PR}, L56M{PR}, N18{SC}, etc.

**Orlando:** Fruit medium-large, broadly oblate to subglobose; without neck; seedy. Rind orange, thin, slightly pebbled, fairly adherent. Segments numerous, 12 to 14. Flesh orange, tender, very juicy; flavor mildly sweet. Season of maturity late. Tree somewhat more cold resistant than Minneola. Cross-pollination recommended. REUTHER; D13, E63J{PR}, G17, H4, I77G, I83M, J22

**Pearl:** Medium-small, slightly oblate fruit. Rind yellow, comparatively smooth, thin and tightly adherent. Flesh firm but tender, juicy,

sweet, aroma unique; flavor pleasantly sweet; seedy. Medium-early in maturity and loses quality if left on the tree past maturity. Resembles the grapefruit parent more than the mandarin. Tree vigorous, spreading, drooping; somewhat alternate bearing. C29M{SC}, N18{OR}

**Sampson:** Fruit medium-sized, globose to slightly obovate; often somewhat necked; color orange-yellow; seedy. Rind smooth, thin, relatively adherent. Flesh dull-orange, juicy, somewhat acid; flavor with distinctive bitterish tang. More like the grapefruit parent than the mandarin. Late-midseason maturity. Tree vigorous, spreading. U7Z{SC}

**Seminole:** Medium-large, broadly-oblate fruit; color deep reddish-orange; seedy. Rind somewhat pebbled, thin, moderately adherent, though peelable. Flesh rich orange, tender, juicy; flavor sprightly and acid. Resembles Minneola in appearance, but peels easier and matures later. Tree vigorous and productive; self-fruitful. N84, 097, Q93, R77

**Ugli:** (Ugly Fruit, Uniq Fruit) Fruit broadly obovoid, usually with a short, strongly furrowed neck; seeds few. Rind dull yellowish-orange, medium-thick, leathery, moderately rough and bumpy, loosely adherent. Segments about 12. Flesh orange, tender, very juicy; flavor rich and subacid. Maturity season late. Originated as a chance seedling in Jamaica around 1917. The grated rind makes a particularly pungent flavoring. CUSUMANO [Cul, Re], MORTON 1987a, REUTHER, RICHARDSON, J., SCHNEIDER 1986 [Cul, Re], VAN AKEN; B60M{PR}, E13G{PR}, N40{PR}, N84, 097, R77

**Wekiwa:** (Lavender Gem) Fruit medium-small, spherical to obovate or pear-shaped; rind medium-thick, fairly adherent, pale yellow; flesh tender, juicy, flavor sweet and mildly acid; ripens early. Under favorable conditions the rind is blushed with pink and the flesh is amber pink. Very popular specialty market fruit. Considered the finest flavored citrus fruit by maiy. Duncan grapefruit x Sampson tangelo. REUTHER; A63, E13G{PR}, G44M{PR}, I77G, I83M, N40{PR}, Q93

Citrus x sp. (Citrus x junos x Citrus reticulata) - *Clemiyuzu* {GR}. Artificial hybrida Clementine mandarin x Yuzu. The fruits are occasionally eaten or their juice is mixed with gin. Combines the hardness and edible rind of the Yuzu with the eating quality of the Clementine. NAGLE; K67

#### CULTIVARS

**2- 2:** Large, irregular, oblate fruit; rind blotchy yellow, coarse-textured and bumpy, easily peeled and edible; moderately juicy, straw orange flesh, sweetish with a mild tangerine flavor or a trace of bitterness; segments 8 to 10. Quality varies from year to year. Upright, spreading tree; hardy to 5-10° F. NAGLE; K67

**3- 3:** (Ten Degree Tangerine) Medium-sized, symmetrical, oblate fruit; smooth orange rind; medium orange flesh, sweet-tart and sprightly with no undesirable flavors; ripens late, around Christmas, stores exceptionally well. Unripe fruits may be picked if threatened by frost, having an excellent lime-like flavor. Upright tree, more so than 2-2; haidy to 5-10° F.; produces good fruit every year. NAGLE; K67

*Clausena domesticum* -> *Clausena lansium*

*Clausena excavata* - *Pink lime-berry* {S}. The sweetish, ripe fruit is edible Young leaves and flowers are aromatic and are added to curries, or used for flavoring other foods. Indonesia. BURKILL, PONGPANGAN, TANAKA; F85, P38, R88

*Clausena lansium* - *Wampee, Wampi* {PL}. The aromatic, grape-like fruits are eaten fresh, preserved, dried, or made into jams, pies, and refreshing drinks. Flavor varies from sweet, subacid, to sour. The more acid forms are used in making jelly when fully grown but unripe, and fruit drinks when fully ripe. Leaves are put into curries. In Southeast Asia, a carbonated beverage resembling champagne is made by fermenting the fruit with sugar and straining off the juice. China, cultivated. MORTON 1987a, RAY, R., REUTHER, STUR-

ROCK, TANAKA; E8M{GR}, E29,177G, I83M, M17, N84{S}, P5{S}, P38{S}, Q46{S}, Q93

CULTIVARS {GR}

**Guv Sahm:** Roundish to oval fruit; thin, yellow-brown skin, easily peeled; somewhat sour flavor; rather large seed and relatively little flesh. Ripens in the fall. Upright, evergreen, attractive tree; very productive. Q93{OR}

**Yeem Pav:** Roundish to oval fruit, somewhat reminiscent of a longan; thin, yellow-brown skin, easily peeled; translucent flesh with a pleasant, citrus-like flavor. Superior to Guy Sahm in fruit quality. Attractive, upright, evergreen tree; produces bunches of fruit in autumn. Q93{OR}

*Correa alba* - *Cape Barren tea* {PL}. The leaves were once used as a tea substitute, particularly by sealers on Islands in Bass Strait. Fresh or dried leaves can be used, and the tea has a mild, very pleasant flavor similar to green Chinese tea. Australia. CRIBB, ROBINS; M7M, N84, R77

*Cusparia fehrifuga* - \* *Galipea officinalis*

*Dictamnus albus* - *Fraxinella*, *Gas plant* {S}. An infusion of the dried leaves forms a refreshing, aromatic tea. Mediterranean region to Eastern Asia. MARCIN, MORTON 1976, UPHOF; E7M, 139, K49M, K63G, M98{PL}, N71M, 093

CULTIVARS

**Pink:** (Roseus) Deep pink flowers. Tea made from this form will be less lemony but has an added taste of almond and vanilla. MARCIN; C92, D95{PL}, F80, G4{PL}, H29M{PL}, H63{PL}, K38, K49M, K63G, K85{PL}, 053M, Q24

**White:** (Alba) Showy white flowers. Tea made from this form has a lemony fragrance and taste. MARCIN; E63M{PL}, G4{PL}, H29M{PL}, H63{PL}, J93T, K38, K85{PL}, L66{PL}, L91M, 053M, Q24

*Eremocitrus glauca* - *Australian desert lime*, *Wild lime* {PL}. The acid fruits, including the rind, are used for making refreshing drinks, marmalade, jams, sauces and dressings. The rind is soft, thin and relatively free of bitterness for a citrus-like fruit. A very popular fruit in the native bushfoods industry. Tolerant of extreme drought, heat and cold. Occasionally used as a rootstock for *Citrus* spp. Australia. CRIBB, REUTHER, ROBINS [Cul, Re], UPHOF; 174, K67, N79{PR}, N79{PD}, 032M{PD}

*Euodia daniellii* - *Chdsen-goshuyu* {S}. A cooking oil is extracted from the fruit. China-Korea. TANAKA; C95, D95, E7M, K38, K63G, N71M, 053M, 093

*Evodia daniellii* - *Euodia daniellii*

*Fagara rhetsa* - *Indian pepper* {S}. The bark has a lime-pepper flavor and is added to foods as seasoning or cooked in syrup with spices and made into a relish. In South Vietnam, the leaves are used like hops in making rice beer. The unripe fruit has the flavor of orange peel and is used as a spice. Ripe seeds taste like lemon, with a burning after-sensation, and are used as a substitute for pepper. Indonesia. MORTON 1976; Z25M

*Feronia elephantum* -+ *Feronia limonia*

*Feronia limonia* - *Elephant apple*, *Wood apple* {S}. The orange-sized, woody fruit has an aromatic, sour-sweet, somewhat mealy pulp that is eaten raw or made into jellies, preserves, chutneys, and sherbets. The jelly is purple and much like that made from black currants. In Sri Lanka, a popular drink is made by mixing wood apple pulp with coconut milk and jaggery. Young leaves can be eaten raw. Southern Asia, cultivated. BALASURIYA [Re], MACMILLAN [Re], MORTON 1987a, REUTHER, SINGH, S.; F85, M17{PL}

*Fortucitrocirus* sp. [*Fortunella* spp. x (*Citrus* x *sinensis* x *Poncirus trifoliata*)] - *Citrangequat* {GR}. Artificial hybrid. Kumquat x citrange. The hybrids combine the cold-hardiness of the

kumquat and trifoliolate orange, being generally more cold-resistant than the citrange, calamondin, and kumquat. REUTHER. N37M

CULTIVARS

**Macciaroli:** Similar to Sinton, but the fruit is more acid and the tree has a greater tendency towards trifoliation. It is probably the preferred ornamental because its showy flower clusters bloom almost year-round and have a gardenia-like fragrance. A cultivar most commonly grown in Arizona and Texas. RAY, R.; I83M

**Mr. Johns Longevity:** Changshou kumquat x citrange. Slightly larger fruits than its kumquat parent, but not so fine a peel. Similar to Nagami kumquat in taste. Survives 10° F. when shaded and protected from wind in an unheated greenhouse. 174

**Sinton:** Oval kumquat x Rusk citrange. Small, round to oval fruit, often necked; deep reddish orange; very acid; nearly seedless. Upright, moderately vigorous tree; nearly thornless; hardy. An attractive ornamental with beautifully colored fruit. First fruited at Sinton, Texas, and named in 1923. REUTHER; 174

**Thomasville:** Nagami kumquat x Willits citrange. Small, globose to oval fruit, averaging 1 1/2 inches in diameter; rind thin, yellow to orange-yellow. Pulp juicy, pleasantly acid when immature, sweetish at maturity; color light green to amber; segments 7 or 8; seeds 0 to 12, averaging 6, small. Good for eating out of hand when mature; also excellent for ade or marmalade. Season October to December but juicy and suitable for ade from July to October. Reliably cold tolerant to 10° F. BROOKS 1972, MORTON 1987a; H4,174, K67

*Fortunella x crassifolia* - *Meiwa kumquat*, *Large round kumquat* {GR}. The fruit is round, relatively large, with a tender, sweet rind and relatively sweet or subacid juice. It is considered the best of the kumquats for eating out of hand, rind and all. In China, a sweetmeat called *dun-chu-ping* is made by preserving the fruit in sugar. Japan-China, cultivated. MORION 1987a, RAY, R., REUTHER, SCHNEIDER 1986 [Cul, Re], STURROCK, TANAKA; A63, D23M, D23M{ES}, D37, E3M{DW}, E29, F85{S}, G17, G49, I53M, I77G, I83M, N18{SC}, N84{S}, Q93

*Fortunella hindsii* - *Hong Kong wild kumquat*, *Formosan kumquat* {GR}. The small, brilliantly colored fruits are used for making sweetmeats and candy. Although small, the Chinese are said to prize these fruits and to preserve them in honey for use as a spicy flavoring. In the western world, the very thorny shrub is grown only as an ornamental potted plant. Eastern Asia. MORTON 1987a, REUTHER; F85{S}, M82, N37M

*Fortunella japonica* - *Marumi kumquat*, *Round kumquat* {GR}. Fruits are made into jams, jellies, and preserves. The peel is golden-yellow, smooth, thinner and somewhat sweeter than that of the oval kumquat. The tree is less vigorous, somewhat thorny, and considerably more cold-tolerant. Japan, cultivated. MORTON 1987a, REUTHER, SIMMONS 1972; N18{SC}, N84{S}, P38{S}, Q93, S59

*Fortunella margarita* - *Nagami kumquat*, *Oval kumquat* {GR}. The fruits are eaten fresh, preserved in syrup, pickled in vinegar, used as a garnish, or made into marmalades, jams, sauces, and jellies. For eating out of hand rind and all, first squeeze and massage the fruit to combine the flavors. After ripening, the fruit gradually loses water content, becomes richer in flavor, and is then at its best for making preserves. Japan-China, cultivated. CARCIONE, JOHNS [Cul], REUTHER, RICHARDSON, M. [Re], SCHNEIDER 1986 [Cul, Re], SIMMONS 1972, STURROCK; A63, A71, D23M, D23M{ES}, E3M{DW}, F85{S}, G17, G49, I83M, J22, J61M{DW}, N18{SC}, N84{S}

*Fortunella obovata* - *Changshou kumquat*, *Long life kumquat* {GR}. The juicy, refreshing fruits are eaten in sweetmeats and candies. They are said to have the flavor and aroma of the round kumquat, *F. japonica*. The peel is soft, sweet and edible. Grown as a potted plant in parts of China and Japan. China. REUTHER, TANAKA; 174,183M

*Galipea officinalis* - *Angostura* {DF}. The bark is the source of an extract that flavors various foods including bitter tonics, baked goods, candy, ice cream, gelatins, etc. The original flavoring for *Angostura Bitters*, now made of bitter orange peel, gentian and other herbs and spices. Tropical America. BROUK, BURDOCK, LEUNG, MORTON 1976; F37T, GO, K18M, N7D

*Glycosmis pentaphylla* - *Jamaica mandarin orange* {S}. The sweet, fleshy ripe fruit is eaten. Tropical Asia. HEDRICK 1919, VAN DUONG, WATT; F85, N84, P38, Q46

*Glycosmis trifoliata* - *Chan-kiue* {S}. Leaves are dried and ground into a powder used in the preparation of a wine-like beverage called *Kiu-tsee*, made from rice and soybeans. It is said to be impossible to obtain a good fermentation without these leaves. Tropical Asia. PAILLIEUX; W59M

*Limonia acidissima* - *Feronia limonia*

X *Microcitronella* sp. (*Microcitrus australasica* x X *Citrofortunella mitis*) - *Faustimedon* {GR}. Artificial hybrid. Australian finger lime x calamondin. The fruits are eaten. They resemble the finger limes, but are somewhat shorter, nearly seedless, and pleasantly acid. About as hardy as the calamondin. REUTHER.

#### CULTIVARS

**Australian Sunrise Lime:** Attractive, pear-shaped fruits, 1 1/4 to 2 inches long and 3/4 inch to 1 1/2 inches wide; "sunrise" golden in color. Sharp, clean, bittersweet flavor and light, floral aroma. Highly suited for sweet and savory products including beverages, preserves, sauces, garnishes, confectionery, etc. Ripens in August and September in Australia. Has been budded successfully onto Troyer citrange. SYKES, S.; N79

*Microcitrus australasica* - *Australian finger lime* {PL}. Ripe fruits are said to be refreshingly sour when eaten out of hand. They can also be made into a pleasant-flavored marmalade which has a distinctive perfume and is also ornamental, the sliced rings of fruit looking like miniature cartwheels. Use a recipe for lemon marmalade but reduce the amount of water added by about a quarter as the finger limes have less pectin. Australia. CRIBB; G17,174,183M, M17

*Microcitrus australasica* f. *sanguinea* - *Red-pulp finger lime* {GR}. The fruits are used like those of the common finger lime, but die pulp at maturity varies from pink to red in color. Currently being used in breeding pigmented hybrids for the bushfoods industry. Australia. REUTHER, SYKES, S.

#### CULTIVARS

**Australian Blood Lime:** Natural hybrid. Red-pulp finger lime x Rangpur lime. Round to slightly oval fruits, 1 1/4 to 2 inches long and 3/4 inch to 1 1/4 inches wide. Skin, flesh and juice are a striking, blood-red color. Sharp, crisp flavor similar to the West Indian lime. Highly suited for beverages, preserves, marmalades, sauces, chutneys, etc. Ripens in winter. Glossy, dark-green foliage with red flushes of new growth; cream-colored flowers tinged with red. Can be budded to Troyer citrange. SYKES, S.; N79

*Murraya exotica* - \**Murraya paniculata*

*Murraya koenigii* - *Curry leaf*, *Meetha neem*, *Sweet neem* {S}. The pungent, aromatic leaves are a common ingredient in curries, chutneys, stews, etc. They are first fried in ghee or oil until crisp, at the start of preparing a curry. The leaves retain their characteristic flavor and aroma even after drying and are an ingredient of the Tamil Nadu spice blend called *curry powder*. After being powdered in a grinder or blender the dried leaves can also be used in marinades or sprinkled on vegetables or yogurt. Peppery fruits are edible. India. BURKILL, DEVI [Cul, Re], JOSEPH, MACMILLAN, MORTON 1976, REUTHER, SOLOMON, VON WELANETZ; A7{DF}, A79M, D57{PL}, F85, G96{PL}, I12{PL}, I83M{PL}, L16{DF}, M82{PL}, N84, P38, Q46

*Murraya paniculata* - *Jasmine orange*, *Orange jessamine* {S}. The leaves are used to flavor curries. Fragrant flowers are used for scented tea. The red fruit is also edible. Southern Asia. BROUK,

HEDRICK 1919, TANAKA; A79M, C9M, E7M, F85, G96{PL}, I83M{PL}, J27{PL}, N84, O53M, P5, Q32

*Poncirus trifoliata* - *Trifoliolate orange*. The rind of the fruit can be candied. In China, the bitter fruits are used for seasoning. When first picked the fruit gives very little juice when pressed but after being kept for two weeks they yield about twenty percent juice. A drink can be made from the diluted juice. Young leaves are occasionally boiled and eaten. China. SIMMONS 1972 [Cu], TANAKA; (for cultivars see Rootstocks, page 510)

*Ptelea trifoliata* - *Hop tree*, *Wafer-ash* {S}. The bitter fruits are sometimes used as a substitute for hops in making beer. A decoction of them added to yeast is said to make it rise more rapidly. Eastern North America. FERNALD, HEDRICK 1919; D95{PL}, J25M, K38, K63G, K89{PL}, L91M, N84, O53M, O93, P49, R78

*Ruta chalepensis* - *Egyptian rue* {PL}. The leaves are used as a condiment, and are highly esteemed by the Jews of North Africa. They are often added to the lamb and beef sausages known as *merguez*. In parts of Tunisia, they flavor an omelette called *hajja*. Mediterranean region. BOUQUET, ENGLER; E48, E61, F68T{S}, F86G{S}, I74, M82, N84{S}

*Ruta graveolens* - *Rue*, *Herb-of-Grace*, *Term Adam* {PL}. The strongly aromatic leaves are minced and used sparingly in salads, ragouts, vinegars, sandwiches, *grappa*, and vegetable juices. They can also be pickled, brewed into tea, or used for seasoning cheese and chicken. In North Africa, the seeds are employed in the preparation of a palm wine, known as *laqmi*. The ground seed capsules are ingredients in the Ethiopian spice mixtures *berbere*, *shiro*, and *awaze*. Mediterranean region, culthated. GRAY, P. [Cul], GRIEVE, HEDRICK 1919, LATHROP, MACNICOL, MESFIN [Re], MORTON 1976, POPENOE, R, ROOT 1980b [Cul], TANAKA; C3{S}, C67M, D92M{S}, F80{S}, H46{DF}, H51{DF}, H51{PD}, I8M{DF}, I77M, J66, K22, M82, N19M, N84{S}, O53M{S}, etc.

*Severinia buxifolia* - *Chinese box-orange* {S}. In China, the plant is esteemed for its leaves, which are used in the preparation of yeast cakes. For this reason it is called *tsau ping lak* in Cantonese, meaning *wine cake thorn*. Southeast Asia. REUTHER, TANAKA; F85, N84

*Skimmia laureola* - *Ner*, *Chamlani* {S}. The strongly aromatic leaves are eaten in curries or used for flavoring other foods. Himalayan region. ATAL, TANAKA, WATT; F85, Q40

*Triphasia aurantiola* - *Triphasia trifolia*

*Triphasia trifolia* - *Lime berry*, *Limon de China* {S}. The aromatic, juicy, somewhat mucilaginous fruits are eaten raw, stewed, pickled, or made into jams and preserves. Tropical Asia, cultivated. HEDRICK 1919, KENNARD, TANAKA; E29{PL}, F85, N84, O93, Q46

*Zanthoxylum alatum* - \**Zanthoxylum armatum*

*Zanthoxylum armatum* - *Winged prickly ash*, *Timur* {S}. Young leaves are used as a condiment. The seeds, known as *Chinese pepper*, are widely employed as a seasoning in China and India. In Nepal, they are often mixed with chilis and are considered essential for making achar (pickles and chutneys). Tropical Asia. ASSOCIATION [Re], BURKILL, MAJUPURIA [Re], MANANDHAR, MORTON 1976, POHLE, WATT; F85, G66,174{PL}, N61, O93, Q12, Q40

*Zanthoxylum piperitum* - *Sansho*, *Japanese pepper* {DF}. The dried fruit hulls are ground and used for flavoring soups, buckwheat noodles, rice dishes, and *kiri-sansho*—a type of cake. They are often heated to bring out their full aroma, and then combined with salt to make a table seasoning. They are also one of the seven spices that constitute the Japanese spice mixture *shichimi*. Discriminating chefs grind the hulls with a pestle made of sansho wood, which passes its flavor to the *kiri-sansho*. The whole seeds, called *sansho-no-mi*, are simmered with shoyu and mirin to make *tsukudani*. *Kinome*, the

young shoots, are used as a garnish for broiled fish, and lend flavor to soups, salads and miso. Flowers and immature fruits are pickled or preserved in soy sauce. Japan-China, cultivated. COOK, COST 1988 [Cul], MORTON 1976, SHURTLEFF 1975 [Re], SHURTLEFF 1976 [Re], TSUJI [Re], VON WELANETZ [Pie], YASHIRODA; A7, C34G, D95{PL}, E14T, G20M, G20M{PD}, L16, N49M, N49M{PD}, N61{S}, N84{S}

*Zanthoxylum rhetsa* - \*Fagara rhetsa

*Zanthoxylum simulans* - *Szechwan pepper*, *Chinese pepper*, *Huachiao* {DF}. The fruit is dried and toasted and used as a condiment, either whole or ground to a powder. It is stronger and more pungent than black pepper. Popular for making seasoned peanut oil, used for stir-fried dishes and for dressing Chinese salads. Also one of the ingredients of *Chinese five-spice powder*. Dried whole fruits, called *Szechwan peppercorns*, are available in Chinese and specialty stores. China. CHANG, W. [Re], COST 1988 [Cul, Re], CUSUMANO [Cul, Re], TANAKA; A7, A49D, C27G, C34G, D95{PL}, G66{S}, H4{PL}, H15T, I8M, J11M{PD}, K63G{S}, L17, M92{PL}, N37M{PL}, N84{S}, etc.

SALICACEAE

*Populus balsamifera* - *Balsam poplar* {PL}. The wood is a favorite of the Tanaina Indians for smoking fish because it produces a slow-burning fire and imparts a distinctive flavor. Source of an essential oil used by the food industry to flavor alcoholic beverages. North America. BURDOCK, KARI, LEUNG; D95

*Populus tremuloides* - *Quaking aspen* {PL}. The sap of the tree is potable. Inner bark is also used as food. The wood is sometimes used for smoking fish. North America. KARI, YANOVSKY; C33, C38, D95, E33M, E87, G66, G66{S}, G89M, H49, I47{S}, J26, K89

*Salix babylonica* - *Weeping willow* {PL}. Young leaves, shoots, and flower buds are parboiled and eaten. Older leaves are used to adulterate tea. Also the source of a manna-like substance. Cultivated. DONKIN, TANAKA; B32, D95, F51, H4, H14M, I53M, I68, K46, L47, M69M, M82

*Salix caprea* - *French pussy-willow* {PL}. Source of an edible manna. Europe, cultivated. DONKIN; A91, B9M, B32, B53, C9, C45M, C54, D95, G66, I77M, K22, K89, M69M, N84{S}, P38

*Salix daphnoides* - *Arctic willow* {PL}. The young, tender shoots and catkins are eaten fresh or in seal oil by the Eskimos of Alaska. Young leaves are especially rich in vitamin C. Growing tips of the underground rhizomes can be peeled and eaten, raw or cooked. The inner bark is eaten raw. Northern Europe. GIBBONS 1979, HELLER, UPHOF; K81, R49

*Salix fragilis* - *Crack willow* {PL}. The leaves and young branches yield a saccharine exudation used as food. Eurasia. DONKIN, HEDRICK 1919; A91, D95, N84{S}, R49

*Salix gracilistyla* - *Japanese pussy willow*, *Neko-yanagi* {PL}. Young leaves and flowers are parboiled and eaten as a vegetable. Leaves are used as a substitute for tea. Eurasia. TANAKA; I77M, K22

*Salix pulchra* - \**Salix daphnoides*

SALICORNIAEAE

*Salicornia europaea* - *Saltwort*, *Glasswort*, *Marsh samphire*, *Pickle weed*, *Sea bean*, *Perce-perie* {PR}. Young, salty stems and leaves are eaten raw in salads, cooked as a potherb, pickled, added to soups, or used as a garnish. For pickles, the tender stems and branches are first boiled in their own salted-water before being put in spiced oil or vinegar. The protein-rich seeds are eaten, and can be refined into a high-quality edible oil similar to safflower oil. Northern temperate region. ANGIER, FERNALD, GIBBONS 1964, LAUNERT, MABEY [Cul, Pie], MATIGNON [Re], MICHAEL [Re], NIETHAMMER, SCHNEIDER 1986 [Re], TANAKA; C11T, G5, H25M, H25M{PD}, H73, O48{S}

SALSOLACEAE

*Salsola kali* - *Russian thistle*, *Tumbleweed* {S}. Young shoots are eaten raw in salads, put in soups, or boiled and eaten like spinach. They make an excellent vegetable when served with butter, vinegar or lemon juice, bacon strips or hard-boiled egg slices, or a cream sauce. Because of their mild flavor they can be mixed with stronger flavored greens such as mustard. Northern temperate region. CLARKE [Re], GIBBONS 1979, HARRINGTON, H., NIETHAMMER [Re]; C4, N84, Q15G

*Salsola komarovi* - *Oka-hijiki* {S}. The young leaves are used as a potherb, put into soups, or eaten as *ae-mono*. In Japan, mixed foods served with a seasoned dressing are called *ae-mono*. Occasionally available in Japanese markets. Eastern Asia. LARKCOM 1991 [Cu], SHURTLEFF 1975, TANAKA; F85

*Salsola soda* - *Barilla plant*, *Agretti*, *Roseano*, *Riscolo* {S}. The succulent, tender, young shoots are boiled or steamed, then served with olive oil and lemon juice. They have a slightly sour flavor, much appreciated by some. Considered a delicacy in Umbria and other parts of central Italy. Sold in local markets during summer and autumn. Also grown in Japan. Mediterranean region to Southwest Asia, cultivated. HAMMER, LOVELOCK, PLOTKIN, UPHOF; S17

*Sarcobatus vermiculatus* - *Greasewood* {S}. The tender young twigs can be cut into short pieces, boiled until tender, then served with butter or cream sauce. Seeds are occasionally consumed. Southwestern North America. KIRK, MEDSGER, UPHOF, YANOVSKY; C43V, E66M, F85, G66

SALVADORACEAE

*Salvadora persica* - *Mustard tree*, *Fielu* {S}. Young shoots and leaves are eaten in salads or prepared into a sauce. The aromatic fruits are eaten fresh, dried like currants, made into a drink, or used as a substitute for mustard seeds. A vegetable salt, called *kegr*, is derived from the ash of the plant. A fat obtained from the seeds is used as a substitute for vegetable butters in chocolate manufacture. Resins and microfibers of the plant are used for producing a chewing gum. Tropical Africa and Asia. DALZIEL, HEDRICK 1919, MENNINGER, TANAKA, UPHOF, WATT; A79M, L34{YD}

SAMBUCACEAE

*Sambucus caerulea* *Sambucus glauca*

*Sambucus canadensis* - *American elder*, *Canadian elderberry* {PL}. Purple fruits are edible, being high in vitamin C. Usually used in pies, jellies, jams, preserves, drinks, sauces, chutneys, fruit soups, vinegar, pancakes, muffins, or fermented into wine. Unripe fruits and unexpanded flowers are pickled like capers. The flowers are dipped in batter and made into fritters, added to pancakes and muffins to lighten them and provide a distinct flavor, or made into *elder blow* wine. Dried flowers are used for tea. North America, cultivated. ANGIER, FERNALD, GIBBONS 1962 [Re], MEDSGER; A99{DF}, B9M, C94M{PD}, E61, F42M{PD}, F74M{PD}, G40{DF}, H49, I37M, K63G{S}, K89, M69M, N9M, N9M{S}, N84{S}, etc.

CULTIVARS {GR}

**Adams:** Since the distinctions between Adams #1 and Adams #2 are somewhat minor, they are not always propagated as such and are merely sold as Adams. For general descriptions see Adams #1 and Adams #2. A74, B19, B73M, C47, D37, D95, E3, H49, I49G, I74, I78, J2M, J89M, L27M, N24M

**Adams #1:** Fruit clusters and berries exceptionally large, berries somewhat larger than Adams #2. Plant vigorous, productive; only partially self-fruitful, cross-pollination required. Selected from wild bushes. Originated in Union Springs, Nov York by William W. Adams. Introduced in 1926. BROOKS 1972; C61, D69, G16, H65, J63M

**Adams #2:** Fruit cluster exceptionally large, berries somewhat smaller than Adams #1. Plant strong, vigorous; only partially self-fruitful, cross-pollination required; somewhat more productive than Adams #1. Originated in Union Springs, New York, by William W. Adams. Introduced in 1926. BROOKS 1972; *J63M*

**Hidden Springs:** Fruits ripen evenly in the cluster, making them much easier to sort. Hardy to Zone 5. A local selection by Hidden Springs Nursery. The original tree grew 14 feet tall by the site of an old log home. F43M

**Johns:** Fruit clusters and berries large; ripens earlier than Adams. Plant extremely vigorous; only partially self-fruitful, cross pollination is recommended. Originated by the Nova Scotia Experiment Station. B19, B73M, C61, D37, D76, D95, E3, H49, H65, 174, 178, J2M, J61M, *J63M*, L27M, NO, N24M, etc.

**Kent:** Fruit size and quality equal to Adams but ripens 7 to 10 days earlier. Plant vigorous, productive. Open pollinated seedling of Adams. Introduced in 1947 by E.L. Eaton, Canada Department of Agriculture. BROOKS 1972; C58, D76

**Nova:** Fruit large, matures early and uniformly in the cluster; sweeter than Victoria and Kent which it resembles. Plant suckers easily; readily propagated by dormant cuttings of one-year old canes. Open-pollinated seedling of Adams #2. Introduced in 1959 at Kentville, Nova Scotia. BROOKS 1972; A91, B19, C34, *C47*, C58, D37, G71, H49, I49M, 174, L33, *M81M*, N24M

**Scotia:** Fruit large, ripens early and uniformly in the cluster; sweeter than Kent and Victoria which it resembles. Plant suckers easily; readily propagated by dormant cuttings of one-year old canes. Open-pollinated seedling of Adams #2. Introduced in 1959 by the Canada Department of Agriculture, Kentville, Nova Scotia. C58

**Victoria:** Fruit size and quality equal to Adams but ripens 3 to 6 days earlier. Plant moderately vigorous, productive, readily propagated by dormant cuttings. Open-pollinated seedling of Adams #2. Introduced in 1957 by E.L. Eaton, Canada Department of Agriculture Research Station, Kentville, Nova Scotia. BROOKS 1972; C58, N24M

**York:** Fruit cluster heavy; berry large, larger than any named cultivar; in a four year test averaged only 9.9% soluble solids, about 3% less than Johns, Scotia and Victoria; ripens after Adams #1 and Adams #2. Plant very large, more productive than Adams #1 and Adams #2. Introduced in 1964 by the New York State Experiment Station, Geneva, New York. A91, C34, C58, D69, F43M, G16, I49G, I49M, J61M, *J63M*, L27M, L33, NO, N24M

#### *Sambucus chinensis*-*Sambucus javanica*

*Sambucus glauca* - *Blueberry elder*, *Blue elderberry* {S}. The fruits are sometimes eaten raw but they are usually dried before being used in jellies, juices, wines, pies, fruit sauces, sherbets, soups, relishes, etc. Flower clusters are made into fritters or pickles, while the individual flowers can be separated and used in pancakes, muffins, syrups, or vinegars. A tea is brewed from the dried flowers. Western North America. BRYAN [Cul, Re], GIBBONS 1979, HARRINGTON, H., KIRK; A2, A91{PL}, D95{PL}, E15, *E66M*, G59M{PL}, *G66*, 147, J26{PL}, K63G, M35M{PL}, N84

*Sambucus javanica* - *Chinese elderberry*, *Chieh-ku-ts'ao*, *Thudc moi* {S}. Fruits are preserved, used in confectionery, or made into a beverage. Stems, leaves and roots are parboiled and eaten. Tropical Asia. TANAKA, UPHOF; F85, N84

*Sambucus melanocarpa* - *Black elderberry* {PL}. The fruits are used in sauces, pies, muffins, wines, or made into juice. Elderberry juice can be used as a beverage, mixed with other fruit juices and sweetened to taste, or made into *syrup* and jelly. In making jelly, if the juice is mixed half and half with the juice of crabapples or unripe grapes, additional pectin is not needed. Western North America. TURNER 1979 [Re]; J26

*Sambucus mexicana* - *Mexican elder* {PL}. Dried fruits are used in pies, jellies, wines, syrups, etc. Flower clusters are dipped in batter, fried, and sprinkled with sugar. Individual flowers can be shaken from the stems to add flavor and vitamins to pancakes, muffins, and cakes. Southwestern North America. CLARKE [Re], UPHOF; G60, I98M, K15{S}

*Sambucus nigra* - *European elder*, *Black elder* {S}. The fruits are used in wines, chutneys, ketchups, preserves, jams, pies, juices, or made into *pontack sauce*. In Portugal, they are employed for coloring inexpensive port wine. The juice, mixed with equal parts of honey, is used as a spread. Dried flowers are brewed into a sweet tea. Flowers are made into sparkling wines, drinks, fritters, or are added to salads. Shake the blossoms over a salad at the last moment, without washing them, or the fragrance will be lost. Elderflower tea can be used for brewing *kombucha*, the resulting beverage having a delicious champagne-like character. Leaves are used to impart green color to oils and fats. Eurasia, cultivated. GRIEVE [Re], HEDRICK 1919, LARKCOM 1984, LAUNERT, MABEY [Re], MACNICOL, MARCIN, TANAKA, TIETZE; A61M{P£}, A91{PL}, C38{PL}, F35M{PD}, F80, G5{ED}, *G66*, K38, L36M{DE}, *N71M*, 093, P49, R53M, *R78*

*Sambucus pubens* - *American red elder* {S}. The bitter fruits are eaten raw or cooked. They were a common food of the coastal Indians of British Columbia. A tea-like beverage is prepared from the roots North America. TURNER 1979, YANOVSKY; A74{PL}, B74{PL}, F85, *G89M*{PL}, K63G, N84

*Sambucus pubens* f. *xanthocarpa* - *Golden elderberry* {PL}. The golden-yellow fruits are edible. North America. SIMMONS 1972; 174

*Sambucus racemosa* - *European red elder* {S}. Mature fruits, after the seeds have been removed, are a good source of vitamin C and can be used in beverages, wines, and jellies. Eurasia. HELLER, LAUNERT, TANAKA; E15, *E66M*, *G66*, G66{PL}, 147, K38, K63G, K64{PL}, N84, 053M, P49

*Sambucus racemosa* var. *melanocarpa* - *Sambucus melanocarpa*

*Sambucus racemosa* ssp. *sieboldiana* - *Sambucus sieboldiana*

*Sambucus sieboldiana* - *Niwatoko* {PL}. Young leaves and buds are boiled and eaten as a vegetable or used as a substitute for tea. Japan, Korea. TANAKA; D95

#### SANTALACEAE

*Eucarya acuminata* - *Quandong*, *Native peach* {S}. When fully ripe, the thin, acid flesh of the fruit is eaten raw, used as a pie filling, or made into prized jams, jellies, sauces, syrups and chutneys. It is very rich in vitamin C. The flavor is said to improve when the fruits are dried and stored. Seed kernels, having 60% oil content and 25% protein, are roasted and eaten. Australia. CHERIKOFF [Re], CRIBB, MENNINGER, ROBINS [Re], ROSENGARTEN; A79M, C95, N79{PL}, N79{PR}, N79{ED}, N79M, N84, 032M{ED}, 033, PIG, P5, P17M, P38, R15M, R33M, R47, S59{PL}, S92, etc.

#### CULTIVARS {GR}

**Frahn's Parinqa Gem:** Exceptionally high quality fruit with strong gourmet market acceptance. Rich, cherry-red skin; light-colored flesh; delicious flavor free of "meaty" aftertaste; small, free stone. Excellent size, shape, texture and flesh thickness. Vigorous, compact, non-suckering tree adapted to high density plantings. Bears regular, heavy crops, with production increasing even after 17 years of age; precocious; disease resistant. Selected by Dudley and Lyla Frahn. N79

*Eucarya spicata* - *Australian sandalwood* {S}. The edible seeds are somewhat larger than the quandong and are enclosed in a hard shell that is somewhat thinner. They are highly regarded both for flavor and ease of extraction. Australia. MENNINGER; N79M, N84, 033, P5, P17M, P38, R15M, R33M, S92



*Leptomeria acida* - *Currant bush* {S}. The acid fruits are sometimes eaten raw, otherwise they are said to make uncommonly fine jellies, preserves and salad dressings. Australia. CHERIKOFF [Re], CRIBB, UPHOF; F85

*Santalum acuminatum* - \**Eucarya acuminata*

*Santalum album* - *White sandalwood* {S}. The bark is sometimes chewed instead of betel nuts. In India, sandalwood essence adds a delicate fragrance to syrups, frappees and *burfi*, a traditional milk sweet. An essential oil, distilled from the heartwood and roots, is used as a flavoring in commercial chewing gum, bakery products, ice cream, and candy. Tropical Asia. DEVI [Re], MORTON 1976, SCHERY, TANAKA; A79M, E14T{DF}, E21D{PL}, F68T, F85, F86G{DF}, L34{DF}, N84, 093, P5, P17M, P38, Q12, Q18, Q45M, Q46, etc.

*Santalum lanceolatum* - *Lanceleaf sandalwood, Bush plum* {S}. The edible fruits are deep blue or blue-black when ripe, smaller than *Eucarya acuminata*, and with sweetish flesh that is of a very agreeable taste. Australia. CRIBB; N84, P17M

*Santalum spicatum* - *Eucarya spicata*

### SAPINDACEAE

*Blighia sapida* - *Akee, Vegetable brain* {PL}. Ripe, fleshy arils are eaten raw, fried in butter, curried, or used in filled pastries, soups, stews, souffles and omelettes. In Jamaica, they are traditionally boiled with salted codfish, onions, and tomatoes. The underripe or overripe aril and the seeds are toxic. Flowers are used in the preparation of an aromatic water. Tropical Africa, cultivated. BENGHIAT [Pre, Rs], HAWKES [Re], IRVINE 1952, JOHNS [Cul], MORTON 1987a, ORTIZ 1973 [He], POPENOE, W. 1920, RICHARDSON, M. [Re]; E29, F85{S}, I77G, J17, M17, N84, 019{S}

*Cubilia blancoi* - *Kubili* {S}. Nutritious seeds are eaten boiled or roasted, being of excellent quality. Contains 5.2% protein, 1.92% fat, 23.13% starch, and 18.83% other carbohydrates. The leaves are used as a vegetable. Indonesia-Philippines. CORONEL 1984, MENNINGER, UPHOF; X62

*Dimocarpus longan* - *Longan* {PL}. The aril of the fruit is whitish, translucent, somewhat sweet but not as aromatic or flavorsome as the lychee. It is eaten out of hand, dried, preserved in syrup, cooked in sweet and sour dishes, or made into a liqueur. The black, smoky dried fruits are used in slow-cooked soups, or are made into a refreshing beverage. China, cultivated. CHANG, W. [Cul], GROFF, MORTON 1987a, POPENOE, W. 1920 [Cu, Pro], SCHNEIDER 1986 [Cul, Re], STURROCK; A41G, B60M{PR}, C27G{DF}, E2M{DF}, E21D, E29, E47M{DF}, F85{S}, G0{DF}, G99M{PR}, H53M{S}, I77G, L21T{DF}, N84{S}, P38{S}, Q93, etc.

### CULTIVARS {GR}

**Bai Dum:** Recently introduced into Hawaii where it produces high quality fruits regularly and is recommended for general planting. Originated in Thailand, where the highest quality longan varieties have been developed. E8M

**Biew Kiew:** Large, crisp fruit, somewhat dry. Quality excellent. Hangs on the tree well without loss of flavor. Tree an irregular bearer; somewhat slow to come into production. Originated in Thailand. GLOWINSKI; E8M, 183M, J22, Q93

**Chompoo:** (Pink Flesh) Large, high quality fruit with a faint pink tinge in the flesh. It is not canned because of this coloration, pure white flesh being preferred. Relatively small seed. Matures mid July to early August. Originated in Thailand. E8M, J22, Q93

**Pang:** (Red Stem) Heavy bearing cultivar with fair quality fruit but is not particularly crisp. Matures mid July to early August. Originated in Thailand. Q93

**Fortune Eye:** Recently introduced into Hawaii where it produces high quality fruits regularly and is recommended for general planting. Originated in Taiwan. E8M

**Haew:** (Water Chestnut) Large fruit with firm flesh of excellent quality. A good canning cultivar, but it has a pronounced alternate bearing habit. Matures mid August to early September. Popular in the markets of Thailand where it originated. GLOWINSKI; Q93

**Isau:** Small, round fruit, about 1 inch in diameter; medium-green, thin, brittle shell covered with small protuberances, easily opened; translucent flesh, about 1/4 inch thick, very sweet and juicy with a musky or melon-like flavor reminiscent of a very sweet watermelon. Tolerates light frost and flooding; requires wind protection. TANKARD; N84{S}, 019

**Kakus:** Delicious longan-like fruit, similar in appearance to Isau but with a yellow or yellow-brown pebbly shell, sometimes slightly larger. The sweet, musky flesh is somewhat less juicy than Isau but has a more distinctive, smokey flavor, somewhat melon-like. Tolerates light frost and flooding. Large, attractive foliage TANKARD; 019

**Kohala:** Large to very large fruit; skin brownish; flesh aromatic, sweet and spicy, quality very good to excellent; seed small. Tree produces fairly good crops in mid-summer. The number one commercial cultivar in Florida and Australia. Introduced into Florida from Hawaii by William F. Whitman in 1954. MORTON 1987a, WHITMAN; D57, E8M, E29, G2M, H53M, 183M, J17, J22, M17, N53M, N84, Q93

*Diploglottis australis* + *Diploglottis cunninghamii*

*Diploglottis cunninghamii* - *Native tamarind* {S}. The orange-red arils of the fruits are juicy, sub-acid, pleasantly flavored, and are eaten out of hand, cooked with fish and chicken, or made into preserves, jams, jellies and sauces. Excellent when combined with quandong. Australia. CHERIKOFF, ROBINS [Cul, Re], UPHOF; N84, P38

*Dodonaea viscosa* - *Switch-sorrel, Native hops* {S}. The bitter fruits are used as a substitute for hops in making yeast and beer. Leaves are chewed as a stimulant. Seeds are also edible. Tropics, Subtropics. CRIBB, FCK, F., TANAKA; C9M, D87G{PL}, F63M, N84, 093, P5, Q15G, Q32, R15M, R33M, S92

*Euphoria didyma* - *Nephelium glabrum*

*Euphoria longan* - \**Dimocarpus longan*

*Lecaniodiscus cupanioides* - {S}. The sweet pulp of the fruit is eaten. Fragrant flowers are used in some parts of Africa for the preparation of an aromatic water. Tropical Africa. DALZIEL, INGLET, UPHOF; F85

*Litchi chinensis* - *Lychee, Litchi* {S}. Fleshy arils are sweet, juicy, sub-acid, and have a delicious flavor somewhat reminiscent of Muscat grapes. They are eaten fresh, dried, spiced, pickled, canned in syrup, used in jams, sauces, fruit salads, ice cream, sherbets, or made into wine. The dried fruits, called *lychee nuts*, have a distinctive smoky flavor and are widely eaten in China, especially at New Year celebrations. Dried tea leaves are soaked in lychee juice, dried again in the sun, then made into a fragrant tea which releases the lychee flavor. Lychee honey, of excellent flavor, is an important commercial honey in China and other parts of Asia. China, cultivated. CHANG, W. [Cul], CRANE 1975, GROFF, LEE, G., MORTON 1987a [Cu], POPENOE, W. 1920 [Cu, Pro], RICHARDSON, M. [Re], ROSENGARTEN, SCHNEIDER 1986 [Cul, Re]; A41G{PL}, B60M{PR}, C9M, C27G{ffi}, E13G{PR}, E29{PL}, E47M{DF}, F85, G99M{PR}, H44M{ED}, H53M, K18M{ED}, L54{PR}, L88D{ED}, N40{PR}, N84, P38, Q12, Q46, etc.

## CULTIVARS {GR}

**Bengal:** Large, round to heart-shaped fruit, borne in clusters of 8 to 30; skin deep pink; flesh firm, rose-scented, flavor excellent; does not leak juice when peeled; seed pointed, hilly developed in most fruits, smaller in proportion to flesh than those of Brewster; ripens in June. Tree large, very vigorous, more spreading than Brewster; adapted to alkaline soils. Introduced into Florida in 1929 from a seedling received from Calcutta, India. BROOKS 1972, MORTON 1987a; Q93

**Brewster:** Medium to large, conical or wedge-shaped fruit, borne in clusters of 6 to 20; skin bright red, spiny; flesh soft, more acid than Kwai Mi, seeds often fully formed and large; ripens in June and July. Tree large, vigorous with wide, strong, reinforced branch crotches; leaflets flat, tapering to a sharp point. Originated in Florida. MORTON 1987a; D57, E29, G2M, H53M, I77G, I83M, /77, N84, Q93

**Farwell Ranch:** Large fruit with excellent flavor. Resembles Brewster, but with larger leaf and fruit. Tree more compact than Brewster; a reliable bearer of moderate to heavy crops. Originated in Vista, California by Bill Farwell. I83M

**Groff:** Small, heart-shaped fruit, borne in clusters of 20 to 40; skin dull red; has a higher proportion of flesh to seed than other clones growing in Hawaii; ripens August to September. Tree upright; bears in Hawaii where other cultivars fail due to poor flower initiation. Probably a seedling of Haak Yip. Originated at the Poamoho Branch Station, Hawaii Agricultural Experiment Station, Honolulu. Introduced in 1952. BROOKS 1972; E8M, I83M, J22

**Haak Yip:** (Haak Ip, Black Leaf) Fruit broad-shouldered, small to medium in size, borne in clusters of 15 to 25; skin medium-red, sometimes with green tinges, soft and thin; flesh is occasionally pinkish, crisp and sweet; ripens in June and July. Tree slow growing, compact; branches fragile, spreading; leaves dark green, long, slightly curled, pointed. Considered one of the best of the Chinese "water" lychees. GROFF, MORTON 1987a; Q93

**Heuna Lai:** (Hsiang Li, Fragrant Lychee) Fruit small; skin deep red in color, very rough and with many prickles; flesh very fragrant and delicious and is said to be even better than Kwai Mi, seed very small; prone to splitting; ripens late. Tree upright, with leaves that tend to grow upward. Originated in China. GROFF; Q93

**Kaimana:** Large, nearly heart-shaped fruit; skin deep red, attractive; flesh whitish, translucent, juicy, sweet, of a delicious subacid flavor; round, medium-sized, glossy brown seed; ripens May to July; resembles Kwai Mi but twice as large. One of the best flavored lychees, with no musky aftertaste. Vigorous, spreading tree with long, drooping leaves and branches; bears heavy crops regularly. Released by the University of Hawaii in 1982. MORTON 1987a; E8M, J22

**Kwai Mi:** (Cinnamon Flavor) Small, somewhat heart-shaped fruit, borne in clusters of 15 to 30; skin very rough, red tinged with green on the shoulders; flavor very sweet and fragrant, seeds very small and dry; ripens May to June. The Chinese consider this fruit to be light, or like lean meat in comparison to the No Mai Chee, which is said to be heavy or iatty. For this reason they say Kwai Mi can be eaten in greater quantity. Large, spreading tree with brittle branches. Originated in China. GROFF; E8M, I83M, J22

**Nam Tao Sing:** (Roger's No Mai Chi) Large, rounded to ellipsoid fruit, borne in clusters of 10 to 25; skin bright red, brittle; flesh solid and crisp, sweet, fragrant, dry and clean, quality excellent; seeds often small and shriveled. Tree slow growing, spreading. One of the best cultivars for drying. This is a late maturing cultivar of No Mai Chi. Q93

**Salathiel:** Small, red to yellow fruit of good flavor. Clean, dry flesh with the majority of seeds being of the "chicken tongue" type. Low in vigor when young. Best suited to the southern reaches of lychee culture where it yields well and consistently. Ripens late. GLOWINSKI; Q93

**Seong Sue Wai:** (Gee Kee) Small, rounded fruit; skin slightly rough with many dark spots, red; flesh sweet, lacking in aroma, easily separated from the seed, seeds mostly small; quality medium to good. Leaflets small, long, oval in shape. Q93

**Tai Tso:** (Ta-Tsao, Large Crop, Mauritius) Medium-sized, somewhat egg-shaped fruit, borne in clusters of 15 to 30; skin rough, bright red with many small dots; flesh firm, crisp, sweet, faintly streaked with yellow near the large seed; ripens May to June. Some of the juice leaks when the fruit is opened. Tree vigorous, spreading; a consistent bearer; cold-sensitive; susceptible to limb breakage. Originated in China. GROFF; D57, E29, G2M, I83M, /77, N53M, N84, Q93

**Wai Chee:** (Wai Chi, Sweet Cliff) Small, round fruit, borne in clusters of 4 to 8; skin yellow overlaid with pinkish-red, medium smooth, with few dots or markings; flesh somewhat watery, seeds large, quality good; ripens very late. Tree compact, upright, slow growing; a regular bearer but susceptible to wind damage; recommended for Florida; needs a cooler climate than that of coastal north Queensland. Originated in China. MORTON 1987a; I83M, Q93

*Melicoccus bijugatus* - *Mamoncillo*, *Spanish lime*, *Genipa* {PL}. Pulp of fruits is juicy, aromatic, somewhat sweet, with a pleasant acid flavor. Usually eaten out of hand, or used in pies, jams, jellies, marmalades, and cooling drinks. The starchy seeds are roasted and eaten as a substitute for cassava. Fresh fruits are sometimes available at ethnic markets. Tropical America, cultivated. DUKE, HEDRICK 1919, MENNINGER, MORTON 1987a [Cu, Pro], POPENOE, W. 1920; E29, F85{S}, I77G, /77, N84{S}, S97M

## CULTIVARS {SC}

**Key West:** Large green fruit, 1 1/2 inches in diameter, 14 fruit to the pound; borne in bunches like grapes. Quality excellent with a delicious, slightly acid/sweet flavor. Introduced from Key West, Florida by William F. Whitman. WHITMAN; T73M

**Montgomery:** (No. 4) Large fruit with 51.5% pulp, of good flavor; sometimes 18% of fruit has 2 seeds. Tree bears heavily in most years. Originated in Coral Gables, Florida. First evaluated in 1976 by Dr. Carl Campbell of the University of Florida. MORTON 1987a; T73M

**Newcomb:** (No. 3) Good sized fruits with 48.2% pulp, of good flavor. Tree bears heavily in most years. Originated in Key West, Florida by R.G. Newcomb. First evaluated in 1976 by Dr. Carl Campbell of the University of Florida. MORTON 1987a; U27T

**Queen:** (No. 2) Large fruit with 55.6% pulp, only fair in flavor. Tree moderately vigorous. Originated in Key West, Florida by William F. Whitman. First evaluated in 1976 by Dr. Carl Campbell of the University of Florida. MORTON 1987a; T73M

*Nephelium glabrum* - *Philippine ruyuan*, *Mata kuching* {PL}. The aril of the fruit is sweet and edible. It is thin, juicy, and translucent. Tropical Asia. BURKILL, TINGGAL; E29, N84

*Nephelium lappaceum* - *Rambutan* {S}. The sweet, juicy, translucent flesh of the fruits is excellent eaten out of hand. Or it can be stewed, preserved, used in jams, jellies, and compotes, or canned in light syrup, either as whole fruits or stuffed with pineapple. The seeds are roasted and eaten. They also yield an edible oil. Malaysia, cultivated. ALMEYDA 1979, GARNER [Pro], KUNKEL, MORTON 1987a [Cu, Pro], POPENOE, W. 1920; E8M{GR}, F85, K8, K8{PL}, M17{PL}, N84, 019, 093, R78M

## CULTIVARS {GR}

**Jit Lee:** (Deli) Leading commercial cultivar in Singapore. Originally from Indonesia. Q93

**R 134:** Large fruit with firm flesh. Early season cultivar, coming into bearing earlier than others. Originated in Malaysia. J22, Q93

**R 156:** (Muar Gading) Unique yellow fruited cultivar. Originated in Malaysia. Q93

*Nephelium litchi* - *Litchi chinensis*

*Nephelium mutabile* - *Pulasan* {S}. The delicious flesh of the fruits is less juicy than that of the rambutan, sweeter, and of less sprightly flavor. It is eaten raw or used in jams and compotes. Boiled or roasted seeds are used in the preparation of a cocoa-like beverage. They also yield a cooking oil. Malaysia to the Philippines, cultivated. KUNKEL, MORTON 1987a, POPENOE, W. 1920; F85, J22{PL}, K8{PL}, N84, 019

#### CULTIVARS

**Meritam:** Fruit resembles a rambutan, but is hairless, being instead covered with small protuberances; softer, juicier and more subacid than a rambutan while remaining quite sweet and refreshing. More flavorsome than lychees, being somewhat reminiscent of sweet, purple grapes. The skin is either red or green. Vigorous tree, resembles a rambutan; produces fruit in clusters; requires a tropical environment. TANKARD, *Baccaurea motleyana*; 019

*Nephelium* sp. - *Sibau* {S}. Sibau is a small, dark red, rambutan-like fruit with a pleasant subacid flavor. The tree has large pinnate leaves, a more upright habit than the rambutan, and is ornamental. Grows well in North Queensland, Australia. Borneo. TANKARD; 019

*Pappea capensis* - *Jacket plum*, *Wild plum* {S}. The fruits have pleasant tasting red flesh and are eaten raw, made into beverages and jellies, or fermented into vinegar. Seeds are the source of an edible oil. Southern Africa. FOX, F., HEDRICK 1919, TREDGOLD; N84

*Paullinia cupana* - *Guarand* {DF}. Roasted, pounded seeds are pressed into a paste which is manufactured into carbonated beverages and a stimulating tea, containing 4.88% caffeine. The sweetened paste, called *Brazilian chocolate*, is used in soft drinks, candy, and for flavoring liqueurs. Guarana soda is sometimes available in specialty stores that sell Latin American foods. One of the ingredients—along with figs and chickpeas—of *Wake Up*, a coffee substitute. Tropical South America, cultivated. MENNINGER, MORTON 1976, SCHERY, UPHOF, VAN STRATEN; E14T, F37T, F86G, GO, G73, G84, 181M, K18M, L24G{PD}, L34, M15M, N7D

*Paullinia pinnata* - *Apgi*, *Barbasco* {S}. The aril and the sweet, powdery pulp of the fruit are sometimes eaten. Flowers are also edible. Leaves are consumed in the Congo. The roots are used as chewsticks. Tropical America. CORREA, DALZIEL, DUKE, IRVINE 1961, MARTIN 1975; F85

*Paullinia sorbi*Us - *Paullinia cupana*

*Pometia pinnata* - *Fijian longan* {S}. The pulp of the fruit is semi-transparent, white, juicy, and sweet. It is usually eaten out of hand. Oily seeds are eaten after roasting or boiling. Malaysia to Pacific Islands. MAY, R., MENNINGER, TANAKA, WESTER; F85, 019, N84

#### CULTIVARS

**Whitman:** Produces 2 1/2 inch diameter fruit hanging in clusters like grapes. Quality of fruit fair. Tree everbearing. WHITMAN; U27T

*Sapindus mukorossi* - *Chinese soapberry*, *Reetha* {S}. The seeds are crushed and boiled to make a liquid which is added to certain types of Indian milk sweets known as *rasgullas*, the reetha water providing a frothy quality to the dessert. In India they have also been employed for bleaching cardamom seeds, and are reported to improve the flavor as well as the color of the spice. Tropical Asia. PARMAR, P. [Re], WATT; D95{PL}, G66, 174, N73{PL}, N84, P38, Q12, Q18, Q45M, Q46, R50{PL}

*Schleichera oleosa* - *Malay lacttree*, *Koosambi* {S}. Young leaves and shoots are eaten raw, in soups, or steamed and served with rice or fish. Unripe fruits are pickled, ripe ones are eaten raw. The seeds are the source of *macassar oil*, sometimes used for culinary purposes. Southern Asia. OCHSE, TANAKA, UPHOF, WATT; F85, Q46

*Schleichera trijuga* - *Schleichera oleosa*

*Talisia olivaeformis* - *Yellow genip*, *Cotopriz*, *Tinalujo* {S}. The fruit is the size and shape of an olive, green or yellow on the outside, with orange-red pulp of somewhat acid but agreeable flavor. It is eaten out of hand or used for jellies. Tropical America. HEDRICK 1919, MARTIN 1987, WILLIAMS, L.; E29{PL}, F85, N84

*Xanthoceras sorbifolium* - *Shiny-leaf yellowhorn*, *Northern macadamia* {PL}. Flowers and leaves are used for food. The nut is enclosed in a shell similar to a chestnut, is the size of a pea, and is quite sweet. The flavor is thought by some to be reminiscent of a macadamia nut. Northern China. HEDRICK 1919; B74, C9, D95, E63, E87, F43M, F80{S}, G66{S}, H49, 174, J61M, K38{S}, K63G{S}, NO, N24M, N84{S}, etc.

#### SAPOTACEAE

*Achras sapota* - *Manilkara zapota*

*Argania sideroxyylon* - *Argania spinosa*

*Argania spinosa* - *Argan tree*, *Morocco iron-wood* {S}. Seed kernels are the source of a yellow oil served with bread, roasted barley (*sesometa*), or other foods, and also used in cooking like olive oil. It has an excellent toasted flavor somewhat reminiscent of walnut or hazelnut oil. In Morocco, argan oil is mixed with almond paste and honey to make a delicious almond butter known as *amalou*, or kneaded with grilled wheat germ and honey to form a breakfast gruel called *zematar*. Contains 80% unsaturated fatty acids. North Africa. MORTON 1987b [Nu, Pro], UPHOF, WOLFERT 1973 [Cui, Re]; F85

*Bassia latifolia* - *Madhuca indica*

*Bassia longifolia* - \**Madhuca longifolia*

*Butyrospermum paradoxum* ssp. *parkii* - *Shea butter tree* {m}. Seeds are the source of *shea butter* or *galam butter*, eaten by the natives. Also used as a cooking fat and oil, as a substitute for cacao butter, or for manufacturing margarine. Pulp of the fruit is sometimes eaten. Tropical Africa. DALZIEL, MENNINGER, UPHOF, WILSON, E.G.; GO

*Butyrospermum parkii* - *Butyrospermum paradoxum* ssp. *parkii*

*Calocarpum mammosum* - \**Pouteria sapota*

*Calocarpum sapota* - \**Pouteria sapota*

*Calocarpum viride* - *Pouteria viride*

*Chrysophyllum albidum* - *White star apple* {S}. The fruits have a pleasant, sweet-acid flavor and are often sold in local markets. Tropical Africa. DALZIEL, IRVINE 1961; F85

*Chrysophyllum cainito* - *Star apple*, *Caimito* {PL}. The sweet fruits are eaten fresh, parboiled, made into preserves, or eaten as a dessert called *matrimony*, which is prepared by scooping out the inside pulp and mixing it with orange juice, milk and spices. When cut transversely, the interior section of the fruit presents a star-like appearance, hence the common name. Both purple and green fruited types are known. An emulsion of the slightly bitter seed kernels is used to make imitation *milk-of-almonds*, or nougats and other confections. West Indies, cultivated. BENGHIAT [Cul, Re], GARNER [Pro], JOHNS [Pre], MORTON 1987a [Cu], POPENOE, W. 1920, RICHARDSON, M. [Re], STURROCK, WALSH [Re]; A41G, A79M{S}, D57, E29, F85{S}, I77G, J17, J22, N84{S}, 019{S}, Q93, R78M{S}

#### CULTIVARS {GR}

**Haitian:** Fruit purple, well-formed, of high quality; ripens from late January to the end of June. Tree heavy yielding. In Florida, grafted and air-layered trees have borne well even prior to reaching 10 feet in height; seedlings have performed poorly. Grown commercially in Australia. Discovered in Port-au-Prince, Haiti by William F. Whitman. Introduced in 1953. MORTON 1987a, WHITMAN; E8M, J22, Q93

**Philippine Gold:** (Manila Gold) Unique, rusty greenish-gold cultivar that is popular in the Philippines, where it originated. E8M, Q93

**Weeping:** Fruit tennis ball size, purple, of very good quality. Originated as a seedling of Haitian. Distinguished by its weeping or drooping habit. WHITMAN; Q93

*Chrysophyllum lacourianum* - *Bambu* {S}. The dark-red to light orange, apple-shaped fruit is highly esteemed by the natives who poke a hole in one end and suck out the juicy, sticky, sweet to subacid pulp. Sold in local markets. Tropical Africa. DANFORTH; Y40

*Chrysophyllum oliviforme* - *Satinleaf*, *Caimitillo*, *Olive plum* {S}. The lavender pulp of the small, dark-purple fruit is sweet, melting, has a good flavor, and can be used to make an excellent jelly. West Indies. KENNARD, MORTON 1977, STURROCK; D87G{PL}, F85, N84, P38

*Dumoria heckelii* - *Ueghemella heckelii*

*Lucuma nervosa* - *Pouteria campechiana*

*Lucuma obovata* -> *Pouteria lucuma*

*Madhuca indica* - *Butter tree*, *Mahwa*, *Mowra*, *Illipe nut* {S}. The fleshy flowers are rich in nectar and are dried and consumed, either raw or cooked. They are also used directly as a sweetener, as a source of sugar, and are fermented into an alcoholic beverage. Both the ripe and unripe fruit is eaten. An edible oil is expressed from the seed which is used as a substitute for *ghee*. India. BURKILL, HEDRICK 1919, MACMILLAN, MACNICOL, MENNINGER, TANAKA, WATT; Q46

*Madhuca latifolia* - *Madhuca indica*

*Madhuca longifolia* - *Indian butter tree*, *Mee* {S}. Seeds are the source of *illipe butter*, used in margarine and chocolate, and to adulterate *ghee*. The fleshy edible flowers are eaten dried, roasted, or made into jelly, sugar and wine. Leaves are also edible. Southern Asia. HEDRICK 1919, MACMILLAN, MARTIN 1975, TANAKA, UPHOF; F85

*Manilkara hexandra* - *Khirmi* {S}. The fruit is eaten fresh or dried, being sweet but somewhat astringent. Seed kernels yield a pale yellow edible oil known as *rayan oil*. The bark is added to palm sugar to inhibit fermentation. Also made into a wine known as *rajadane*. Often used in India as a rootstock for *Manilkara zapota*. Southern Asia. BURKILL, CAMPBELL-PLATT, GARNER, MOLLISON, SINGH, S., WATT; N84, P5, Q46

*Manilkara kauki* - *Sawo maneela*, *Sawo kecil* {S}. The small, reddish-brown fruits have creamy-white flesh, are quite sweet when ripe and are eaten raw, cooked or used for making syrup. Southeast Asia to Australia. CRIBB, EISEMAN, HEDRICK 1919, RIFAI; T71

*Manilkara zapota* - *Chico sapote*, *Sapodilla*, *Naseberry* {S}. When fully ripe, the flesh of the fruit is soft, sweet, and delicious with the flavor of pears, cinnamon, and brown sugar together. It is eaten fresh, preserved, dried, in custards, sherbets, ice cream, pies and muffins, or made into syrup, jams, and vinegar. The very young, leafy shoots are eaten raw or steamed. Stems are the source of a gummy latex, *chicle*, used as a base for chewing gum. Tropical America, cultivated. CUSUMANO [Cul, Re], GARNER [Pro], MORTON 1987a [Cu], OCHSE, POPENOE, W. 1920 [Cu, Pro], RICHARDSON, M. [Re], STURROCK, UPHOF; A41G{PL}, A79M, B60M{PR}, D57{PL}, E29{PL}, G99M{PR}, I12{PL}, I83M{PL}, J22{PL}, L54{PR}, N84, 019, 093

CULTIVARS {GR}

**Alano:** Very sweet, top-shaped fruit with excellent texture and flavor. Has a richer flavor than most other smooth-textured cultivars. Self-fertile, very productive trees with limber branches. Local Hawaiian selection. Originated as a seedling of the Philippine cultivar *Ponderosa*. E8M, N53M

**Cricket Ball:** (Calcutta Large) Very large, roundish fruit with crisp, gritty, granular flesh; fairly sweet but not distinctive in flavor. Tree somewhat of a shy bearer; does well in arid climates and elevations of up to 1,000 feet. Originated in India. BOSE 1990, MORTON 1987a; RO, R50

**Hasvf:** Very large, long, top-shaped fruit with slight pink hues in smooth areas of the skin; light brown and pink flesh, melting, aromatic, of delicate flavor. The standard of excellence to which all other Yucatec cultivars are compared. Very upright tree with moderate to good production. Number one commercial cultivar in the Mexican states of Yucatan and Campeche. N53M

**Kalipatti:** Small, oval-shaped fruits; sweet, mellow flesh of excellent quality; mild aroma; few seeds, only 1 to 4; ripens in winter. Spreading tree; bears fruits singly. One of the leading cultivars in the Indian states of Maharashtra, Gujarat, and north Karnataka. BOSE 1990; RO, R50

**Molix:** (Curly) Medium-sized, oblong fruits; good, pear-like texture; very good flavor. Ripening season is said to vary from that of *Hasya*. Heavily productive tree with brittle branches and very wavy mature leaves; plain, light green new growth. Originated in Yucatan, Mexico. N53M

**Morena:** Very similar to *Molix* but with less wavy leaves. Good to excellent flavor and texture. Newest selection from *Oxkutzcab*, Yucatan. Selected because it is thought to be less brittle than *Hasya*, which is susceptible to split branches. E29, N53M, N84

**Oxkutzcab:** Very distinct cultivar. Very large, roundish fruit; speckled, light-colored skin; flesh brown, moderately grainy, of excellent flavor. Heavily productive tree with relatively sturdy branches. New growth bronzy-brown underneath and pink above. Originally from the Conafruit Experiment Station near *Oxkutzcab*, Yucatan. N53M

**Ponderosa:** Large, oblong fruit; thin, light-brown skin with splashes of red on the exposed side; melting, smooth-textured flesh, very sweet and juicy. Does not soften uniformly. Upright, pyramidal tree; tends to be a shy bearer when isolated from other varieties. Originated in the Philippines from seed introduced from Buitenzorg, Java in 1912. CORONEL 1983; E8M, Q93

**Prolific:** Round-conical fruit, 2 1/2 to 3 1/2 inches long and broad; skin scurfy, brown, becoming nearly smooth at maturity; flesh light pinkish-tan, mildly fragrant, texture smooth, flavor sweet, quality good. Tree bears early, consistently, and heavily; only moderately susceptible to rust. Originated in Homestead, Florida. Introduced in 1951. BROOKS 1972, MORTON 1987a; Q93

**Russell:** Large, roundish fruit, 3 to 4 inches in diameter and length; skin scurfy brown with gray patches; flesh pinkish-tan, shading to greenish-tan under the skin, mildly fragrant, texture somewhat granular; flavor rich and sweet. Tree slower to bear and less productive than *Prolific*. Originated in Islamorada, Florida. Introduced in 1935. BROOKS 1972, MORION 1987a; T73M{SC}

**Sawo Manila:** (Sao Manila) Medium to large, egg-shaped fruit; very sweet and juicy, of fine texture. Fruits mature in 190 days, and ripen 3 to 5 days after picking. Spreading, very prolific tree. Originated in the Philippines. CORONEL 1983, MORTON 1987a; Q93

**Tikal:** Fruit elliptical to conical, much smaller than *Prolific*; skin light brown, smooth; light tan flesh, of smooth texture and excellent flavor; ripens very early, December to February or March. Bears regularly and well, about 350 pounds per year. Selected in Florida from seeds originating in Yucatan, Mexico. MORTON 1987a; N53M

*Mimusops caffra* - *Coast red-milkwood*, *Tinzol* {S}. When ripe, the fruits are red to purple and have sweet, starchy pulp and an agreeable flavor. They are eaten raw or made into a beverage. Southeastern Africa. FOX, E, VON REIS; F85

*Mimusops elengi* - *Spanish cherry* {S}. The fruits are yellow when ripe, somewhat sweet, and are eaten raw, preserved, or pickled. Seed kernels yield an edible oil. The bark is used in the distillation of *arrack*. Tropical Asia, cultivated. BREMNESS, BURKILL, HEDRICK 1919, TAN\KA, WATT; F85, G66, N84, P5, P17M, Q12, Q18, Q45M, Q46, R50{PL}

*Mimusops hecke* *Ui* - *Tieghemella hecke* *Ui*

*Mimusops hexandra* - *Manilkara hexandra*

*Mimusops kauki* - *Manilkara kauki*

*Mimusops obovata* - *Red milkwood*, *Beach sapote* {S}. The fruits are eaten. They are smooth, orange-red or yellow when ripe, and usually have one seed. Southern Africa. FOX, E; N84, P38

*Pouteria caimito* - *Abiu* {S}. A bright yellow fruit with flesh that is whitish, translucent, somewhat sweet, and of a jelly-like consistency. When fully ripe, it is eaten out of hand or used in sherbets and ice cream. It goes well in fruit salads, particularly those containing orange slices to provide acidity, which the abiu lacks. Fruit that is not completely ripe may contain a milky latex that sticks to the lips. Tropical South America, cultivated. MARTIN 1978a, MORTON 1987a, POPENOE, W. 1920; J22{PL}, K8{PL}, M17{PL}, N84, 019, P38, Q93{PL}, R78M

#### CULTIVARS {GR}

**Grav's No. 1:** Medium to large, round fruit of good flavor and quality; weight about one pound; contains one or more seeds. Tree prolific. Originated in Australia where it is grown commercially. WHITMAN; E8M, Q93

**Z1:** Fruit has the shape of a Lisbon lemon, is marginally better flavored but smaller than Z2 and Z3. Tree a very heavy bearer, 200 hundred fruit were picked from a tree 6 feet in height. Introduced by Joe Zappala, Queensland, Australia. Q93

**Z2:** Fruit elongated, approximately one pound in weight, with excellent flesh to fruit recovery; flavor and quality good. Tree a good producer. Introduced by Joe Zappala, Queensland, Australia. E8M, Q93

*Pouteria campechiana* - *Canistel*, *Egg fruit*, *Yellow sapote* {PL}. Pulp of the fruit is yellow to orange, soft and mealy in texture, and resembles in appearance the yolk of a hard-boiled egg. The flavor is very rich and sweet, somewhat like that of a baked sweet potato. Excellent to eat out of hand or it can be used in cakes, pies, custards, puddings, fruit cups, ice cream, and milkshakes (*eggfruit nog*). Tropical America, cultivated. JOHNS [Cu], MARTIN 1978a, MORTON 1987a [Cu, Pro], POPENOE, W. 1920, RICHARDSON, M. [Re], STURROCK; B60M{?R}, D57, E29, G2M, 112, 183M, K8, K8{S}, M17, N84{S}, 019{S}, P38{S}, S97M

#### CULTIVARS {GR}

**Ross:** Small to medium-sized fruit. Probably the best tasting of all canistels. May be a hybrid. Introduced into Florida from Costa Rica, by William F. Whitman. WHITMAN; I77G, 019{S}

**Saludo:** An improved type with large, round fruits and moist flesh. The trees appear to have good wind tolerance. E8M

*Pouteria hypoglauca* - *Cinnamon apple*, *Pan de la vida* {PL}. The sweet fruits are eaten. They are highly esteemed in El Salvador, where numerous valuable seedling forms occur. Central America. MARTIN 1978a; E29, N84

*Pouteria lucuma* - *Lucmo*, *Lucuma* {PL}. The fruits are similar to the canistel but are more rounded, are green to brownish-green in color, and the sweet pulp is firm even in fully ripened fruit. In Peru, besides being eaten fresh, the ripe fruit is made into a meal or flour that can be mixed with wheat flour, commeal, or starch and used in the preparation of many drinks and desserts. Lucmo meal adds a strong odor and color to ice creams, sherbets, puddings, punches and milkshakes. Andean South America. MARTIN 1978a [Cu], MORTON 1987a, NATIONAL RESEARCH COUNCIL 1989, POPENOE, W. 1920, UMANA+MURRAY [Re]; D57, 183M,

L55J{S}, N84{S}, P38{S}, Q49M, Q49M{S}, S97M

#### CULTIVARS {SC}

**Kona:** Large, roundish to top-shaped fruit, 4 inches long and 3 inches across; smooth, brownish skin; sweet, deep-yellow flesh, soft and moist, dessert quality excellent. Does well in southern California where it ripens from November to April. Originated in Kona, Hawaii. T49M

**Montero:** Large, round to broadly oval fruit; skin deep brownish-green, heavily marked or overspread with russet; flesh yellow, dry and mealy, very sweet, flavor good. Ripens early, approximately October through December in California. T49M

**Peruvian:** Large, roundish to oval fruit, 4 inches long and 3 inches across; skin smooth, yellowish when ripe; sweet, deep-yellow flesh, somewhat dry, flavor and aroma good. Does well in southern California where it ripens from November to April. Selected in California as a seedling originating from Peruvian seed. T49M

*Pouteria obovata* - \**Pouteria lucuma*

*Pouteria sapota* - *Mamey sapote*, *Mamey Colorado* {S}. When ripe, the pulp of the fruit is firm, rich and sweet, salmon-red to reddish brown in color, and finely granular in texture. It is eaten out of hand, dried, preserved, or used in sherbets, ice cream, drinks, etc. In Cuba, it is added to *guava cheese* and made into a thick jam called *crema de mamey Colorado*. Unripe fruits are used as a vegetable. Ground seeds are added to *texate*, made into a confection, or mixed with commeal, sugar and cinnamon and prepared as a nutritious beverage called *pozol*. Central America, cultivated. ALMEYDA 1976b [Cu, Pro], COE, DUKE, JOHNS, MORTON 1987a, POPENOE, W. 1920 [Cu], RICHARDSON, M. [Re], STURROCK, UPHOF, ZASLAVSKY; B60M{PR}, C9M, D57{PL}, E29{PL}, F85, G99M{PR}, H55{ED}, J17{PL}, K8{PL}, M17{PL}, 019, N84, P38, S97M

#### CULTIVARS {GR}

**Copan:** Medium-sized fruit; weight 15 to 32 ounces; flesh red, of excellent quality, contains 1 seed; ripens in July and August. Tree medium-sized, spreading. Leaves turn red in December, then become brown and are shed in spring. Originated in Florida from seed received from Cuba in 1938. MORTON 1987a; T73M{SC}

**Lorito:** Small to medium-sized fruits; creamy, very red flesh, without fiber, flavor excellent. Ripens very early and over a long season, December to February. Originated in the Mexican state of Yucatan. N53M

**Maaana:** Large to very large fruit; weight 26 to 85 ounces; flesh pink, of good to excellent quality, contains 1 seed; ripens in April and May. Tree small and slow-growing, evergreen; may fruit 1 year after planting. Bears very well in Florida, poorly in Puerto Rico. Introduced into Florida from El Salvador in 1961. MORTON 1987a; E8M, E29, I77G, N53M

**Mavapan:** Fruit slightly above medium in size; weight 18 to 40 ounces; skin very scurfy; flesh red, of good quality though slightly fibrous, contains 1 seed. Tree tall and erect, slow to come into bearing when grafted but then yields well. Originated in Florida from seeds obtained from Isle of Pines, Cuba in 1940. MORTON 1987a; T73M{SC}

**Pantin:** Medium-sized fruit; weight 14 to 40 ounces; flesh pink to red, fiberless, of excellent quality, contains 1 seed. Tree tall; slow growing at first, bears little or no fruit for 2 to 3 years, then becomes more vigorous and yields well. Leaves become brown in winter. Originated in Key West, Florida. MORTON 1987a; E8M, I77G, 183M, N53M

**Tazumal:** Medium-sized fruit; weight 14 to 30 ounces; flesh pink, of good quality, contains 1 or 2 seeds. Bears two crops; one in January and February, a second in July and August. Tree medium-sized, vigorous, bears regularly and heavily; usually evergreen. Originated in Homestead, Florida from a seedling tree received from El Salvador in 1949. MORTON 1987a; T73M{SC}

*Pouteria viride* - *Green sapote, Injerto* {S}. The pulp of the fruit is pale reddish-brown, melting, sweet, and somewhat juicy. The flavor is similar to that of *P. sapote*, but more delicate, and the flesh is finer and smoother in texture. It is eaten out of hand or used to make preserves. The latex is used as a base for chewing gum. Central America. KENNARD, MORION 1987a, POPENOE, W. 1920; E29{PL}, F85, N84, P38

#### CULTIVARS {SC}

**Makawau:** Originated in Makawau, Maui, Hawaii. Selected for large size and superior eating qualities. Large, softball-sized, top-shaped fruit; flesh reddish-orange, very smooth-textured, less stringy than other types; rich, sweet potato-like flavor. T49M

*Sideroxylon dulcificum* - \**Synsepalum dulcificum*

*Synsepalum dulcificum* - *Miracle fruit; Miraculous berry* {PL}. Although the ripe fruit is not sweet to the taste, it has the ability to cause sour foods to seem sweet when eaten or drunk immediately afterwards. This taste-modifying property will cause lemons, limes, grapefruits, rhubarb, and vinegar to taste very pleasantly sweet. Ice cream and other sweet foods become cloyingly sweet. The West African natives use the fruit to sweeten sour palm wine, *pito* (beer), and *kenkey* (fermented maize bread). West Tropical Africa. HEDRICK 1919, INGLET, KENNARD, UPHOF; A28, A79M{S}, E8M, E29, F16, F85{S}, G73, H49, H53M, I77G, I83M, J17, M17, N84{S}, P38{S}, R78M{S}, etc.

#### CULTIVARS

**Hirsutus:** A form with hairy leaves introduced into Florida from Africa some years ago. Small, oval, red fruits; larger than those of the common smooth-leaved type. WHITMAN; U27T

*Tieghemella heckelii* - *Baco nut* {S}. Seed kernels are the source of an edible fat called *baku butter* or *dumori butter*, used for cooking and in margarine. West Tropical Africa. DALZIEL, MENNINGER, UPHOF; F85

#### SAURURACEAE

*Houttuynia cordata* - *Giap cd* {PL}. The strongly aromatic leaves are eaten in salads, soups, fish stews, or with boiled, fertilized duck eggs—which are not eaten until three days before they hatch. Roots and fruits are also edible. Himalayas to Japan. ALTSCHUL, BOND, JACQUAT, KUEBEL, TANAKA, UPHOF; C43M, H30, J66, J82, K22, K85, L90J, M82, N84{S}, R49

#### SAXIFRAGACEAE

*Bergenia crassifolia* - *Badan* {PL}. The leaves are used as a substitute for tea, called *Tschager tea*. Northeast Asia. HEDRICK 1919, UPHOF; B28, B77, M92, N84{S}, Q24

*Chrysosplenium alternifolium* - *Golden saxifrage* {S}. Leaves are eaten in salads in some parts of Europe. Eurasia. HEDRICK 1919; A61, A61{PL}, N84, 053M, Q24

*Chrysosplenium oppositifolium* - *Cresson de roches, Golden saxifrage* {S}. In the Vosges mountains, the leaves are eaten in salads and soups. Eurasia. HEDRICK 1919, LARKCOM 1984, MABEY; F85

*Peltiphyllum peltatum* - *Indian rhubarb, Umbrella plant* {S}. The thick, fleshy leafstalks are peeled and eaten raw, cooked like asparagus, or added to salads and stews. Pacific Coast of North America. KIRK, MEDSGER; A61, B28{PL}, E33{PL}, E63M{PL}, H63{PL}, L91M, M98{PL}, 053M, Q24

*Saxifraga crassifolia* - *Bergenia crassifolia*

*Saxifraga pensylvanica* - *Swamp saxifrage* {S}. Young, tender, unrolling leaves can be used in salads, eaten as a potherb, or briefly cooked in bacon fat. Eastern North America. FERNALD, GIBBONS 1979, PETERSON, L.; B51, G47M, J39M, J39M{PL}, J41M{PL}, J43, M72{PL}, N84, Q41

*Saxifraga stolonifera* - *Strawberry saxifrage, Yuki-no-shiwa* {PL}. In Japan, the leaves are relished when fried or after being parboiled,

in salads. The flower scapes are said to be tasty when salted. China, Japan. TANAKA, YASHIRODA; A61, A61{PL}, C36, C43M, D95, G96, H4, H29M, K22, L55, M16, N42, N84{S}

#### SCHISANDRACEAE

*Schisandra chinensis* - *Chosen-gomishi, Magnolia vine, Five flavor fruit* {S}. Young leaves are boiled and eaten as a vegetable. The fruit is eaten fresh or dried. In the former Soviet Union, a paste made from the fruit is mixed with *Actinidia arguta* fruit to counteract the insufficient acidity of the latter, which is used for fillings in the confectionery industry. Eastern Asia. SHISKIN, TANAKA; A61{PL}, F68T, G0{DF}, G66, H4{PL}, I49M{PL}, I74, J61M{PL}, J82, K18M{DF}, M77M{PL}, N84, 053M, 093, P49, R47, etc.

#### CULTIVARS {GR}

**Eastern Prince:** Very produce type with large, tasty fruit. Appears to be self-fertile, having fragrant male and female flowers on the same plant. Some strains have only male or female flowers. Vigorous and pest resistant. B74, H49, I46, I49P, I66T

**Male:** Does not produce fruit. Used as a pollinator for female trees. D95

#### SCROPHULARIACEAE

*Antirrhinum majus* - *Snapdragon* {S}. The flowers are commonly sold as edible flowers due to the wide range of colors available, although they are not regarded highly for flavor. Cultivated. LENZ; A25, B75, C92, D74B, E97, F13, F80, F82, G6, G16, I91, J20, K66, L42, L91M, M49, OI, etc.

*Bacopa monniera* - *Water hyssop, Rau dang* {PL}. The herb is eaten in salads and soups, as a cooked vegetable, or pickled. Occasionally available in ethnic markets. Tropics. BOND, HEDRICK 1919; C74, F73, F85{S}, I90M, N3M

*Capraria biflora* - *West India tea, Jamaica tea, Te de Santa Maria* {S}. An infusion of the dried leaves and flowers is said to be a very agreeable substitute for tea. Central America, West Indies. ALTSCHUL, HEDRICK 1919, TANAKA; Y2

*Castilleja linariaefolia* - *Wyoming paintbrush* {S}. The flowers may be eaten raw, being the best tasting of the genus. Western North America. KIRK; E66M, F44, I98M, L75, N84

*Escobedia scabrifolia* - *Raiz de color, Palillo* {DF}. The dried ground roots are used as a turmeric-like colorant for commercial cheeses, butter and margarine. Also popular in Peruvian cuisine for giving gravies and other foods a yellow color. Occasionally available in Latin American markets. South America, cultivated. ALTSCHUL, HEDRICK 1919, ORTIZ 1979, PEREZ-ARBELAEZ; G47G

*Halleria lucida* - *Umbinza, Wildfuchsia* {S}. When ripe, the fruits are purple, extremely sweet although slightly astringent, and can be eaten out of hand or added to a fruit salad to give it an exotic look. The flowers are sucked for their sweet nectar. Southern Africa. FOX, F., SIMMONS 1972 [Cu]; M7M{PL}, N84, 093, P38, S28M

*Herpestis monniera* - *Bacopa monniera*

*Limnophila aromatica* - *Swamp leaf, Rau om, Ngo om, Rice-paddy herb, Keukeuhan* {PL}. The leafy stems are eaten raw or cooked, as a side-dish with rice. They have a distinct aroma and flavor and are an essential ingredient in several sweet and sour Vietnamese dishes, including a soup made with tamarind and cantaloupe. Occasionally found at ethnic markets in North America. Southern Asia to Australia. BOND, BURKILL, COST 1988, JACQUAT, KUEBEL, OCHSE, ROUTHIER 1989 [Re], TANAKA; C43M, F37T, J76, J82, L90J, M82, N84

*Mimulus guttatus* - *Yellow monkey-flower* {S}. Very young leaves and shoots have a slightly bitter flavor and are eaten raw in salads and sandwiches, steamed, boiled, stir-fried, or added to soups. The

bright yellow flowers make an attractive addition to gelatin salads. Western North America. FARNSWORTH [Re], KIRK, NIETHAMMER, SCHOFIELD [Re], YANOVSKY; A2, C43V, D95{PL}, E15, E63M{PL}, F88M, G59M, G89M{PL}, I98M, I98M{PL}, K49Q, L55J, Q24

*Mimulus langsdorfii* - \**Mimulus guttatus*

*Paulownia tomentosa* - *Empress tree, Kiri, Tung* {S}. The flowers are eaten with miso. Leaves are parboiled and used as an emergency food. China, cultivated. TANAKA; B61M, C9M, E7M, F35M{PL}, F80, H4{PL}, I4{PL}, K38, K63G, N84, 053M, R47

*Penstemon confertus* - *Yellowpenstemon* {S}. A tea-like beverage is made by boiling the dried leaves and stems. Western North America. YANOVSKY; A61, Q24

*Penstemon confertus* \nr. *caeruleo-purpureus* -> *Penstemon procerus*

*Penstemon procerus* - *Small-flowered penstemon* {S}. Dried leaves and stems are made into a tea-like beverage Western North America. YANOVSKY; A61, E67T{PL}, F44,147, J25M, N84, 053M, Q24

*Scoparia dulcis* - *Sweet broom* {S}. Used as a substitute for tea in the Philippines. In some parts of the West Indies branches are placed in drinking wells to give the water a cool taste. Tropical America. ALTSCHUL, HEDRICK 1919, UPHOF; F85

*Verbascum thapsus* - *Mullein* {S}. An aromatic, slightly bitter tea is made from the dried leaves by steeping them in boiling water for five to ten minutes. A sweeter tea can be brewed by using the fresh or dried flowers. The flowers are also used for flavoring liqueurs. Eurasia, naturalized in North America. BREMNESS, CROWHURST 1973, MARCIN, PETERSON, L.; C43M, C43M{PL}, D92M, F35M{PL}, F80, H61M, N9M, N9M{PL}, N71M, N84, 053M

*Veronica americana* - *American bioklime* {PL}. Young shoots are eaten raw in salads, in bread and butter sandwiches, or cooked as a potherb and seasoned with bacon fat or butter. They have a pungent, somewhat bitter flavor much appreciated in Europe and Japan. Also brewed into a popular tea with a flavor reminiscent of Chinese green tea, called *tea de l'euope*. North America. FERNALD, GIBBONS 1979, HARRINGTON, H., MEDSGER, SCHOFIELD; C74,198M

*Veronica beccabunga* - *European bioklime* {PL}. Young shoots and leaves are mixed with water cress or other strong flavored greens and eaten in tossed salads. When finely chopped they can be combined with chives and added to bread and butter sandwiches. Eurasia. LAUNERT, MICHAEL [Pre, Re]; C74, N3M, N84{S}, R53M

*Veronica chamaedrys* - *Bird's-eye speedwell* {S}. The leaves are used as a substitute for tea. Northern temperate region. FERNALD; J24{PL}, N71M, N84, 048, 053M, S55

*Veronica officinalis* - *Speedwell* {S}. A bitter, tangy tea is made from the fresh flowering herb or dried leaves. Europe. FERNALD, HEDRICK 1919, MARCIN; E61{PL}, J82, N71M, N84, 048, 053M, Q24

*Veronicastrum sibiricum* - *Siberia-kugii-sd* {S}. Young stems and leaves are eaten raw, oil-roasted, put in soups, or used as a potherb. Flower spikes are eaten as a potherb. Eastern Asia. TANAKA; M77M{PL}, N84

#### SIMAROUBACEAE

*Ailanthus altissima* - *Tree of Heaven* {S}. Source of an unusual greenish-brown honey that granulates only after several months. It has a poor flavor initially, but after a few months becomes very fine with an aroma reminiscent of Muscat wine. China. CRANE 1975;

A82{PL}, B68{PL}, C9M, D95{PL}, G66, K38, K63G, M25M, N40M, N61, 053M, P5, P17M, P49, Q15G, etc.

*Picrasma excelsa* - *Jamaica quassia* {DF}. The wood is the source of an extract used in bitter tonics and liqueurs. Also used commercially to add a bitter flavor to baked goods., candy, frozen dairy products, etc. Sometimes used by cooks to increase die bitterness of orange marmalade. Wood chips have been used by brewers as a substitute for hops. West Indies. BURDOCK, HEDRICK 1919, LEUNG, LEYEL 1987a, UPHOF; J82

*Picrasma quassioides* - *Nigaki* {S}. Small red fruits are eaten. Young buds are used to make a tea. A bitter element, *quassin*, is extracted from this tree and used as a hops substitute in brewing beer. Temperate Southern Asia. TANAKA; F85

*Quassia amara* - *Quassia, Bitterwood* {DF}. The bitter bark and wood are substituted for hops in manufacturing beer. An extract is used to flavor spirits, soft drinks, bitter tonics, baked goods, candy, etc. In Brazil, die bark is steeped in brandy which is then taken as a tonic. Tropical America. BURDOCK, LEUNG, LEYEL 1987a, MORTON 1976, WILLIAMS, L.; E14T, F85{S}, GO, G73, K18M, L34, N7D

*Quassia excelsa* - *Picrasma excelsa*

*Simarouba amara* -> *Quassia amara*

*Simarouba glauca* - *Paradise tree* {S}. Ripe fruits are eaten raw. The seed kernels yield an oil used in cooking or in the manufacture of margarine. Florida, Caribbean region. DUKE, MORTON 1977, WILLIAMS, L.; D87G{PL}, F85

#### SIMMONDSIACEAE

*Simmondsia californica* ->*Simmondsia chinensis*

*Simmondsia chinensis* - *Jojoba, Pignut, Goatnut* {S}. Seeds are eaten raw, parched, or roasted and served with melted butter and salt. The ground seeds are boiled and made into a coffee-like beverage. In Mexico, there is a variation of this which is said to taste like chocolate. They mix the roasted, ground nuts with the yolk of a hard-boiled egg and boil this in water with milk, sugar, and a vanilla bean. California. CLARKE [Re], KIRK, NIETHAMMER [Re], ROSENGARTEN; A2, A79M, C9M, F63M, G45, G45{PL}, I83M{PL}, I98M{PL}, J25M, N84, 053M, R47

#### SINOPTERIDACEAE

*Pellaea mucronata* - *Tea fern, Bird's foot fern* {S}. The dried fronds may be steeped in hot water for fifteen to twenty minutes to produce a fragrant and flavorful tea. Western North America. KIRK; F85

#### SMILACACEAE

*Smilax aristolochiifotta* -> *Smilax medica*

*Smilax aspera* - *Red-berried rough-bindweed* {S}. The young shoots and tendrils are gathered in the spring and eaten boiled or added to salads Very popular in Greece and Turkey where they are sold in local markets. Eurasia. NIEBUHR, PHILLIPS, TANAKA; N84, 053M

*Smilax china* - *China root, Ma-chia* {S}. Young shoots and leaves are eaten as a boiled vegetable or potherb. The fruit is eaten to quench the thirst. Leaves are used as a substitute for tea. Roots are also edible. Eastern Asia. TANAKA; F85

*Smilax herbacea* - *Carrion flower, Jacob's ladder* {S}. The young, tender shoots, when cooked and served like asparagus, make a delicate and palatable vegetable. When ripe, the blue-black fruits are eaten raw, pureed, or made into jellies and sauces. The fruit sauce is excellent for basting wild meats, adding zest and flavor. North America. FERNALD, FREITUS [Re], GIBBONS 1979, HARRINGTON, H.; F80, F85, J43, N84

*Smilax medica* - *Mexican sarsaparilla* {DF}. The bitter, licorice-like roots are one of the principal sources of sarsaparilla. Used extensively for flavoring commercial root beers, baked goods, ice cream, candy, tea, beverages, etc. Mexico. BROUK, BURDOCK, LEUNG, MORTON 1976; E14T, GO, L34, N7D

*Smilax officinalis* - *Honduran sarsaparilla* {DF}. The dried roots are a principal source of *sarsaparilla*, widely used for flavoring root beer soft drinks, ice cream, candy and baked goods. Due to their bitter taste, they are normally used as a mixture with other spices, very rarely alone. Central America. BROUK, LEUNG, TANAKA; K18M

*Smilax rotundifolia* - *Horse-brier*, *Greenbrier*, *Bayou asparagus* {S}. Tender, young shoots and unrolling leaves are eaten raw in salads, boiled and served cold with French dressing, steamed like asparagus, or pickled in vinegar. They are said to have a delicious, avocado-like flavor. The dried roots are the source of a reddish flour used in soups, breads, cakes, puddings, jellies, and sweet drinks. A beer resembling *root beer* or *sarsaparilla* can also be prepared from the roots. North America. FERNALD, GIBBONS 1966a, GIBBONS 1966b; D47M, F85, H73{PR}

## SOLANACEAE

*Atropa belladonna* - *Belladonna*, *Deadly nightshade*, *Zbib el laidour* {S}. Small quantities of the berries are added to the Moroccan spice mixture *ras el hanout*, and the kif candy known as *majoun*. They reportedly have a very good flavor. Also one of the ingredients of *Maa'ssel* and *Mrouziya*, dishes consumed during the feasts of *Aid Seghir*, and for certain weddings. Otherwise considered toxic. Eurasia, cultivated. BOUQUET, WOLFERT 1973; C43M, D56M, F37T{PL}, F68T, F80, F86G, I81M, I81M{PL}, J82, L90J{PL}, L94M, M82{PL}, N40M, O53M, R53M, R53M{PL}, etc.

*Capsicum annuum* - *Chili pepper*, *Bell pepper*, *Cayenne*, *Pimento*, *Paprika* {PD}. Fruits are eaten raw in salads, fried, stuffed (*chilis rellenos*), roasted, dried, preserved, cooked as a vegetable, pickled in vinegar, made into sauce, or used as a condiment. *La-chiao chiang* or *la-chiang* is fermented, salted red peppers used in China like tabasco sauce. The leaves, having 4 to 6% protein, are eaten steamed as a potherb, oil-roasted, or used in soups and stews. They are thrown into *locro*, a popular Andean soup prepared from potatoes, avocado, and various spices. In Thailand, the green leaves are sometimes added to green curry paste (*gkaeng kiow wahn*), to deepen the green color. Korean cuisine uses dried green pepper leaves, thin strips of pepper called *red pepper threads*, and *kochujang*—\* hot-pepper flavored soybean paste. The powder from the dried, ground fruits of some cultivars is added to food as a coloring. Tropical America, cultivated. ANDREWS, J. [Re], CARCIONE, DUKE, FELL 1982b, GELLE [Re], HARRINGTON, G. [Cul], HEISER 1969, HERKLOTS, LOHA-UNCHIT [Re], MILLON [Cul, Re], SHURTLEFF 1976, TANAKA, VILMORIN [Cu]; B31, B91T, G17M, I8M, L17. (for cultivars see Pfeffer, page 473)

*Capsicum annuum* \ar. *aviculare* - *Bird pepper*, *Bird's-eye pepper* {S}. The small, extremely pungent fruits are used as a condiment, both fresh and dried. They are popular for making jelly and sauce, to which they impart a very special flavor. Leaves can be used as a potherb. Southern North America, Tropical America. ALCORN, ANDREWS, J. [Re], D'ARCY, HEISER 1969, HERKLOTS; A21, A49D{DF}, I63T{DF}, G0{DF}, J4, J76{PL}, N7D{DF}

## CULTIVARS

**Besler's Cherry:** Small, round fruit, 1/2 to 3/4 inch in diameter; brilliant red, waxy; very hot; ripens late in the season. Sturdy, tree-like plant with distinctive arching stems; highly ornamental; ideal for growing in pots as a perennial. Illustrated by Basilius Besler in 1613. WEAVER 1997; D29P

**Firecracker Peaufn:** 70-75 days. Upright, pointed, glossy fruits, 1 inch long; quite hot; purple, turning orange and then brilliant red. Spicy, fruity flavor. Ea^ to dry. Multi-branching plants, to 3 feet

tall, do not require staking. Produces abundant crops over a long season. C26{PL}, C69D{PL}, D26G, K17J, K66, Q34

**Larae Black Peaufn:** Small fruits, about 1/2 inch long; purple-black, turning red when ripe; very hot. Excellent for pickling. Large, attractive plant, about 3 feet tall; purple stems and purple-tinged leaves. F73D

**McMahon's Texas:** Highly ornamental plant covered with tiry, edible, sparkling-red peppers. Ideally suited for flower pots or the sunny garden. Grows 8 to 12 inches tall. Native to Southwest Texas. Does best in zones 9 and 10. L90M

**NuMex Bailev Piaufn:** 120 days. The first machine-harvestable chile Peaufn. Fruits fall from the stem when ripe. Small, oblong red fruits, 3/4 inch long and 1/4 inch in diameter. Distinctive flavor. Very hot; 97,000 Scoville Units. Developed at New Mexico State University's Chile Pepper Breeding Program. D42M, I63T, M0

**Peaufn:** (Chili Piqufn, Chiltepiqufn) 150 days. Oval fruit, 1/2 inch long; green when immature turning purple where pods are exposed to the sun, red when ripe. Plant robust, upright, 4 feet tall and 3 feet wide. Fresh pods are hotter than the dried. Much used for seasoning in the Southwest, either fresh or dried. Can also be used for *ristras*, and is the base for *Cholula* hot sauce.. DREMANN, C., DREMANN, S. 1986 [Re]; A7{DF}, C34G{PD}, D92M, E13G{DF}, F80, G13T{DF}, H73{DF}, I63T{DF}, I63T{DE}, J4, J25M, J25M{PL}, J58{PD}, J73, J76{PL}, K17J{DF}, K17J{ED}, L17{PD}, M1P, etc.

**Sinaloa Chiltepfm:** Round, pea-sized fruits, 1/4 to 1/2 inch in diameter; red when ripe. Very hot, having an intense but brief burst of heat that quickly dissipates. Sold by Southern Mayos at the railroad crossing between San Bias and El Fuerte, Sinaloa. Ripe pods are dried and ground into powder, made into hot sauces and added to stews and bean dishes. B38

**South Texas Peaufn:** (Chiltepe) Collected along the Lower Rio Grande Valley near McAllen, Texas where plants have naturalized among the brush near cultivated fields. 116, N84

**Tarahumara:** Wild perennial collected from canyons near Basaseachi Falls in the Sierra Madre de Chihuahua, Mexico. Attractive container plant for cooler climates. Potentially resistant to one or more viruses. C26{PL}, 116, N84

**Teofn:** (Chili Tepfn, Chiltepfm) 150 days. Round fruit, 3/8 inch across; green when immature turning purple on the parts exposed to the sun, red when ripe. Plant small, spreading, frail-looking; 2 feet tall, 18 inches wide. Dried pods are hotter than the fresh. Available in stores that sell Mexican and Southwestern foods. Good in pots. DREMANN, C., DREMANN, S. 1986 [Re]; A7{DF}, B75, D42M, D92M, F37T{PL}, H73{DF}, I63T, I63T{DF}, J4, J25M, J25M{PL}, J73{DF}, J76{PL}, K17J{PD}, K49M, L17{DF}, M0, M1P, etc.

**Texas:** Fruit slightly elongated in shape. Collected at Wimberly, Texas on the Edwards Plateau, west of Austin. Attractive container plant for cooler climates. Perennial in warmer climates. C26{PL}, 116, N84

**Texas Bird:** Heirloom that dates to 1808. Very small fruits that grow on dwarf, bushy perennial plants. Can easily be grown in pots in colder climates and brought indoors. Originally from the collection of botanist Dr. George Thomas. F24D

**Tohono O'odham:** (Papago) Pointed fruit from the Baboquivari Mountains, the sacred peaks of the Tohono O'odham in southern Arizona. Slow growing plants that should be started indoors to improve the chance of getting fruit the first year. Freezes back in winter. Perennial in warm climates. C26{PL}, 116, N84

**Willina's Barbados:** (Barberry, Pipperridge) Tiry, barberry-like fruits. Green or ripe peppers were traditionally infused in Madeira to make *pepper wine* or *pepper sherry*. Small, 2 1/2 to 3 foot plants with down-covered leaves. Grown as an ornamental house plant



during the 18th and 19th Centuries. Reportedly collected by Sir John St. Claire of Trenton, New Jersey through John Bartram, who obtained it from Charles Willing of Barbados WEAVER 1997; EST{DF}

*Capsicum annuum* var. *glabriusculum* - *Capsicum annuum* var. *aviculare*

*Capsicum baccatum* - *Peruvian pepper*, *Aji*, *Uchu* {S}. The pungent fruits are used as a seasoning. Most commonly found in the dry state or *cusqueho*, the principal condiment for traditional Peruvian foods such as *cau cau*, *cuye chacatado* and *ceviche*. Andean South America, cultivated. ANDREWS, J. [Re], HEISER 1969, HERKLOTS; C95, D42M, F73D, J25M, J25M{PL}, MO, M81T

#### CULTIVARS

**Aif Amarillo:** (Kellu Uchu, Ajf Yellow) Slender fruits, 2 to 2 1/2 inches long, tapered on both ends; yellow when ripe; very hot but flavorful. Bushy plants, about 18 inches tall. A year round supply of hot peppers can be obtained by growing 1 or 2 plants in 5 gallon containers. A rare Peruvian cultivar for the gourmet pepper palate. C26{PL}, C69D{PL}, D42M, F73D, I16{DF}, I63T, I63T{DF}, I63T{PD}, J4, J4D, J20, J73, K17J{PD}, MO, M81T, N84, Q34, etc.

**Aif Colorado:** 80 days. Medium-sized, conical fruits, somewhat wrinkled and curved; 3 1/2 to 5 1/2 inches long. Brilliant, glossy orange-crimson skin. Unique, spicy pungent flavor. Short, sprawling shrub. C26{PL}, C69D{PL}, C95, K49T

**Aif Habanero:** South American chile that resembles the famed Habanero of the Yucatan. Not as hot, but has a similar spicy, smoky flavor. Conical, wrinkled orange to red fruits; 3 to 4 1/2 inches in length. Excellent dried into powder for use in spicy sauces. C26{PL}, C69D{PL}, K49T

**Christmas Bell:** Unusual, 4-lobed fruit, 1 3/4 inch long and 1 1/4 inch in diameter; green, turning yellow-orange or red when ripe; mildly pungent. Has somewhat the shape of a bell, hence the name. Grows 2 to 3 feet tall. DEWITT 1996; F73D, J4

**Kovinchu:** (Ajf Kovinchu) Slightly curved fruit, 4 inches long and 1/2 inch in diameter; green, turning red when ripe; thin-walled; moderately hot. Heavy yielding plants. Originally from Peru. DEWITT 1996; L7M

**Mirasol:** (Ajf Mirasol) Medium-sized, tapered fruits, 3 to 5 inches in length and about 1 inch in diameter; thick, shiny, yellow-orange skin; medium to very hot. Used fresh or dried in sauces. Popular throughout the southern Andes where it has been grown for nearly 4,000 years. The dried form is occasionally available in Latin American markets. ORTIZ 1979; C26{PL}, F80, N84

**Peru Yellow:** (Ajf Limon) Small, elongated fruit, 1 1/2 inches in length and 1/2 inch in diameter; green, turning yellow when ripe, somewhat translucent. Quite hot, with lemony flavor overtones. Variable growth habit, pods usually horizontal but occasionally erect. Does well when grown in containers. DEWITT 1996; A7{DF}, M81T

**Puca Uchu:** (Ajf Rojo, Chileno) Long, slender fruits, curved and tapering to a point; greenish-yellow turning red when ripe. Unique, spicy flavor. Grown commercially for yellow pickled peppers in the fertile valleys of the California and Nevada High Sierras. According to local legend, the seeds came to the Lone Pine area of California with Chilean workers brought to work the mines and railroad. B63M{PD}, C26{PL}, C69D{PL}, J73, K17J{PD}, N84, Q34

**Valentine:** Small, oblong fruits, about 1/2 inch in length and diameter; green, turning orange, then red when ripe; moderately hot. Prolific plant; yields both erect and pendant pods. DEWITT 1996; M81T

*Capsicum cardenasii* - *Ulupica* {PL}. The fruits are very small, aromatic, and in Bolivia, are said to be better tasting than locoto or ajf, though much hotter. There they are ground with tomato to make

a popular dish, called *jallpa huayka* in Aymara or *ucha llajfua* in Quechua. The *ulupica* is also used as a pickle, preserved in oil and vinegar. Although commonly sold in the markets of La Paz, the species was not known to science until 1958. Andean South America. CARDENAS, HEISER 1969, HERKLOTS; C26

*Capsicum chacoense* - *Chaco pepper* {S}. The pungent fruits are occasionally used as a condiment. A rare wild species thought to be one of the ancestors of several cultivated species. South America. ANDREWS, J., KUNKEL

#### CULTIVARS

**Red:** Small, upright, pointed fruits; about 1 inch long; red when mature; very hot. Multi-branched plant, about 5 feet tall. F73D

**Yellow:** Small, upright fruits, about 1 1/2 inches long; orange-yellow when mature; very hot. Multi-branched plant, about 6 feet tall. F73D

*Capsicum chinense* - *Bonnet pepper*, *Squash pepper*. The extremely pungent fruits are used as a condiment. Apparently this is the species that was used by the Carib Indians of the West Indies for torturing captives and for preparing their *pepper-pot*, a sort of camper's stew in which various ingredients are constantly added so that the pot is never empty. Tropical America, cultivated. ANDREWS, J. [Re], HEISER 1969, HERKLOTS; (for cultivars see Pepper, page 473)

*Capsicum frutescens* - *Tabasco pepper*, *Chili pepper*. The pungent fruits are pickled, used as a condiment, or made into hot-pepper sauce. The young leaves and tops of the stems are occasionally steamed and eaten as potherbs. In Thailand, juice from the leaves adds color and a hot, spicy flavor to curries. Tropical America, cultivated. ANDREWS, J., HEISER 1969, HERKLOTS, JACQUAT, OCHSE; (for cultivars see Pepper, page 473)

*Capsicum pubescens* - *Apple chili*, *Rocoto*, *Locoto* {S}. The distinctive thick-fleshed, pungent fruits are used as a vegetable, condiment, or made into sauce. In Peru, the seeds are removed and the pod is filled with cheese or sausage and then baked in the same manner as American stuffed peppers. Andean South America, cultivated. ANDREWS, J. [Re], HEISER 1969, HERKLOTS, WILLIAMS, L.; C26{PL}\C95, D42M, I63T, I74, J73, K17J{PD}, MO, Q34

#### CULTIVARS

**Cuzco:** Heavy, squat fruit; thick, sweet, flavorful flesh; extremely hot seed core. Busty, thick-trunked plant; prolific; perennial in warm climates; tolerant of light frost. An ancient strain from Cuzco, Peru. A26

**Manzano Amarillo:** (Yellow Rocoto, Canario) Fruits blocky, up to 5 inches long, canary yellow when ripe; seeds black. Similar to bell peppers when young; when they turn light green they are rather hot. When fully ripe they are sweet and crisp, except for the seeds and their attachments which stay hot. Sprawling sub-shrub, will bear for up to 15 years in mild climates. A21, C26{PL}, C69D{PL}, F73D, F80, J4, N84

**Manzano Roio:** (Red Rocoto) Medium-sized, blocky fruits ripen a deep, glossy red, and are milder and more like a bell pepper in flavor than the Amarillo when the core and inner membranes are removed. Though the flesh is sweeter, the core is hotter than Amarillo, giving quite a range of flavors. As an annual it reaches a height of 3 to 5 feet. A21, C26{PL}, C69D{PL}, F80, J4, J76{PL}, N84

**Peron:** Round, thick-skinned fruits; fuzzy stems; purple flowers. Both red and yellow forms are available. Attractive as well as useful. Originally from a chile farm in Mexico. C26{PL}

*Cestrum nocturnum* - *Night jessamine* {S}. The leaves are cooked in fat, with tortillas. Central America, cultivated. KUNKEL; C9M, C95, E7M, F80, F85, G20, G96{PL}, H4{PL}, J27{PL}, M82{PL}, N7J{PL}, O53M, O93

*Cyphomandra betacea* - *Tree tomato*, *Tamarillo* {S}. The subacid fruits are eaten out of hand, stewed, grilled, baked, pickled, added

to salads, or made into jams, jellies, chutneys, conserves, pies, salsas, preserves and sauces. South America, cultivated. CUSUMANO [Cul, Re], FLETCHER [Cu, Pro], FRIED [Re], HEISER 1969, KENNARD, MORTON 1987a, POPENOE, W. 1920, SCHNEIDER 1986 [Pre, Re], SIMMONS 1972; A79M, C9M, C95, E13G{PR}, H4{PL}, H53M{PL}, I83M{PL}, N40{PR}, O53M, O93, P5, P17M

#### CULTIVARS

**Ecuadorian Orange:** Fruit is medium orange in color, the size of a large hen's egg; pulp light orange, creamy in texture, less acid than the Ruby Red. Excellent for eating out of hand and also suited for culinary purposes. L55J, N7J{PL}, R47

**Goldmine:** A superior cultivar originating in New Zealand and recently introduced. Very large golden-yellow fruit with golden, highly flavored flesh, less bland than Solid Gold, but not acidic. Has superb eating qualities. O97{PL}, R77{PL}

**Inca Gold:** A yellow-fruited cultivar said to be less acid than the red types. When cooked the fruit is said to resemble the apricot in flavor. Q49M{PL}

**Gratia Red:** A large-fruited cultivar, oval to rounded in shape, and with a sharp acid flavor. Plum red fruits with red flesh. Good quality for eating out of hand, and excellent for jams and preserves. O97{PL}, Q49M{PL}, R77{PL}

**Rothamer:** Unusually large fruit, over 3 ounces; skin bright red; flesh golden-yellow, flavor sweet and exotic; seeds dark red; ripens from December to April. Delicious eaten out of hand. Vigorous and heavy bearing plant. Originated in San Rafael, California. T49M

**Ruby Red:** Large, brilliant red fruit; pulp dark red, tart and flavorful. Fair for eating out of hand, but very good for culinary use. If allowed to ripen for one to three weeks after picking, they will become less acid. The standard cultivar grown for export in New Zealand. R47, TIM

**Solid Gold:** Large, oval shaped fruit; skin golden-orange in color; pulp soft, less acidic in flavor than Oratia Red. Very good for eating out of hand, with acceptable culinary qualities. O97{PL}

**Yellow:** Fruits the size and shape of a large plum; skin yellowish-orange; flesh yellow, with a milder flavor than the red types. The yellow form is the oldest in cultivation in New Zealand. G73, P5

*Cyphomandra casana* - *Casana* {PL}. The fruit is smaller than a tamarillo, spindle-shaped, green at first becoming yellow-striped, then full golden-yellow when ripe. The pulp is fragrant, sweet, not unlike a blending of the flavors of a peach and a tomato. Others say the flavor is like passionfruit or a juicy Thompson Seedless grape. It is best eaten in a ripe, fresh state. Ecuador, cultivated. CHILD 1985b, RILEY 1983; O97, Q49M

*Cyphomandra crassifolia* - *Mountain tomato* {PL}. The fruit is green, the size of a hen's egg, and turns a greenish off-white when ripe. Rather bitter if eaten fresh, when cooked into jam or juice it has an unusual pleasant flavor. Closely related to *C. betacea*. Andean South America. Q49M

*Cyphomandra fragrans* - *Guava tamarillo* {S}. Small, orange fruits with pulp that is vaguely reminiscent of guava, though not very exciting when eaten out of hand. Dried fruits lose their leatheriness and have a pleasant sour taste similar to the dried tamarinds used in Indian cookery. Since its skin is tough, it is under assessment in New Zealand for breeding to improve the shelf life of the tamarillo. South America. CHILD 1985b, RILEY 1983; Q32

*Cyphomandra hartwegii* - *Tomate de monte* {S}. The tomato-like fruits are eaten raw, stewed, candied in syrup, or sweetened and made into juices and preserves. Harvested from the wild and sold in local markets of Columbia, Chile, Peru and Argentina. Occasionally cultivated. Central and South America. BOHS, HEDRICK 1919, UPHOF, ZEVEN; N84, P38

*Jaltomata procumbens* - *Jaltomate* {S}. Leaves are consumed raw, as a potherb, or cooked with eggs. The sweet black fruits are eagerly sought for food by the Tarahumaras of Mexico, either raw, cooked or dried. Roots are eaten raw, boiled, broiled or with radishes. Sold in local markets. Central America. ALTSCHUL, DAVIS, WILLIAMS, L.; F85

*Lycium barbarum* - *Duke of Argyle's tea tree*, *Gou qi zi* {PL}. The dried red fruits are eaten in rich tonic soups and stews made of poultry, meat or turtle, to which they impart a delicate sweet flavor. Leaves and fruits are used for making tea. The leaves are one of the ingredients of *Essential Harmony* classic herbal tea. Source of most of the lycium fruit imported into the United States. China. LEE, G., LEUNG [Nu], TAN [Re], TANAKA; E14T{DF}, F35M, F37T, GO{DF}, G73{DF}, H36{DF}, H36{ED}, J82, N7D{DF}, N84{S}, R83

*Lycium carolinianum* - *Carolina wolfberry*, *Boxthorn* {PL}. The bright red berries are reportedly pleasant eating, having a slightly salty taste. North America. MEDSGER; H4

*Lycium chinense* - *Chinese boxthorn*, *Chinese wolfberry*, *Gau gei choi* {S}. The young, soft leaves, having a peppermint-like flavor, are consumed raw in salads, as a potherb, cooked with rice or pork, or used in soups with duck's eggs. After roasting, the seeds are made into a coffee-like beverage. The fruits have a sweet, licorice-like flavor and are eaten raw, dried, added to soups and braised dishes, or used in the preparation of a liqueur. Dried leaves are used as a tea substitute, sometimes called *Lord Macartney's tea*. Eastern Asia, cultivated. COST 1988 [Cul], DAHLEN [Pre, Rj], HAWKES, HERKLOTS [Cu, Re], OCHSE, TANAKA, YASHIRODA; C95, D26G, D56M, D95{PL}, F68T, F80, F85, F86G, I60{PL}, 174{PL}, L90J{PL}, M82{PL}, N84

*Lycium pallidum* - *Pale wolfberry*, *Rabbit thorn* {S}. Fruits are eaten fresh, cooked, or dried for future use. The Indians of the Southwest cooked them into a syrup or sauce which was dried, stored, and later recooked into a soup or sauce. They keep well when dried and ground into a meal. Western North America. HARRINGTON, H., KAVENA [Re], KIRK; L55J, N84

#### *Lycopersicon esculentum* - *Lycopersicon lycopersicum*

*Lycopersicon lycopersicum* - *Tomato* {PD}. Ripe fruits are eaten raw, added to salads, stewed, pureed, stuffed, made into sauces, pastes, juice, catsup, or used in soups and stews. Unripe fruits are pickled, fried, roasted, dried or made into marmalade, pies, and relishes. In the Southern United States, green tomatoes are popular for making the pickled vegetable relishes known as *chowchow* and *piccalilli*. Small, green olive-shaped fruits, called *tomolives* when pickled, are popular for serving in a martini or Bloody Mary. The dried fruits, called *pumate*, are marinated in olive oil and used in gourmet cooking. Fermented tomato juice is marketed as *Biotta* or *Eden*. Flour, made from dried fruits, may be used to flavor and thicken soups, dips, sauces, breads, pancakes, muffins, puddings, and custards. Tomato seed oil is suitable for culinary purposes. South America, cultivated. EGERTON, FELL 1982b, HEISER 1969, HERKLOTS, HUNTER 1973a, KLEIN [Re], KRAFT [Re], LARKCOM 1984, MILIUS, TANAKA, UPHOF, VILMORIN [Cu]; B65, B91T, C95, D27M, D93M, E13G, E23M, E68M, F42M, F68P, G17M, G47F, H73, J49, K19, L97G, etc. (for cultivars see Tomato, page 554 and Rootstocks, page 510)

*Lycopersicon pimpinellifolium* - *Currant tomato*, *German raisin tomato* {S}. The small, grape-like fruits are eaten raw, dried, added to salads and soups, or used as a garnish. They also make excellent pickles. Andean South America. HEDRICK 1919, ORGAN, VILMORIN; A2, F80, F85, K49M, R47

#### CULTIVARS

**Broad Ripple Yellow:** 60 days. Fruits are bright yellow, cherry-sized, borne in clusters, and very tasty. Non-shattering, fruits hold on the vine until picked. Upright, determinate plants. Excellent keeper. A2, 089

**Cherriette of Fire:** Small red fruits. Matures very quickly. Prolific, compact plants, 14 to 18 inches wide. Possesses a semi-continuous growth habit, yet stays compact. Will naturalize along creeks and river banks. Developed by Peters Seeds & Research. J9M

**Cherry Babv:** 70 days. Early maturing strain. Very good flavor, with just the right balance of sweetness and acidity. Lacks the bitterness and toughness of most currant tomatoes. Excellent for eating out of hand. Also makes an attractive garnish for salads. Large, indeterminate plant, moderately productive. E24

**Chiapas:** Very small, yellow fruits, sweet and flavorful. Contains almost four times the Vitamin C of common tomatoes. Sprawling bushes, prolific throughout the summer; self-seeding. Originally from southern Mexico. I16

**Ciudad Victoria:** Small, perfectly round, bright orange-red fruits, about 1/2 inch in diameter; seedy. Very good, intense flavor. Small-leaved plant, produces fruits which hang in clusters. Weedy, semi-cultivated strain from Tamaulipas in northern Mexico WEAVER 1997; F24D

**Currant Fashions Mix:** A mixture of various strains maintained by Peters Seed & Research. Will produce small fruits in colors of pink, red, yellow and orange. Early maturing types. Vigorous vines. J9M

**Currant HF:** Very small red fruit, just over 1/2 inch in diameter. Excellent sweet-tart flavor and a pleasant, crisp texture. Consistently outstanding flavor due to resistance to flavor-destroying stresses. Vigorous, prolific, sprawling plants that are highly branching. Shows good disease resistance. J9M

**Lemon Drops:** Small, attractive yellow fruits that contrast nicely with red types, slightly smaller than 3/4 inch in diameter. Good sweetness and flavor, but environmental stresses can cause it to lose eating quality easier than Currant HF. Vigorous, indeterminate, disease-resistant vines. E5T, E24, J9M

**Maine Tomato Berry:** Small red fruit, about the size of a blueberry; very sweet. Excellent in quiches, stews, casseroles, shrimp scampi, omelettes, pizza, salads, sandwiches, etc. Does well in hanging baskets, producing hundreds of fruit. Developed by Marcia Christensen, from a volunteer currant tomato found in East Sebago, Maine. MIG, MIG{PL}

**Red:** 70 days. Very small, pea-sized fruit; grows in clusters; good flavor. Excellent in salads and for garnishing. Very prolific. Holds on the vine until picked. Resistant to frosts. Suitable for growing in hanging baskets or on indoor window sills. C53, C92, F13, G6, H73{PR}, I18M{PL}, 139, K10, K20M, K23{PL}, K49T, K57{PL}, L7M, MO, M1P, etc.

**Shattering Red:** 70 days. Very small, pea-sized fruit with excellent flavor; drops from the vine when ripe. Harvested by spreading a cloth under the vine and shaking. Good in salads and as a garnish. K20M

**Sugar Cherrv:** 76 days. Large, orange-red fruits, about 3/4 inch in diameter; sweet, intense flavor. Excellent in salads. Very productive, indeterminate vine, bears fruits in clusters of 12. Of particular interest to specialty growers and the restaurant trade. L7M

**Yellow:** (Gold) 68 days. Globe-shaped fruits, 1/2 inch wide, borne in clusters; golden-yellow skin and flesh; tasty. Prolific yielder; does not drop its fruits when ripe. Indeterminate plant that does not require trellising. Often reseeds itself. B49, C53, C92, F13, G6, H73{PR}, I18M{PL}, K10, K20M, K23{PL}, K49T, K57{PL}, L88J, MO, M1P, etc.

*Nicotiana tabacum* - *Tobacco* {S}. Tobacco leaf protein, an odorless, tasteless white powder can be added to cereal grains, vegetables, soft drinks, and other foods. It can be whipped like egg whites, liquified, or gelled, and it can take on the flavor and texture of a variety of foods. It is 99.5% protein and contains no salt, fat or

cholesterol. Currently being tested as a low calorie substitute for mayonnaise and whipped cream. South America, cultivated. The dried and cured leaves are used for chewing. PIRIE, SHEEN, UPHOF; A26, F68T, F86G, G73, J73, J82, Q41, R47

#### CULTIVARS

**Burley:** Common smoking tobacco grown in several southern states. Makes a good cigar filler and binder leaf. A striking specimen plant with 18 inch leaves and numerous clusters of rose-pink flowers. The plant is best grown at about 30° latitude for commercial production. C43M, C43M{PL}, D11M, D56M, D26G, E97, F70, F73D, I81M, N40M, N84, 053M

**Burley No. 21:** 120 days. All-purpose plug tobacco for chewing or wrapping cigars. This sun-cured white burley is also a favorite for pipes and cigarettes. Produces very large white blooms; grows 4 to 6 feet tall. Start seeds indoors 5 to 6 weeks before transplanting. D76, E7M

**Havana 608:** 65 days. Said to be the best Havana type tobacco for home gardeners. Produces good crops early. Does particularly well in cool northern areas. Good for cigars and chewing. Recommended for first time growers of tobacco. D56M, F80, N40M, N84

**Kentucky Burley:** A standard Burley tobacco grown in Kentucky for its high yield and high quality. Good for pipes, cigar fillers and binders, and cigarettes. Disease resistant. D26G

**Kentucky Park:** Makes a good filler for cigarettes, pipes and cigars. Also a good binder for cigars. To make a good cigar binder increase leaf size by leaving only 10 to 12 leaves after pruning. D26G

**Madole:** Fast growing, hardy commercial strain. Prized by specialty growers because it provides a great wrapper tobacco or a premium snuff tobacco when ripe. A good tobacco for beginners learning to roll their own cigars or for first time snuff makers. D26G, D56M, N40M

**Mont Calme Brun:** (Havana, Havana Large Leaf) A fine Cuban variety of smoking tobacco. Has a very fresh and smooth flavor. Normally grown for cigars but can also be used for pipes and cigarettes. More tolerant of rich soils. Produces ornamental, rose colored flowers. A2, D26G, F73D, N84

**Mont Calme Yellow:** Yellow, improved Virginia type. Has a rich flavor of high quality. Grows 8 feet tall, with leaves 3 feet long and 1 foot wide. Very productive. Slightly tolerant of frosts. F73D, N84

**Shirazi Iranian:** 85 days. Strong-flavored smoking tobacco of premium quality. Good for cigar fillers and pipes. Early maturing. Grows 4 to 5 feet tall with foot long leaves. Attractive pink to pale purplish flowers. Originally from Iran. A2, C95, D26G, D56M, F73D, K49T, L77D, N40M, N84

**Tennessee Burley:** A good burley type that is a favorite in Tennessee. Produces good quantities of high quality leaves that are favored for cigarettes and pipes. Vigorous, easy to grow plant with multiple disease resistance. D26G, D56M, N40M

**Virginia Smoking:** Dark leaved Virginian tobacco. One of the principal sources of commercial tobacco. Ideal pipe and cigarette tobacco. Grows to 6 feet tall. Best grown in light soils. Originated in pre-Columbian times. A2, A66, F73D, N84, S55

*Petunia x hybrida* - *Garden petunia* {S}. The mild tasting flowers are eaten in salads or used for garnishing other foods. Cultivated. LENZ; A25, B77M, C69, D68, E7M, F80, F82, G27M, G82, H57M, H61, H85M, H95, 191, J20, K49M, L42, M49, M95M, etc.

*Physalis angulata* - *Cutleaf ground-cherry* {S}. The juicy, subacid fruits are eaten raw, fried, stewed, or made into marmalade by cooking in palm syrup. In Costa Rica, they are sometimes used in the preparation of hot chili sauces. Young leaves are used as a potherb. Tropics. HEDRICK 1919, MORTON 1977, WILLIAMS, L.; F85

*Physalis edulis* -+ *Physalis peruviana*

*Physalis heterophylla* - *Clammy ground-cherry* {S}. Ripe fruits are eaten fresh, dried, or made into pies, jams, sauces, syrup, preserves and soups. Pectin must be added when making jam. Dried fruits are sometimes ground into meal or bread. North America. CROWHURST 1972, HARRINGTON, H., KINDSCHER, PETERSON, L., WEAVER 1993 [Re]; M34M, N84

*Physalis ixocarpa* - *Tomatillo, Mexican ground-cherry, Tomate verde* {S}. Unripe fruits are widely used in *salsa verde*, a mildly hot chili sauce often served with tacos, enchiladas, tostadas, chilis rellenos, and other Mexican dishes. They are also stewed, fried, baked, or used in dressings, purees, curries, soups, and other Mexican sauces such as *mole verde*. Ripe fruits are sweeter and can be eaten out of hand, added to salads and sandwiches, or used in pies and preserves. Often hung in garlands or *ristras* like chili peppers. Mexico, cultivated. CUSUMANO [Cu, Re], DREMANN, S. 1989, HALPIN [Cu, Cul], HEISER 1969, HERKLOTS, KENNEDY, D. [Cu], KIRK, MORTON 1987a [Cu], ORGAN, SCHNEIDER 1986 [Pre, Re], SIMMONS 1972; B75, B75{PL}, C43M{PL}, C82, C89{PR}, E13G{PR}, F71M, G47F{PR}, J20, J25M, M1P, N40{PR}, R47

**CULTIVARS**

**Indian:** 60 days. Medium-sized fruit, about 2 inches in diameter. Ripens early. Tart green fruits make good salsa. Golden-ripe fruits have very good flavor, just the right balance of sweetness and acidity with a hint of citrus. They are excellent for making preserves. Upright growing plant with dark green foliage. D82, F73D, H24, J9M, L89

**Larae Green:** 80-90 days. Large, round fruit; 2 to 3 inches across. Mild, slightly tart but pleasant flavor. Good for canning. The large fruit is easier to de-husk to make quantities of salsa but does not store as well as *P. philadelphica*. F73D, F80, H95, J73, N52

**Purple:** Medium-sized fruit, 2 inches in diameter. A smaller purple fruit that is preferred by some for its sharper flavor, otherwise about the same as the green tomatillo. A2, C26{PL}, G6, G68, 139, K49M

**Purple Husk:** Fruit somewhat smaller and harder to husk than the green types, should be used in cooking only when fully mature. The decorative purple husks are outstanding as a culinary garnish, particularly when the husk is separated along its ribs into a flower shape, with the fruit forming the flower center. Recommended for the restaurant trade. M1P

**Rendidora:** Fruits are large, yellow-green when ripe, sweet acidic in flavor, and easy to pick since they are about the size of a golf ball. Plants at first grow upright, but then branches become prostrate when loaded with fruits. Ripens 15 days earlier than others and gives 80% greater yield. Good to eat raw, served sliced along with tomatoes. MORTON 1987a; DIT, J82

**Toma Verde:** 60 days. Large, globe-shaped fruit, 2 to 3 inches in diameter; weight 2 to 3 ounces; non-pithy when ripe. Papery husk better encloses and protects the fruit than other types, yet is still easy to peel. Excellent either raw or cooked. Relatively new, widely adapted strain. B73M, C53, D56M, D68, G6, G16, G82, 191, J9M, J97M, K66, L42, M0, M29, M49, M65, N16, etc.

**Verde Puebla:** 75-85 days. Large-fruited, uniform strain; weight 1 to 2 ounces. The golf ball size fruits are harvested green for making salsa. Somewhat sweet and tangy if eaten raw after turning slightly yellow. Will split before becoming fully yellow. A87M, C20M, DIT, E24, E97, H33M, H61, K10, M0

*Physalis peruviana* - *Cape gooseberry, Poha, Peruvian ground-cherry* {S}. The subacid fruits are eaten out of hand, dried, preserved, stewed, pureed, added to salads, or made into pies, cakes, sauces, jellies, compote, and jams. Using the husk as a handle, the fruits can be dipped into icing, chocolate, or fondant. The fruits often dry naturally on the plant, making a palatable "raisin" that does not have much sugar but is pleasant to eat. Dried fruits are said

to be a substitute for yeast. Tropical America, cultivated. HEISER 1969, HERKLOTS [Cu, Nu], JOHNS [Cul], MORTON 1987a [Cu], RILEY 1983, SCHNEIDER 1986 [Pre, Re], SIMMONS 1972, WILDER; E13G{PR}, E33, F21M{£D}, I83M{PL}, J9M, M1P, N40{PR}, N84, 093, Q49M{PL}

**CULTIVARS**

**Giallo Grosso:** (Larga Golden Italian) Tall, erect, well-branched plant flowering at every node. The fruit is eaten raw or preserved after ripening to a golden-yellow color. In areas with mild winters the plant will last for several years. Q11M

**Giant:** Very large, golden-orange fruit, approximately 40% larger than Goldenberry; delicious flavor. Vigorous, spreading plants grow 3 to 5 feet tall. Requires a long growing season. Originated in Guatemala. Introduced into the United States by Gabriel Howarth. C95, D29P

**Golden Nugget:** Small, marble-sized, golden yellow fruits; sweet and juicy. Good fresh or in preserves. Very productive, spreading plants. A three year perennial in warmer climates, with production tapering off in the third year. PIG

**Goldenberry:** Fruits average 1 inch in diameter, with some reaching 2 inches; pulp is very flavorful and sweet. Dried fruits are used in fruit cakes in place of raisins. Said to be frost resistant; it has resisted light frosts which caused tomatoes and other *Physalis* species and cultivars to die. In cooler climates, it takes 1 1/2 years from seed to bear well. KRAFT, RILEY 1983; C95, G53M, L11, L91M, R49

*Physalis philadelphica* - *Wild tomatillo, Miltomate, Purple ground-cherry* {S}. Fruits are eaten raw, stewed, fried, or made into sauces. In Central America, it is perhaps the most commonly used of the fruits of *Physalis* in hot chili sauces, or used like tomatoes. Cultivated in Guatemala and perhaps elsewhere for its relatively large fruits. North America, Mexico. VON REIS, WILLIAMS, L.

**CULTIVARS**

**Purple de Milpa:** Small, purple-tinted fruits with high dry matter are considered the best-flavored tomatillo. They have a sharper flavor that is preferred by some cooks. The fruits can be stored for months by pulling back the husks and stringing them like garlic. Only found as a semi-domesticated weed in the milpas or slash-and-burn cornfields, and is much sought after. DREMANN, S. 1986 [Re]; C26{PL}, F73D, G6, I99M, J39, J97M, K23{PL}, K49T, L7M, L77D, L11, M32, N84

**Tepehuan:** Small, green, husked fruits. Collected in Nabogame, Chihuahua, Mexico, a remote mountainous region. Often served with beans as a breakfast food. Weedy in its native habitat. Adapted to both high and low desert areas. 116, N84

**Zuni:** Small, sweet fruit, excellent in salsas. Can also be roasted in an oven, then blended with garlic, onion, chile and cilantro and used as a hot sauce. Prolific plants; plant in spring in high, cool desert areas. Their culture, by the Zuni Indians, predates the tomato. From northern New Mexico. C26{PL}, D29P, F73D, 116, N84

*Physalis pruinosa* - \* *Physalis pubescens*

*Physalis pubescens* - *Ground cherry, Husk tomato, Strawberry tomato* {S}. The subacid to sweet fruits are eaten out of hand, dried, pickled, stewed, added to salads, or used for pies, preserves, sauces, jams, and ice cream toppings. When dried in sugar, ground cherries make an excellent fruit to use in fruit cakes, some cooks preferring them to citron, figs, or even raisins. North America, Tropical America. ANGIER [Re], GIBBONS 1962 [Re], HALPIN [Cu, Cul], MEDSGER, VILMORIN; A2, B73M, C82, C85M, D11M, D68, D82, F70, G13M, G16, G93M, 139, K49M, K71, L42, M0, etc.

**CULTIVARS**

**Aunt Molly's:** (Aent Moll) 65-70 days. Notable for its mild flavor, very sweet and fruity, somewhat reminiscent of tangerines. Excellent in fruit salads and jams. Turns a golden-orange color and

drops to the ground when ripe. Will store up to 3 months when kept in its papery husk. May be a variant form of Goldie WEAVER 1997; F24D, F73D, L89, N24M

**Cossack Pineapple:** 60 days. Small, yellow fruits, about 1/2 inch in diameter. Excellent flavor reminiscent of a sweet pineapple. Excellent for preserves, hot dessert toppings, salads or mock pineapple yogurt. Short, bushy, spreading plant; height 12 to 18 inches. Originally from Eastern Europe C95, D29P, F73D, L7M, L77D, L88J, R47

**Eden:** Small fruits, about half the size of a cherry tomato; yellow when ripe; sweet. Can be eaten raw, cooked or after having been dried. Low growing, tomato-like plants. Originally from the Netherlands. J39

**Goldie:** 75 days. A selected strain with apricot-colored fruits, and a clean, sweet flavor when ripe. Slightly larger than Cossack Pineapple, averaging 3/4 inch in diameter. Plants are profusely branching, prolific, and decorative; interesting in flower beds. Bears until frost. G6, L7M, L77D

**Huberschmidt:** Pennsylvania German heirloom. Often found as an escapee from old gardens. Distinctive, tomato-like flavor with a sweet aftertaste. Popular for making pies and preserves. Prolific grower. F24G, F73D

**New Hanover:** Small, yellow fruits, similar to Cossack Pineapple. Distinctive flavor, somewhat reminiscent of a yellow tomato. Winner of a tasting held by the American Institute of Wine and Food. Originated with the late Katie Hoffman Slonaker of New Hanover, Pennsylvania. WEAVER 1997; F73D

**Sweet Amber:** Small, cherry-size fruits, ripen to an amber or bright-orange color. Has a very pleasant fruity flavor when fully ripe. Greenish fruit will have an unpleasant taste. Ripe fruits are harvested from the dry papery husks that fall to the ground. J9M

*Saracha jaltomata - Jaltomata procumbens*

*Solanum aethiopicum - African scarlet eggplant, Mock tomato, Garden egg* {S}. The orange-red fruits are cooked and eaten like eggplant, pickled, or used for flavoring other foods. Young shoots are stripped of their numerous flowers and buds, and then finely cut for use in soups. They have a bitter taste. Sometimes known as the *tomato of the Jews of Constantinople*. These people are the Ladinos expelled to Constantinople from Spain about 1500 AD, and whose ancestors possibly carried this crop with them to Spain when they were expelled from Timbuktu about 1400 AD. Tropical Africa, Tropical Asia. DALZIEL, LESTER, VAN EPENHUSEN [Cu], WILSON, E.G.; F73D, F80, N84. (for cultivars see Eggplant, page 359)

*Solanum alibile -+ Solanum sessiliflorum van alibile*

*Solanum anomalum - Children's tomato* {S}. Fruits are eaten as a condiment in soups and sauces. They are also dried, preserved, or fermented into *dawadawa*, which can be used as a flavoring. West Tropical Africa. DALZIEL, UPHOF; F85

*Solanum aviculare - Kangaroo apple, Poro-poro* {S}. Fully ripe fruits are eaten raw, boiled, baked, stewed with sugar, or made into jam. They should be harvested after having fallen from the branches, when they lose their unpleasant acidity. Also used as an ornamental and a rootstock. Australia, New Zealand. COLENSO, CRIBB, HEDRICK 1919, UPHOF; F80, F85, N79{PL}, N79M, N84, 093, R15M, R47, R77{PL}

*Solanum x burbankii - Wonderberry, Sunberry, Msoba* {S}. The small, deep-blue fruits are eaten. Often confused with *S. scabrum*, which has larger, purple-black fruits. Once sold by Gleckler's Seedsmen of Metamora, Ohio who described it as "an annual domesticated blueberry from South Africa...quite similar to the California Sunberry grown by the great Luther Burbank 50 years ago. In colonial days of Africa farm women used Gsoba for tarts, jams, etc...It appears Gsoba would be adapted also for making fermented

beverages". Tropical Africa. HEISER 1969, ZEVEN; D29P, F73D, F80, H24, N84

CULTIVARS

**Fruity:** 130 days. Large fruits, 2 to 3 times the size of Mrs. B's Non-Bitter. When fully ripe, they are sweet and suitable for eating out of hand. Much firmer than Mrs. B's Non-Bitter, although not as sweet. Can be frozen. Fruit caps turn yellow-brown when ripe. Grows 3 1/2 to 4 1/2 feet tall. Developed by Tim Peters. J9M

**Mrs. B's Non-Bitter:** 55-60 days. Small, bluish-purple fruits, smaller than Garden Huckleberry (*S. scabrum*). More intense in flavor but also notable for being non-bitter, almost sweet. Can be eaten raw, but is better cooked or used in jams, sauces, jellies and pies. Plants grow to 3 feet tall; bears fruit in clusters. C95, J9M

*Solanum caripense - Tzimbaló, Pepino lloron* {S}. The fruits, hardly larger than cherries, are eagerly eaten by the South American people. Their sweetish juice makes them palatable although they have little flesh and numerous seeds. In Colombia, they are made into preserves. Closely related to, and hybridizes with *S. muricatum*. Andean South America. CORRELL, HEISER 1964, HEISER 1969, PEREZ-ARBELAEZ; U37M

*Solanum centrale - Bush tomato, Akudjura, Desert raisin* {S}. Small quantities of the fruit can be eaten fresh. Dried, shriveled fruits have a rich, spicy, aromatic flavor—and after rubbing in the native red sand are said to taste more like raisins. One of the most delicious and popular bushfoods. Usually ground to a powder or preserved in oil. Excellent in sauces, chutneys, relishes, jams and salsas or as a topping for focaccia. High in Vitamin C. Australia. CHERIKOFF, O'CONNELL, ROBINS [Re]; B76M{DF}, C95, N79{DF}, N79{PD}, 032M{DF}, 032M{P£}, N79{PL}, N84, R15M

*Solanum x curtlobum - Choque pitu, Bitter potato* {PD}. Natural hybrid. The tubers are eaten. One of the principal species used in the production of *chuho*, a freeze-dried potato product indigenous to cold altiplano regions. White chuno—locally called *moraya* or *tunta*—is made by freezing, peeling, soaking and sun drying the potatoes. Black chuno or *chuho negro* is processed in a similar manner, however the potatoes are not soaked. Most often used in soups and stews, combined with barley and herbs. Can be stored for three or four years. Andean South America. CAMPBELL-PLATT, NATIONAL RESEARCH COUNCIL 1989, UMANA-MURRAY [Re], WERGE; G47G

*Solanum demissum - Papa cimarrina, Papa del monte* {S}. Tubers are cooked and eaten. They are frequently added to soups and stews as much for flavoring as for their food value. In Mexico, the fruits are cooked and eaten as a sweet, without the addition of sugar. Fully ripened fruits are said to have the odor of mango, papaya, or wild strawberry. Central America. CORRELL; U24, Z91

*Solanum fendleri - Fendler potato, Wild potato* {S}. The small tubers are eaten raw, boiled, baked, or roasted. They are said to be pleasant tasting, somewhat like a boiled chestnut. Southwestern North America. GIBBONS 1979, HEDRICK 1919, KIRK, MEDSGER, YANOVSKY; U24

*Solanum ferox - Terong asam, Ma uk muak* {S}. The fuzzy, orange fruits are cooked and eaten. They are made into a sour-relish, or used in curries. Southeast Asia. BURKILL, HERKLOTS, UPHOF, WATT; F85, N84

*Solanum georgicum - Solanum sessiliflorum van georgicum*

*Solanum gilo - Solanum aethiopicum*

*Solanum hirsutissimum -> Solanum pectinatum*

*Solanum incanum - Palestine nightshade, Meringam, Ikon* {S}. The green, unripe fruits are eaten raw or cut into pieces and added to soups, or the pieces may be dried for later use. In Nigeria, both sweet and bitter types are cultivated. Seeds are used in the Sudan for curdling milk. Leaves are also edible. Tropical Africa, Tropical

Asia. DALZIEL, MARTIN 1975, UPHOF, VAN EPENHUSEN; F85

*Solanum indicum* - *Terong pipit puteh* {S}. Ripe fruits are eaten in soups and sauces. Unripe fruits are used in curries. Leaves are also edible. Tropical Asia. BURKILL, MACMILLAN, TANAKA, UPHOF; F85, Q46

*Solanum integrifolium* - *Solanum aethiopicum*

*Solanum intrusum* *Solanum scabrum*

*Solanum jamesii* - *Colorado wild potato* {S}. Tubers are eaten raw, baked, or boiled. They can be stored for several months, or they can be sliced, dried, and ground into a flour. The Hopi Indians cook the tubers with a saline clay and also reportedly use them in making yeast. Southwestern North America. CORRELL, HARRINGTON, H. [Pre, Re], YANOVSKY; U24, Z91

*Solanum x juzepczukii* - *Luqui, Bitter potato* {PD}. Natural hybrid. The tubers are eaten. One of the principal potato species used in the production of *chuno*, a freeze-dried product known since pre-historic times. Both white *chuno* and black *chuno* are produced, the white being much less bitter. *Chuno* is added to soups and stews, steam heated with cheese, or mixed with fruit and molasses and made into a sweet dessert known as *manmorra*. *Tongosh* or *tokosh* is also prepared from the tubers. It is a strongly aromatic product made by soaking the tubers in running water until they ferment. Andean South America. CAMPBELL-PLATT, NATIONAL RESEARCH COUNCIL 1989, UMANAMURRAY [Re], WERGE; G47G

*Solanum macrocarpon* - *Gboma eggplant, Terong engkol* {S}. Fruits are eaten as a cooked vegetable or used in soups and sauces. The leaves are boiled or steamed and served as a side dish with rice. Tropical Africa, cultivated. LESTER, OCHSE, OOMEN, TANAKA. C95, F80. (for cultivars see Eggplant, page 359)

*Solanum melanocerasum* - *Solanum scabrum*

*Solanum melongena* - *Eggplant, Aubergine, Brinjal, Melanzane* {PD}. Fruits are eaten raw, fried, baked, stewed, pickled, grilled, marinated, stuffed, added to soups, stews and curries, or used in *caponata*, *ratatouille*, *Imam bayeldi*, *baba ghanoush*, *moussaka*, etc. Paper-thin slices of the fruits are popular wrappings for other foods. Dried eggplant skins, made from small cylindrical fruits that have been hollowed out and the shells dried, are popular in Middle Eastern cuisine where they are reconstituted and used as casings for various stuffings. In Morocco, the peeled stems of small eggplants, said to have a mushroom-like flavor, are added to lamb stews. The leaves are mixed with the rice bran and salt in which daikon roots are pickled. Tropical Asia, cultivated. BIANCHINI, HALPIN [Cu, Cul], HAMADY [Re], HEISER 1969, HERKLOTS, OCHSE, ROUTHIER 1993, SCHNEIDER 1986 [Pre, Re], TANAKA, VILMORIN [Cu], WOLFERT 1973 [Cul, Re]; E23M, H19M, L50M, L99. (for cultivars see Eggplant, page 359)

*Solanum muricatum* - *Pepino dulce, Melon pear* {S}. The sweet, aromatic, refreshing fruits are very good eaten out of hand, having the flavor of a ripe muskmelon with a hint of pear or pineapple. They can also be used in fruit salads, as a garnish, served with prosciutto, or made into sauces, jams, and preserves. Occasionally available in specialty markets. Andean South America, cultivated. CUSUMANO [Cul, Re], FRIED, HEISER 1969, HERKLOTS, NATIONAL RESEARCH COUNCIL 1989, POPENOE, W. 1924, SCHNEIDER 1986 [Cul]; A28{PL}, A79M, C89{PR}, D56M, E13G{PR}, F73D{PL}, H53M{SC}, N40{PR}, N40M, N84, P38, R78M. (for cultivars see Pepino Dulce, page 472)

*Solanum nigrum* - *Black nightshade, Morelle* {S}. Young shoots and leaves are eaten as potherbs or added to soups. Ripe fruits are eaten stewed or made into pies, jams, preserves, puddings, sauces, pastry, or a spicy relish. They are usually cooked with sugar and lemon juice to make them palatable. The unripe fruits contain solanine and should not be eaten. Cosmopolitan. CRIBB, FERN-

ALD, FOX, E, GIBBONS 1979, HARRINGTON, H. [Re], HEDRICK 1919, MACMILLAN, NIEBUHR, OCHSE, UPHOF, VAN EPENHUSEN [Cu, Pio]; A79M, C43M, D29P, F85, G73, N71M, N84

*Solanum nigrum* var. *guineense* - *Solanum scabrum*

*Solanum nigrum* var. *nodiflorum* - *Solanum nodiflorum*

*Solanum nodiflorum* - *Popolo* {S}. The leaves are boiled and used like spinach. In Hawaii, they were cooked in underground ovens and eaten with fish as a substitute for poi. Ripe fruits are eaten, and have a peculiar flavor that is agreeable to some. Fresh or dried leaves were made into a tea. Tropics. ALTSCHUL, CRIBB, DALZIEL, DEGENER, MAY, R., UPHOF; X54, Y2

*Solanum pectinatum* - *Lulita* {S}. The juicy fruits may be eaten raw but are best cooked with sugar after their fizz has been brushed off and perhaps after thin peeling. Pulp is acid but the sugar content is relatively high and the flavor is somewhat aromatic. The fruit has extremely fine juice, almost equal to that of the naranjilla, and is used in the preparation of refreshing beverages. Tropical America. HEISER 1985, HERKLOTS; N84, P38, R78M

*Solanum pseudolulo* - *Lulo comun, Lulo de perro* {S}. Fruits are used in the preparation of refreshing drinks. The pulp is pale yellow and the quality of the juice is generally inferior to that of the naranjilla. Produces fertile hybrids when crossed with the naranjilla. Colombia. HEISER 1969, HEISER 1985, MORTON 1987a; X54

*Solanum quitoense* - *Naranjilla, Golden fruit of the Andes* {S}. The fruits are bright orange, thick-skinned, and have greenish pulp of a very refreshing, subacid flavor that has been likened to a combination of orange, pineapple and tomato. In Ecuador and Colombia, freshly squeezed naranjilla juice is used to make *sorbete*, a green, foamy drink with an appealing sweet-sour flavor of pineapple and strawberry. The juice is also used for flavoring ice cream and sherbets, or made into jam and jelly. In Panama, it is mixed with sugar cane juice to make an unfermented *chicha*. Andean South America, cultivated. DUKE, FRIED [Re], HEISER 1985, HERKLOTS, MORTON 1987a [Cu, Pro], NATIONAL RESEARCH COUNCIL 1975a, POPENOE, W. 1924, SCHULTES, STURROCK; A79M, C95, D92M, E29 {PL}, E48{PL}, F85, G73, I12{PL}, I83M{PL}, L55J, N84, Q49M{PL}, R32, R47

*Solanum scabrum* - *Garden huckleberry* {S}. The purplish-black fruits, when thoroughly ripe, are eaten raw, stewed, or used in jams, jellies, sauces, pies and preserves. They are usually cooked in baking soda first to remove the bitterness, and then prepared with sugar and lemon juice. In West Africa, the leaves are used as a potherb. Cultivated. CHILD 1985a, FELL 1982b [Cu, Pre], FERNALD, HEISER 1969, MARTIN 1975, MASEFIELD, SIMMONS 1978, TANAKA; B73M, C82, D11M, D65, F70, F73D, G68, H33M, H85M, J9M, K20M, K49M, K71, L3J, L42, M1P, N84, etc.

#### CULTIVARS

**Schwartzbeeren:** (Loneberry) 60-75 days. Plant grows to 2 feet tall, self-seeds. Fruits dark-purple, round, 1/4 inch in diameter, borne in clusters. Heirloom cultivar brought by Volga German immigrants to Kansas and Nebraska in the 1880 to 1920 period. U33

*Solanum sessiliflorum* - *Cocona, Cubiu, Orinoco apple* {S}. The ovoid fruits, suggestive of large red or yellow apples, have an acid, pale-cream flesh that is distinctly acid. Although the flavor is agreeable, they are not recommended for eating out of hand. When peeled and used whole for making jams, preserves, pies, and sauces, the product might be compared with that of apricot, pineapple, or gooseberry. An acidulous, thirst-quenching drink can also be prepared from the fruits. In Brazil, the leaves are cooked and eaten. Tropical America, cultivated. HEDRICK 1919, HERKLOTS, MORTON 1987a [Cu, Pro], RILEY 1983, SCHULTES; A79M, G73, N84, R78M

*Solanum sessiliflorum* w. *alibile* - *Cocona willa* {S}. Cultivated as a dessert fruit and source of a refreshing beverage. The

fruits are globose, orange-red, more than twice as large as those of other forms of *cocona*, and are also less acidulous. Colombia. SCHULTES, ZEVEN; F85

*Solanum sessiliflorum* var. *georgicum* - *Cocona* {PL}. The dark red fruits are eaten out of hand or employed in the preparation of a refreshing, acidulous beverage. Similar to *S. sessiliflorum* but with smaller, globose fruits and spiny stems. Usually occurs as a weed or in semi-cultivation. South America. SCHULTES, ZEVEN; 112, N84{S}

#### *Solanum topiro* - *Solanum sessiliflorum*

*Solanum torvum* - *Pea eggplant*, *Susumber*, *Plate brush*, *Pokak* {S}. Young shoots are eaten raw or cooked. In the West Indies, especially Jamaica, the half grown, firm berries are boiled and eaten with salted fish, yams, akees, or in soups and stews. They have a distinctive, bitter flavor. In tropical Asia, they are eaten raw, cooked and served with rice, or used in stews, curries, and chili sauces such as Thailand's *ndm prik*. An extract of the plant is occasionally used as a rennet in the manufacture of *domiati*, the most popular white brined cheese in Egypt. Tropics. BENGHIAT [Cul, Re], COST 1988 [Cul], GRIGSON, J. 1986, HAWKES [Re], HERKLOTS, OCHSE, ROBINSON, R. 1991, TANAKA, UPHOF, WALSH [Re]; F85, N84, P38

#### CULTIVARS

**Snake Eve:** (Lao Green Grape) 135 days. Tiry, round fruit, no more than 1/2 inch in diameter; light yellow-green at harvest stage; seedy flesh. Used in traditional Laotian cuisine. May be used in any stir-fry dish calling for eggplant. Very tall, thorny plant, height 6 feet; bears fruit in grape-like clusters; resistant to nematodes, flea beetles and cold. C95

*Solanum tuberosum* - *Potato* {S}. Tubers are eaten boiled, baked, fried, roasted, mashed, or used in soups, stews, dumplings, pancakes, potato salad, etc. Paper-thin slices can be used as wrapping for other foods. The skins are eaten separately, for example in Bengal they are cooked with chickpea flour and poppy seeds. Also used for the manufacture of starch and alcoholic beverages, especially *vodka*. In Scandinavia, the national beverage is *aquavit*—made from potato alcohol and flavored with caraway, orange or lemon peel, cardamon, and other spices. *Papa seca*, potatoes that have been boiled and sun-dried, are popular in South America for adding to soup or *carapulcra*—2i famous pork and vegetable dish. *Vegeicious* and *Vance's DariFree* are unique milk substitutes derived from potatoes. The water from cooked potatoes is sometimes employed in the preparation of leavens used in *sourdough bread* manufacture. Andean South America, cultivated. CAMPBELL-PLATT, CARCIONE, FELL 1982b, HEISER 1969, HERKLOTS, KIRCHNER [Re], ORTIZ 1979 [Re], ROUTHIER 1993, TANAKA, UPHOF, VILMORIN [Cu], WERGE; E14T{DF}, D43G{PD}, F17{PD}, G47G{DE}, L17{DF}, R47. (for cultivars see Potato, page 493)

*Solanum uporo* - *Cannibal's tomato* {S}. Red fruits are used like tomatoes in the preparation of sauces. The leaves are eaten as a potherb. Polynesia. HEDRICK 1919, UPHOF; F80

*Solanum verrucosum* - *Papa morda* {S}. Tubers are eaten. A plant considered to be this species was once cultivated by the peasants in the neighborhood of Geneva, Switzerland. The tubers produced were smaller and later in development than *S. tuberosum*, of excellent flavor, and had yellow flesh. Mexico. CORRELL, ZEVEN; U24, Z91

*Solanum vestissimum* - *Lulo de la tierra fria*, *Toranja*, *Tumo* {S}. The juice of the fruits is used in the preparation of refreshing beverages. It has an excellent flavor, but the hairs of the fruit are rather bristly, and so the juice is difficult to extract. Colombia. HEISER 1985; F85

*Solanum xanthocarpum* - *Yellow-berried nightshade*, *Thorny nightshade*, *Makeuwa praw* {S}. The slightly bitter fruits are eaten raw, steamed with dips, or cooked in curries. Eaten green (immature), before the seeds mature and become tough. Leaves are used as

a potherb. Widely used in Thai cuisine. Southern Asia to Polynesia. COOK, HEDRICK 1919, MACMILLAN WATT; A26, F68T, F85, J82, N84

*Solanum* sp. - *Vishate*, *Hierba mora* {S}. Leaves and young shoots are steamed and eaten. They have a somewhat bitter flavor but an intensely sweet aftertaste. Said to be absolutely delicious. Plants grown in moist, shady areas are preferred for table use. Oaxaca, Mexico. THEODOROPOULOS; F80

*Withania somnifera* - *Kuthmithi*, *Ashwagandha*, *Indian ginseng*, *Winter cherry* {S}. The principal food tonic used in Ayurvedic herbalism. Powdered roots are often added to ghee, or made into a decoction with warm milk, raw sugar, honey, long pepper, and Basmati rice. Also an ingredient of various herbal formulas and concentrates such as *Chyavanprash*, *Amrit Kalash*, *Asvagantharistam*, and *Raja's Cup* coffee substitute. In India and the Sudan, the seeds are used to coagulate milk. Southern Eurasia, North Africa. FRAWLEY, SIVARAJAN TIERRA, UPHOF, WATT; A2, B49, C43M{PL}, C95, D92M, E14T{DF}, F15M{PD}, F68T, F80, G0{DF}, H14{ffi}, J82, K18M{DF}, K49T, L90J{PL}, N42{PL}, N84, R47, etc.

#### SONNERATIACEAE

##### *Duabanga grandiflora* - *Duabanga sonneratioides*

*Duabanga sonneratioides* - *Nepal-lampetis*, *Bandorhulla* {S}. The very acid fruit is eaten fresh or made into a refreshing drink. Indomalaya. TANAKA; P38

*Sonneratiaceolaris* - *Perepat*, *Berembang* {S}. Ripe fruits are eaten raw or cooked, having a cheese-like flavor. Young ones are used for flavoring chutney and curries. Also employed for making vinegar. Southeast Asia. BURKILL, TANAKA, UPHOF, WATT; F85, N84

#### SPHENOCLEACEAE

*Sphenoclea zeylanica* - *Goonda*, *Phak pot* {S}. The leaves and young leafy tops of the stems are steamed and eaten as a potherb, mixed with grated coconut, or served as a side-dish with rice. They have a slightly bitter but pleasant flavor. Often sold in local markets in Java. Tropical Africa, Tropical Asia. BURKILL, JACQUAT, OCHSE, UPHOF; F85

#### STAPHYLEACEAE

*Staphylea colchica* - *Colchis bladdemut*, *Dzhondzholi*, *Jonjoli* {S}. The young, leafy shoots are eaten, having somewhat the flavor of garlic. The flower buds are pickled in brine and used as a caper-like condiment, or mixed with red onion rings, olive oil, and red wine vinegar and served as an appetizer. Sold in local markets of Georgia. Suitable for edible landscaping. Caucasus, Black Sea region. GOLDSTEIN, MARGVELASHVILI; N84, R78

*Staphylea pinnata* - *European bladder-nut*, *False pistachio*, *Nezcoupe* {S}. The kernels of the fruit are said to taste like pistachios and are eaten in Germany by children. Southern Europe. HEDRICK 1919, ROOT 1980a; D95{PL}, F85, G66, K63G, N61, N84, P49, R78

*Staphylea trifolia* - *American bladder-nut* {S}. The seeds are eaten raw or they can be used in place of walnuts in chocolate chip cookies. A cooking oil has been extracted from the seeds. North America. GIBBONS 1979, KROCHMAL; B68{PL}, D47M, D95{PL}, F85, G66, J39M{PL}, K38, K63G, M77M{PL}, N37M{PL}, N61, N84

#### STERCULIACEAE

*Brachychiton diversifolium* - *Australian flame*, *Kurrajong* {S}. Seeds are eaten raw, roasted, used as a substitute for coffee, or made into breads, pancakes, muffins, and other baked goods. They have a rich, nutty, earthy flavor. The yam-like, tuberous roots were a popular item of food with the Aborigines, as was the honey-colored

sap. Australia. CHERIKOFF [Re], CRIBB, ROBINS [Cul, Re]; A79M, I83M{PL}, N84, 033, 094, P5, R15M, R33M, R47, S92

*Brachychiton populneum*-*Brachychilon diversifolium*

*Cola acuminata* - *Abata cola-nut*, *Kola nut* {DF}. When chewed, the caffeine-rich seeds act as a stimulant, retard hunger and fatigue, aid digestion, and increase one's stamina. At first bitter, they modify the sensation of taste so that any food or drink, consumed immediately thereafter, seems sweet. Traditionally, they were an ingredient of a stimulating beverage, usually served hot. An extract, prepared from the dried kernels, is used to flavor carbonated beverages, ice cream, candy, baked goods, and liqueurs. The kernels are white, pink or red. Red ones can be used as a natural food colorant. West Tropical Africa, cultivated. MENNINGER, MORTON 1976, ROSENGARTEN, SCHERY, WILSON, E.G. [Re]; F85{S}, F86G, GO, K18M, L34, N7D

*Cola nitida* - *Gbanja cola-nut* {DF}. The bitter, caffeine-rich seeds are chewed as a fatigue and hunger retarding stimulant. They also have a taste modifying effect, causing foods eaten afterwards to have a sweetish flavor. Seeds are dried, ground into a powder, and made into a hot beverage served with milk and sugar—called *drinking kola* in Jamaica. An extract of the seeds is used as a flavor ingredient in cola drinks and other food products. Fresh seeds are occasionally available at African markets. West Tropical Africa, cultivated. BROUK, LEUNG, MENNINGER, MORTON 1976; E14T, F73D, G73, L181M

*Dombeya rotundifolia* - *Wild pear* {S}. The fruits are edible. Flowers are cooked and eaten as a side-dish to which pumpkin leaves are sometimes added. Tropical Africa. FOX, F., KUNKEL; F85, N84, P17M, S28M

*Guazuma ulmifolia* - *West Indian elm*, *Guasimo* {S}. Green fruits are eaten raw, cooked, crushed in water to make a beverage, or used to flavor other foods. The sap is employed to clarify syrup in the manufacture of sugar. Tropical America. DUKE, GRIME, UPHOF; F85, N84

*Heritiera littoralis* - *Lookingglass tree* {S}. Seeds are eaten with fish. The leaves are used in the preparation of *Onge tea*. Old World Tropics. BHARGAVA, TANAKA; F85

*Hildegardia barteri* - *Bronyadua* {S}. Seeds are eaten raw or roasted, and are said to resemble peanuts in flavor. Also the source of and edible oil. West Tropical Africa. IRVINE 1961, KUNKEL; F85

*Sterculia apetala* - *Panama tree* {S}. The almond-flavored seeds are eaten raw, roasted, or fried. Roasted and ground seeds are mixed with water to form a beverage or sweetmeat. Fruits are also edible. Tropical America. DUKE, KENNARD, TANAKA, VON REIS, WILLIAMS, L.; F85

*Sterculia chicha* - *Maranhao nut*, *Castanha do Para* {S}. Seeds are roasted and eaten or used in lieu of cola nuts. They are said to have the flavor of chocolate or of peanuts. Tropical America. MENNINGER, TANAKA; X88M

*Sterculia foetida* - *Java olive* {S}. Seeds are eaten raw, roasted, or fried. They are oily and have a pleasant, cacao-like flavor. If eaten in too large a quantity, they have a purgative effect. The rootstock of the young plant is rich in starch, has a flavor similar to jicama (*Pachyrhizus erosus*), and can be eaten raw. Leaves are also used for food. Tropics. KENNARD, KUNKEL, MENNINGER, PONG-PANGAN; E29{PL}, F85, N84, 093

*Sterculia lychnophora* - *Poontalai*, *Lu uoi*, *Pang da hai* {DF}. When soaked in water, the seeds swell up to eight times their original volume to yield a transparent edible gel. A cooling beverage, called *Sam-rong* in Cambodia, is made by soaking the seeds overnight, adding sugar and a flavoring such as jasmine or banana water, then blending the contents so the gel is suspended in the liquid. Often combined with basil seeds. Southeast Asia. UPHOF, VAN DUONG; L90G

*Sterculia quadrifida* - *Peanut tree*, *Calool* {S}. The seeds are satin-black and about the size of peanut seeds. They have a nutty flavor, and are good to eat either raw or cooked. Australia. CRIBB; P38

*Sterculia scaphigera* - *Pong tai hai*, *Tai hau lam*, *Bakudai* {DF}. The tegmen of the fruit, when soaked in water, swells considerably to yield a gelatinous mass similar to that of *S. lychnophora*. It is dressed with buckwheat flour, made into soups and refreshing beverages, or used as a garnish for *sashimi*. Southeast Asia. HEDRICK 1919, HSU, TAN [Pre, Re], TANAKA, TSUJI, VAN DUONG; H36, L21T

*Sterculia tragacantha* - *African tragacanth* {S}. Source of a tragacanth-like gum that exudes from the stem, used as an adulterant of *gum arabic* in confectionery. The young leaves are cooked and eaten as a potherb. In Ghana, the leaves are used as wrapping for *dokon*—an acidic, fermented corn dumpling. Tropical Africa. CAMPBELL-PLATT, DALZIEL, UPHOF; F85

*Sterculia urens* - *Gular* {S}. Stems are the source of *karaya gum*, used like gum tragacanth in the preparation of sweetmeats and other foods. Seeds are roasted and eaten or used as a substitute for coffee. Tropical Asia. HEDRICK 1919, SCHERY, TANAKA; F85

*Sterculia villosa* - *Udal*, *Vakenar* {S}. Seeds are eaten after roasting or baking. The bark exudes a gum used as a substitute for gum tragacanth. Roots are also edible. Tropical Asia. BURKILL, TANAKA, WATT; F85

*Theobroma bicolor* - *Peru cacao* {S}. The pulp of the fruit is eaten out of hand. It has a sweet, agreeable flavor, superior to that of *T. cacao*. Seeds are toasted and eaten or used like cacao, yielding an inferior chocolate called *Nicaragua chocolate*, but good *cocoa butter*. Tropical America. DUKE, PESCE, UPHOF, WILLAN, WILLIAMS, L.; R78M

*Theobroma cacao* - *Cacao* {S}. Fermented seeds, called cacao beans, are the source of *cocoa*, *chocolate*, and *cocoa butter*, widely used in confectionery, milk chocolate, pastries, cakes, ice cream, chocolate milk, etc. Cocoa extract is added to candies, baked goods, frozen dairy desserts and liqueurs such as *Crime de cacao* and *Bailey's Irish Cream*. Mexican chocolate and the Spanish *xocolata a lapedra* are flavored with cinnamon. Cocoa is used as a coating for California's famed *Dry Monterey Jack* cheese. Traditionally, cacao was mixed with corn meal and made into various beverages. In Tabasco, ground cacao beans are added to the dough in the preparation of *pozol*, a fermented maize dough. The resulting product is called *chorote*. Pulp of the fruit is sucked as a sweet snack, preserved, crystallized, or made into alcoholic beverages and vinegar. Toasted cacao beans are mixed with mamey seeds in making *texate*, a refreshing beverage. The husk is toasted until black and made into *atole negro*. It also contains a pigment that is said to be useful as a food colorant. Tropical America, cultivated. DUKE, GRIGSON, S. [Re], HUTSON 1995, KENNARD, KRAIG [Re], LEUNQ RAY, C, SCHERY, STEINKRAUS, UPHOF, ZASLAVSKY; A79M, C17{£E}, C34G{£D}, D7{PD}, E8M{PL}, E29{PL}, F85, GO{PD}, G73, G73{PL}, H53M{PL}, I83M{PL}, L55J, M45P{PD}, N84, 093, R78M, etc.

CULTIVARS

**Hawaiian:** Cultivar group developed by Jim Walsh of Hawaiian Vintage Chocolate Company from crosses and selections of Trinitario, Criollo and Forastero types. Selected for trunk and first branch bearing, large seeds, disease resistance and adaptation to weather and elevation. Used for producing Kea'au Estates and Hodge's Estate vintage couverture chocolates. Kea'au Estates, grown near the Kilauea and Hilo areas, has a smooth, silky texture and a rich, earthy berry-like flavor. The Hodge's Estate chocolate is a single estate vintage grown near Kona which has more the flavor of hazelnuts and coffee with overtones of tropical fruit. F21P{PD}

*Theobroma grandiflorum* - *Capu-assu*, *Cupuagu* {S}. The fleshy pulp of the fruit has a pleasant, subacid, aromatic flavor and is eaten fresh or made into jams, tarts, marmalade, sherbets, *refrescos* and



*doces*. Highly prized in the Amazon and Upper Orinoco River regions. Small quantities of the pulp are exported to the United States and Europe where it is mostly used in juice and ice cream. The kernels yield a fat suitable for chocolate manufacture. Brazil. IDONE, MARTIN 1987, PESCE, SCHERY, SMITH, N., UPHOF, WILLAN; 019

## STILAGINACEAE

*Antidesma bunius* - *Bignay, Chinese laurel* {S}. When fully ripe the fruits are slightly sweet and may be eaten raw. Otherwise they are cooked with fish, used in jellies, preserves, fruit punches, syrup and sauces, or made into wine and brandy. Young leaves are eaten raw or steamed and served with rice. They are also mixed with other foods to give a sour flavor. Southeast Asia. KENNARD, MORTON 1987a [Cu, Pro], OCHSE, RICHARDSON, M. [Pre, Re], UPHOF; E29{PL}, F85, N84, 094, P5, R78M

*Antidesma dallachyanum* - *Herbert River cherry, Currant tree* {S}. The fruits, which have a very high vitamin C content, are reddish-purple when ripe, larger and with more flesh than *A. bunius*, and very acid. They are not usually eaten out of hand, but are said to make a deep-red jelly that is equal to that made from the European red currant. Australia. CRIBB, JOHNS, MORTON 1987a, STURROCK; N84, P38

*Antidesma ghaesembilla* - *Black currant tree* {S}. When fully ripe, the reddish-purple fruits are subacid to somewhat sweet. They are eaten raw, used in jams and jellies, or made into *roodjak* with chilis, fish paste, salt, and sugar. Young shoots are eaten as a vegetable or used like tamarind for giving other foods a sour taste. Malaysia to the Philippines. MORTON 1987a, OCHSE; F85, Q46

## STRYCHNACEAE

*Strychnos cocculoides* - *Monkey orange* {S}. Pulp of the fruit is juicy and pleasant to eat, sweeter than *S. spinosa* and hence more popular. Its juice is used fresh, fermented, or made into a refreshing sour-sweet drink. Occasionally the fruit is picked green and ripened by burying it in sand, where it will keep for several months. Seeds may be poisonous if chewed or swallowed. Tropical Southern Africa. FOX, R; N84, S28M

*Strychnos madagascariensis* - *Spineless monkey orange* {S}. The refreshing, acidulous fruits are eaten when ripe or made into drinks. Dried fruits, having the flavor of apricots, are mixed with honey and eaten as a favorite food. They are also ground into a fine meal used for making porridge. Southern Africa. FCX, F., TREGOLD; N84, S28M

*Strychnos potatorum* - *Clearing nut, Neimal* {PD}. The young fruits are occasionally eaten or made into preserves. They are also one of the ingredients of *Raja's Cup*, an Ayurvedic coffee substitute. Tropical Africa, Tropical Asia. FOX, F., HEDRICK 1919, UPHOF; F15M, H14, N84{S}

*Strychnos spinosa* - *Kaffir orange, Natal orange* {S}. Ripe fruits have an agreeable, aromatic, sweet-sour flavor reminiscent of stewed peaches. They can be eaten raw, dried, added to maize porridge, or used to make a refreshing beverage. The leaves are eaten with couscous. Seeds are somewhat poisonous. Drier Tropical Africa. EALZIEL, FAIRCHILD 1930, FCX, F., IRVINE 1961, TREGOLD, VON MAYDELL; E29{PL}, N84, S28M

## STYRACACEAE

*Halesia Carolina* - *Silver-bell tree, Wild olive* {PL}. The ripe fruits are chewed for their acidity. Unripe ones are sometimes made into pickles. Southeastern North America. FERNALD, HEDRICK 1919; A93M, E7M{S}, E87, H4, K38{S}, M77, N37M, N84{S}, R7S{S}

*Halesia tetraptera* - \* *Halesia Carolina*

*Styrax benzoin* - *Sumatra benzoin* {DF}. The bark is the source of a resin, called *benzoin* or *ansokuk*, used to flavor chewing gum,

baked goods, frozen dairy desserts, puddings, soft drinks, candies and chocolates. Malaya. LEUNG, MORTON 1976, TANAKA; E14T, F32D, F85{S}, F86G, GO, J82, K18M, L34, N7D

*Styrax officinalis* - *Storax tree* {S}. Stems and branches yield a highly perfumed, balsamic gum occasionally used as a condiment. Southwest Asia. KUNKEL; G66, 198M{PL}, K63G

*Styrax tonkinense* - *Stam benzoin* {S}. The trunk yields a balsamic resin used by the food industry for flavoring ice cream, baked goods, chocolate glaze, alcoholic and non-alcoholic beverages, chewing gum, etc. Also Southeast Asia. BURDOCK, LEUNG, UPHOF; E14T{PD}, N84

## SYMPLOCACEAE

*Palura chinensis* - \* *Symplocos chinensis*

*Symplocos chinensis* - *Sapphire-berry, Sawa-futagi* {S}. The small, sapphire-blue berries are used in jams, jellies, and sauce. Japan, Korea, cultivated. FREITUS [Re], TANAKA; B68{PL}, C9{PL}, D95{PL}, E7M, I60{PL}, K63G, N84, R88

*Symplocos paniculata* - *Symplocos chinensis*

*Symplocos tinctoria* - *Sweet leaf, Horse-sugar* {PL}. On hot summer days, the leaves are chewed for their pleasantly sweet, slightly acid flavor that is refreshing and relieves one's thirst. North America. FERNALD, GIBBONS 1979; H4, H14M, K63G{S}, N37M, N84{S}

## TACCACEAE

*Tacca leontopetaloides* - *Polynesian arrowroot* {S}. Tubers are sometimes eaten boiled or roasted. A starch extracted from them, called *Tahiti arrowroot* or *Fiji arrowroot*, is used in breads and soups, or it is mixed with papayas, bananas, and pumpkins, flavored with vanilla and lemon and cooked into *poi*. Pacific Islands, cultivated. HERKLOTS, MASSAL, UPHOF; F69{PL}, F85

*Tacca pinnatifida* - \* *Tacca leontopetaloides*

## TAMARICACEAE

*Tamarix aphylla* - *Athel tamarisk, Khora-gaz* {S}. A sweet, manna-like substance that forms on the twigs is used to adulterate cane sugar. The Tuareg eat it with porridge or mix it with water to form a refreshing beverage. North Africa to Southern Asia. DONKIN, HEDRICK 1919; JO

*Tamarix articulata* - *Tamarix aphylla*

*Tamarix canariensis* - *Tamarisk, Manna plant* {S}. The sweet, manna-like substance that exudes from the stems is collected and mixed with flour, sugar or honey, and sweet almonds, formed into cakes, and baked into a kind of sweetmeat. Macaronesia, Mediterranean region. DONKIN, HEDRICK 1919; F85, K38, N84, 053M, 093, P49, Q32, R83{PL}

*Tamarix gallica* - *Tamarix canariensis*

## TAXACEAE

*Taxus baccata* - *English yew* {S}. The bark is used as a substitute for tea. Fruits are sometimes eaten, however the seeds are considered poisonous. Eurasia, cultivated. HEDRICK 1919, KUNKEL, TANAKA; A79M, C9M, G66, K38, K63G, N71M, N84, 053M, 093, P49, Q46, R78

*Taxus cuspidata* - *Japanese yew* {S}. The sweet aril, or fruit pulp, is eaten raw, made into jam, or brewed into wine. Caution is recommended, as the seeds of many species are poisonous. Japan. TANAKA; A79M, B9M{PL}, E97{PL}, G66, 14{PL}, K38, K63G, N84, 093, P5, P49, R78

*Torreya californica* - *California nutmeg* {S}. Kernels are eaten. They also yield an edible oil. Western North America. TANAKA; B94, D95{PL}, D96, G59M, G66, K63G, N84

*Torreya nucifera* - *Kaya, Japanese torrey* {S}. Seeds are eaten raw, roasted, or used in confectionery. They have an agreeable, somewhat resinous taste. Also the source of an edible oil used in cooking. Sometimes found in Oriental markets. Japan, cultivated. MENNINGER, UPHOF; B94, B96{PL}, K63G, N37M{PL}, N84, P49, R78

## TAXODIACEAE

*Cryptomeria japonica* - *Japanese cedar, Sugi* {S}. In Japan, the seasoned wood is used for making casks, vats and kegs in which various foods are aged including miso, soy sauce, sake, vinegar, mirin, umeboshi and pickles. The wood adds a pleasant fragrance to the foods. At one time, the Japanese fish paste known as *kamaboko* was steamed and grilled on fragrant cedar boards. Eastern Asia. BELLEME, SHURTLEFF 1976, TANAKA, TSUJI [Re]; A79M, B32{PL}, B94, B96{PL}, C9M, HS{PL}, H14M{PL}, I83M{PL}, K22{PL}, K38, K63G, N37M{PL}, 053M, 093, P5, Q18, etc.

## TETRAGONIACEAE

*Tetragonia decumbens* - *Sea spinach* {S}. The leaves may be used as a substitute for spinach. Southern Africa. MARTIN 1975; N84, R15M, S92

*Tetragonia expansa* - *Tetragonia tetragonoides*

*Tetragonia tetragonoides* - *New Zealand spinach, Warrigal greens* {S}. The young, succulent leaves and stem tips are an excellent hot weather substitute for spinach. They may be eaten raw, steamed, boiled, stir-fried, creamed, served with mushrooms, made into a quiche, prepared au gratin, etc. Australia, New Zealand, cultivated. CLARKE [Re], HALPIN, ROBINS [Cul, Re], VILMORIN [Cu]; B78, C44, D11M, E24, F70, F82, G16, G68, J73, K22, L7M, N79{PR}, N79{PD}, N84, 032M{PR}, R47, TIM, etc.

## CULTIVARS

Maori: Heirloom strain from the Maoris of New Zealand. K49M

## THEACEAE

*Adinandra bockiana* - *Wong-pan-ch'a-shue* {PL}. The black fruit is edible. Also used as a substitute for tea, although Altschul does not indicate which part of the plant is used. Southern China. ALTSCHUL, VON REIS; N37M

*Adinandra milletii* - \* *Adinandra bockiana*

## TILIACEAE

*Corchorus acutangulus* - \* *Corchorus aestuans*

*Corchorus aestuans* - *Rumput bayam rusa* {S}. The leaves are eaten in salads, as a potherb, or used for vegetable bouillon. Old World Tropics. BURKILL, DALZIEL, HEDRICK 1919, TANAKA; F85

*Corchorus capsularis* - *Jute* {S}. Young leaves and shoots are steamed or boiled and eaten with rice. Leaves are also used as a substitute for tea. Tropics, Subtropics. BURKILL, JACQUAT, TANAKA, WATT; F85, N84, N91

*Corchorus olitorius* - *Jew's mallow, Bush okra, Melokheya, Saluyot* {S}. Very young leaves are used in salads. Older leaves and shoot tips are an excellent hot weather spinach substitute, being high in protein. A popular soup in Egypt and the Near East is made from finely hashed melokheya spiced with fried garlic and coriander, and cooked with broth of rabbit, chicken, mutton, or goose. The dried leaves, which are available in Middle Eastern stores, are commonly used to thicken soups and stews, or they can be made into tea. In the Sudan, fresh or dried leaves are mixed with salt, spices, oil, meat and powdered okra to form *mulah*, a sauce or relish served with staple porridges. Immature fruits are used in salads or as a potherb. Reportedly dates back to the Pharaohs. Tropics, Subtropics. DARBY, DIRAR 1993, DUKE, GELLE, KHALIL [Re], MALLOS [Re], MARTIN 1975, TANAKA, VAN EPENHUHSEN, VILMORIN [Cu]; F80, F85, G33, L50M{DF}, L77D, N84, PIG,

R47, S70

*Corchorus trilocularis* - *Al moulinouquia* {S}. Leaves are used as a potherb. In Malawi they are cooked with native potashes, the resulting product being mucilaginous and well liked. Cultivated in some parts of Africa and Arabia. Tropics. FOX, F., HEDRICK 1919, UPHOF, ZEVEN; F85

*Grewia asiatica* - *Phllsa, Dhamin* {S}. The subacid fruits are eaten raw, preserved, as a flavoring for sherbets, made into refreshing drinks, or fermented into an alcoholic beverage. A mucilaginous extract of the bark is commonly used for clarifying sugarcane juice in the manufacture of *gur*. Tropical Asia. HEDRICK 1919, KENNARD, MORTON 1987a [Cu, Pro], SINGH, S., TANAKA; F85, N84, P38, Q12, R50{PL}

*Grewia betulifolia* *Grewia tenax*

*Grewia caffra* - *Wild raisin* {PL}. The small yellow fruits, about the size of a pea, are eaten after ripening when they are sweet to chew, even when dry. Southern Africa. FOX, E; C9M{S}, F53M, I8, M7M, N84{S}

*Grewia occidentalis* - *Cross berry* {S}. Ripe fruits are purplish and quite pleasant to eat raw. The juice is eaten fresh or fermented into an alcoholic beverage. Southern Africa. FOX, F.; N84, 053M, 093, Q41, S28M

*Grewia subinaequa*Us - \* *Grewia asiatica*

*Grewia tenax* - *Chari, Tarakat* {S}. The orange-red, acid fruits are eaten, having somewhat the flavor of hazelnuts. In the Sudan, they are added to the dough in the preparation of *medida*, a thin fermented porridge made from various grains. North Africa to Arabia. DIRAR 1993, TANAKA, UPHOF, WATT; F85

*Tilia americana* - *American basswood* {PL}. The fragrant flowers are used as a salad vegetable or brewed into a sweet, well-flavored tea. A paste of the ground fruits and flowers is said to resemble chocolate in texture and taste. Young leaves are chewed or added to salads and sandwiches. The sweet sap can be boiled down to sugar and syrup. Flowers are the source of a light-colored, good quality honey with a strong, distinctive flavor. North America. CRANE 1975, FERNALD, GIBBONS 1966b, GIBBONS 1979, PELLETT; B9M, C9M{S}, C61G{PD}, D17{PD}, D45, D95, G58{PD}, G66{S}, H4, H49, I66M{PD}, K38{S}, K54{PD}, K64, K89, M69M, 093{S}, etc.

*Tilia argentea* -> *Tilia tomentosa*

*Tilia x europaea* (T. cordata x T. platyphyllos) - *Common linden, Lime tree* {S}. The cooling, glutinous leaves are eaten raw in salads and sandwiches. Flowers have a honey-like fragrance and make an excellent tea that is popular in France, where it is sold under the name of *tilleul*. They are also used as a vegetable or brewed into wine. Linden honey, light in color and of pronounced flavor, was used in Russia to make a mead-like beverage called *Lipez*. The sweet sap is a source of sugar. Also the source of an edible manna. Natural hybrid. Europe. CRANE 1975, DONKIN, GAYRE, LEGGATT, MABEY, MACNICOL [Re], MARCIN, MICHAEL [Re], TANAKA; A49D{DF}, D95{PL}, H15T{PD}, 093, Q32

*Tilia tomentosa* - *Linden, Lime tree* {S}. Dried leaves are sometimes used as an adulterant of marjoram. Eurasia. BROUK; B9M{PL}, D95{PL}, G66, G66{PL}, K38, N84, 053M, 093, P49, Q32, R78

## TRAPACEAE

*Trapa natans* - *Water caltrop, Jesuit nut, Water chestnut, Ling-chio* {PL}. The sweet seed kernels are eaten raw, roasted, boiled, fried like a vegetable, preserved in honey and sugar, candied, or ground into flour for making bread and sweet puddings. They have a very agreeable and delicate flavor, very similar to that of boiled chestnuts. In Italy, they are the main ingredient of a famous *risotto*.

Available at Chinatown markets for the mid-autumn moon festival. Usually eaten cooked because of the risk of intestinal parasites from contaminated water. Eurasia, naturalized in North America. BIANCHINI [Re], COST 1988 [Pie], DAHLEN [Pre, Cul], DEVI [Re], FERNALD, HEDRICK 1919, PASSMORE, ROSEN-GARTEN, ROSS [Re], SIMMONS 1972 [Cu], TANAKA; C74, 174, P59M

#### CULTIVARS {S}

**Su Zhou:** An improved cultivar with red-colored fruit. 054

### TRILLIACEAE

*Medeola virginiana* - *Indian cucumber-root* {PL}. The white rhizomes are crisp and tender, with the aroma and taste of cucumbers. They are eaten raw as a nibble, boiled and served with butter, mixed into tossed salads dressed with oil and vinegar, or made into dill pickles. Eastern North America. FERNALD, GIBBONS 1966b, MEDSGER; 144, K22, L59P, M77M, N7T, N84{S}

*Trillium erectum* - *Bed trillium* {PL}. Young, unfolding leaves are an excellent addition to salads, tasting somewhat like raw sunflower seeds. They can also be used as a potherb served with butter or vinegar. Eastern North America. PETERSON, L.; BO, C9, D75M, E33M, H49, 144, L88M, M77M, N7T, N9M, N9M{S}, N84{S}

*Trillium grandiflorum* - *White trillium* {PL}. Tender young leaves are recommended as a cooked green vegetable. Eastern North America. UPHOF; A61, BO, C9, D75M, E33M, H49, I31{S}, K57, K63G{S}, L88M, N7T, N9M, N9M{S}, N84{S}

*Trillium sessile* - *Toadshade, Sessile trillium* {PL}. Before unfolding, the leaves may be added to salads, often tasting vaguely like raw sunflower seeds. Or they can be boiled for ten minutes and served with butter or vinegar. Eastern North America. PETERSON, L.; A61, A61{S}, BO, C9, E33M, N7T, N9M, N9M{S}, N84{S}, R52

*Trillium undulatum* - *Painted trillium* {PL}. Young, unfolding leaves make a good potherb. Boil in salted water for ten minutes and serve with butter and vinegar. Or they can be added to vegetable soups. Eastern North America. CROWHURST 1972; BO, E33M, H29M, H49, L59P, M82, N7T

### TROPAEOLACEAE

*Tropaeolum majus* - *Nasturtium, Indian cress* {S}. The leaves have a tangy, watercress-like flavor and are used in salads, sandwich spreads, vegetable dishes, or are stuffed like grape leaves. Flowers have a similar flavor and use and also make an attractive garnish, or can be added to vinegars. Both the flower buds and young fruits may be used as substitutes for capers. Mature seeds are eaten roasted or make a good pepper substitute. Andean South America, cultivated. HALPIN [Cul], LARKCOM 1984, LEGGATT [Re], MACNICOL, TANAKA, VILMORIN [Cu]; C9M, E7M, F44, G80{PL}, H49, J73, K53, M46

#### CULTIVARS

**Empress of India:** A non-trailing, single cultivar with brilliant vermilion-red flowers and small, neat red leaves which are especially attractive in salads. Grows in cascading clumps, making it an excellent cover-up for bare areas, walkways or borders, as well as containers. B75, C53, D68, D92M, E7M, E33, 139, 191, J5M, K23{PL}, K49M, K66, L42, L91M, N84, Q34, etc.

**Whirlvbird:** Free-flowering dwarf cultivar, includes seven different colors: cream, tangerine, soft salmon, bright gold, deep mahogany, bright scarlet, and cherry-rose. Two and one-half inch, semi-double blooms, borne well above the compact foliage; spurless, making them easier to clean for culinary purposes. Perfect for baskets or in beds. A16, C44, C92, DI 1M, D68, E33, E63D, F13, F70, G87, 191, K66, L42, L89, N84, etc.

*Tropaeolum minus* - *Dwarf nasturtium* {S}. Leaves and flowers are eaten in salads or used for garnishing. Unripe fruits and flower-buds are pickled in vinegar and used for seasoning, like capers. For pickling, this species is preferred, as it flowers more abundantly than

*T. majus*. Peru. HALPIN, HEDRICK 1919, VILMORIN [Cu]; D92M, G80{PL}, J82, S55

*Tropaeolum tuberosum* - *Anu, Ysahu, Mashua* {PL}. Tubers may be boiled for ten minutes and eaten as a vegetable or added to stews. When boiled they are watery, rather peppery, and have a pleasant vanilla-like odor. They are also frozen after being boiled, and are then considered a delicacy. Or they are eaten in a half-dried state, after having been exposed to the air for some time. The tender young leaves and flowers are also eaten. Peru, cultivated. HERKLOTS, HODGE 1951, NATIONAL RESEARCH COUNCIL 1989, ORGAN, VILMORIN [Cu]; A61, E13G{PR}, E33, E61, F35M, L55J{S}, M37M, N84, Q49M, R53M

#### CULTIVARS

**Ken Aslet:** Large-tubered cultivated clone that appears to be day-neutral. Yellowish tubers, attractively mottled with crimson. Orange-red flowers. Grows to 10 feet in length. Named after the former superintendent of the Wisley rock garden in England. PHILLIPS; N84, R77

**Muru:** White tubers splashed with purple. In Peru, "muru anu" is a local descriptive name for tubers with spotted skin. 174

**Puca:** Red or purplish-red tubers. In Peru, "puca anu" is a local descriptive name for tubers with reddish skin. 174

**Saoullu:** Yellow tubers. In Peru, "sapullu anu" is a local descriptive name for tubers with yellowish skin. 174

**Yurac:** White tubers. In Peru, "yurac anu" is a local descriptive name for tubers with whitish skin. NATIONAL RESEARCH COUNCIL 1989; 174

### TURNERACEAE

*Turnera diffusa* - *Damiana* {DF}. The herb is used in the production of a sweet, yellow liqueur called *Damiana*, which Mexicans drink in hot, cinnamon-flavored tea or on the rocks with a twist of lime. It is also commonly used instead of, or in combination with, Cointreau in *margaritas*, especially in Baja California. Dried leaves are used as a substitute for Chinese tea. Tropical America. HUTSON 1995 [Re], UPHOF; E14T, F73D, F73D{PL}, F86G, I81M, I81M{S}, J58, J82, K18M, L34, M82{PL}, N42{PL}

*Turnera ulmifolia* - *Damiana* {PL}. Dried leaves are used as a substitute for tea or for flavoring. Tropical America. KUNKEL, PEREZ-ARBELAEZ; M82, N84{S}

### TYPHACEAE

*Typha angustata* - \**Typha domingensis*

*Typha angustifolia* - *Narrow-leaf cattail* {PL}. The rootstock is boiled and eaten like potatoes, or macerated and boiled to yield a sweet syrup. It also yields a high-protein flour used to make cattail cookies. The pith near the sprouting new stem is roasted or boiled. Young shoots are boiled and eaten raw. The young flower spikes are eaten raw, cooked, or made into soup. Pollen of male spikes can be used to make bread or porridge. Seeds have been roasted and eaten. Widespread. MORTON 1977; C43M, C74, G26, G85, J7M, M39, M72, M73, M73M, N3M, N9M, N9M{S}, N84{S}

*Typha domingensis* - *Cumbungi, Tabua* {S}. Young shoots are eaten raw or cooked, having a delicate flavor reminiscent of artichokes or hearts of palm. The stems have more of a leek-like taste and are excellent in soups and salads. Rhizomes are baked and eaten and also yield a starch. The pollen can be added to breads, cakes and biscuits. Widespread. CHERIKOFF, ROBINS [Cul, Re], TANAKA; C74{PL}, N84

*Typha elephantina* - *Elephant grass, Hagla, Pun* {S}. In Sind, India, a kind of bread called *boor, booree* or *booratoos* is made from the pollen, commonly eaten by the natives. Leaves are also edible. Tropical Asia. HEDRICK 1919, MARTIN 1975, UPHOF; F85

*Typha latifolia* - *Common cattail* {PL}. Young, green flower spikes are boiled and eaten like corn on the cob with plenty of butter, or they may be scraped from the cob and baked in a casserole. The pollen can be mixed with wheat flour in pancake and muffin recipes. The rootstocks yield a flour that can be substituted for half the wheat flour in breads, cookies, biscuits, and muffins. Young, bulb-like sprouts are eaten boiled or made into pickles. Tender, inner heart of the stem, called *Cossack asparagus*, is eaten raw or cooked. Widespread. ANGIER [Re], FERNALD, GIBBONS 1962, HARRINGTON, H. [Re]; C43M, E33M, G26, G85, H73{PR}, J7M, J41M, M39, M72, M73, M73M, N3M, N9M, N9M{S}, Nil, N71M{S}, 053M{S}, etc.

*Typha laxmannii* - *Scented flag* {PL}. Rhizomes are the source of a meal which is made into cakes. They are also used as a vegetable. Eurasia. HEDRICK 1919; C74, G85, H4, H30, K85M, M15, M72, N3M, N84{S}, Q24{S}, R49

#### UAPACACEAE

*Uapaca guineensis* - *Sugar plum* {S}. The fruit is edible, having a flavor reminiscent of the medlar with a hint of apple. Tropical Africa. DALZIEL, DANFORTH, UPHOF; Y40

*Uapaca kirkiana* - *Wild loquat, Mohobo-hobo* {PL}. Pulp of the fruit is juicy, honey-like, wry tasty, and somewhat reminiscent of pears. It is eaten fresh, brewed into a very pleasant wine, or used for making cakes which are fried and eaten. Juice of the fruit is mixed with sorghum meal to form a thin, orange-flavored porridge called *mutundavaira*. Dried fruits have a toffee-like flavor. One of the most popular wild fruits of Zimbabwe, Zambia, Malawi and Mozambique. Sold in local markets. Recommended for cultivation. Tropical Africa. FOX, E, TREDGOLD; M17

#### ULMACEAE

*Ulmus pumila* - *Siberian elm, No-nire* {PL}. Fruits are made into sauce and wine. Young leaves and budlings are eaten. The bark is processed into noodles. Eastern Asia. TANAKA; C9M{S}, F51, G66, G66{S}, H49, 153M, 178, K38{S}, K63G{S}, M69M

*Ulmus fulva* - \* *Ulmus rubra*

*Ulmus rubra* - *Slippery elm, Red elm* {DF}. The sweet, mucilaginous inner bark is occasionally chewed for its pleasant flavor. Indians of the Missouri River Valley region once cooked it with buffalo fat, to give the rendered tallow a pleasing flavor and prevent rancidity. Kiowa Indians brewed it into a tea. The powdered bark is popular with natural foods enthusiasts for fortifying smoothies and nut milks. It adds demulcent and nutritive properties. Can also be used as a breading for fried fish. Eastern North America. ANGIER, COLE, C. 1990 [Re], COLE, C. 1993 [Re], FERNALD, GIBBONS 1966, HEDRICK 1919, MEDSGER; A49D, B21P, D26G{S}, D56M{S}, E14T, F37T, F86G, J82, K18M, K22{PL}, K63G{S}, K89, L34, M15M, M82M, N40M{S}, etc.

#### URTICACEAE

*Debregeasia edulis* - *Yanagi-ichigo* {S}. The yellow, globose fruits are pleasantly sweet and are said to resemble strawberries. Harvesting is difficult because the fruit is tender and breaks apart easily. The fruit remains on the bush for several weeks, providing a beautiful contrast to the silvery, ornamental foliage. Japan. RILEY 1982, TANAKA, UPHOF; F85

*Parietaria officinalis* - *Pellitory* {PL}. The young plants, before blooming, are occasionally cooked and eaten as a spinach-like vegetable. They make a green cooking water which is an excellent stock for risotto. Europe. CRETTE, HEDRICK 1919; M82

*Pipturus argenteus* - *Native mulberry* {PL}. The true fruits of this coastal tree are small brown structures partly embedded in a soft, translucent white body. This fleshy part is sweet and juicy, and makes excellent eating. Bark and leaves are also used. Australia, New Guinea. CRIBB, POWELL; N79

*Urtica dioica* - *Stinging nettle* {S}. Young leaves make a very palatable and nutritious potherb. They are also pureed, creamed, used in soups and pasta dishes, made into a beer, or mixed with leeks, broccoli, and rice to form nettle pudding. In England, nettle leaves are used for wrapping a mold-ripened cheese called *Cornish Yarg*, the leaves giving a distinctive herbal flavor to the cheese. The juice of the leaves, or a decoction of the herb, is used as a rennet in preparing cheeses or junkets. Nettles may be blanched and eaten like seakale. Dried leaves are brewed into an herbal tea. Eurasia, naturalized in North America. FERNALD, GIBBONS 1966b [Pre, Re], GRAY, P. [Cul, Re], GRIEVE [Re], HALPIN [Cu, Cul], MARGIN, SEKERS; A2, C43M{PL}, E61{PL}, F80, G27{PD}, H46{DF}, H73{PR}, J82, J82{PL}, K22, L3J{DF}, M16{PL}, N71M, N84

*Urtica urens* - *Dog nettle* {S}. Young shoots, leaves, and stem tops are eaten as potherbs or mixed with meal as a relish. Cosmopolitan. CRIBB, FCK, E, MARTIN 1975, UPHOF; D56M, F68T, F80, F86G, N40M, N71M, N84

#### VALERIANACEAE

*Centranthus macrosiphon* - *Long-spurred valerian* {S}. The leaves are similar to corn salad and are used in salads in some countries, especially France. They have a slight bitterness which gives them a more distinct and agreeable flavor. Southern Europe. HEDRICK 1919; N84

*Centranthus ruber* - *Red valerian, Jupiter's beard* {PL}. Young leaves are eaten raw in salads and sandwiches, though they are somewhat bitter used in this way. Otherwise they may be boiled and served with butter as greens. Mediterranean region, cultivated. KUNKEL, MABEY; B49, C9, D92M{S}, D95, F80{S}, H63, J37M, K53{S}, L66, N84{S}, R53M{S}

*Fedia cornucopiae* - *African valerian* {S}. The leaves are eaten raw in salads or used as a potherb. Will quickly form rosettes of leaves in hot weather when corn salad is not available. Mediterranean region. HEDRICK 1919, UPHOF, VILMORIN [Cu]; D92M, N84, 053M

*Patrinia scabiosaefolia* - *Ominaeshi* {PL}. Young plants, stem tips, and flower buds are eaten steamed, fried, oil-roasted, preserved, in soups, or parboiled and dried for later use. Eastern Asia. TANAKA; B28, B77, H63, I37M, K22, M77M, M82, N37M, N84{S}, Q24{S}

*Patrinia villosa* - *Otokoeshi* {PL}. Young plants and flower buds are eaten as a vegetable, either fried, preserved, or as a potherb. Eastern Asia. TANAKA; D95, E48, I37M, M77M, N37M, N84{S}

*Plectritis congesta* - *Pink plectritis, Oregon corn salad* {S}. The small, basal leaves are eaten raw in salads like corn salad, *Valerianella locusta*. Pacific Coast of North America. N7G

*Valeriana ciliata* - *Tobacco root* {S}. The odoriferous roots are prepared for eating by baking in underground ovens for two days. They are then eaten as a vegetable, used in soups, or made into a bread. North America. FERNALD; J43

*Valeriana officinalis* - *Garden heliotrope* {PL}. The root extract and essential oil are used to flavor ice cream, baked goods, condiments, soft drinks, beer, and liqueurs. Also used, in moderation, as an herbal tea. Eurasia, cultivated. MARCIN, MORTON 1976; A97, C9, C67M, D92M{S}, F80{S}, K22, K53{S}, M53, N9M, N9M{S}, N19M, N42, 053M{S}

*Valerianella eriocarpa* - *Italian corn salad* {S}. The young leaves are used in salads. When grown in rich soil, larger leaves are produced that may be used as a potherb. Does not run to seed as readily as the common corn salad, but is less hairy. Mediterranean region. HEDRICK 1919, VILMORIN [Cu]; E83T

## CULTIVARS

**Piedmont:** (Di Piemonte, Seme Grosso di Olanda) Forms small rosettes with long, bright deep-green, spoon-shaped leaves. Resembles tender young lettuce in flavor, but crunchier in texture. Can be harvested at the four leaf stage onward. Good heat resistance, but tender to frost. Sown from July to October. B8, C53, Q11M

*Valerianella locusta* - *Corn salad, Fetticus, Mache, Nut lettuce* {S}. The leaves are very mild in flavor, with a delicate quality that makes them seem to melt in the mouth. Widely used in salads where they compliment strongly flavored greens like cress and dandelion, nut oils, and crisp root vegetables like carrots and radishes. Also used in potato salad, soups, vegetable purees, omelettes, etc. The flowers and flower-stalks are also eaten. Eurasia, cultivated. CUSUMANO [Cul, Re], HALPIN, LARKCOM 1984, LAUNERT, SCHNEIDER 1986 [Re], VILMORIN [Cu]; B49, E5T, F80, F82, H25M{PR}, K22, N40{PR}, R47. (for cultivars see Com Salad, page 349)

*Valerianella olitoria* - *Valerianella locusta*

## VERBENACEAE

*Aloysia triphylla* - *Lemon verbena* {PL}. Young leaves are occasionally eaten as a spinach. Otherwise they are used to impart a lemon flavor to fruit cups, jellies, cold drinks, salads, omelettes, salad dressings, vegetable dishes, etc. The leaves or flowers can be brewed into a refreshing herbal tea, that made from the flowers having a sweeter flavor. Temperate South America, cultivated. HUTSON 1987 [Re], KUNKEL, LATHROP [Cu], MARCIN, MORTON 1976, ROOT 1980b; A7{DF}, C43M, C67M, E14T{DF}, G84{DF}, G96, J66, J76, K18M{DF}, K22, K85, M53, N19M

*Clerodendrum serratum* - *Senggunngu* {S}. Young, bitter stem tops and inflorescences are eaten raw as a side-dish with rice. Or they are roasted briefly and served with hot pepper sauce. Southeast Asia, Malaysia. OCHSE, TANAKA; F85

*Gmelina arborea* - *Malay bushbeech* {S}. The Dai people of Xishuangbanna, China collect the flowers and mix them with glutinous rice to make a delicious cake-like festive dish eaten on the traditional New Year. The yellow fruits are also edible. Tropical Asia. HEDRICK 1919, ZAIFU; G66, N84, 053M, 093, P5, P17M, P38, Q12, Q18, Q46

*Lippia alba* - *Licorice verbena, Anise verbena* {PL}. The fresh leaves have an intense anise aroma and are prized for flavoring soup, meats, fish, and for making a pleasant tea. In India, they are used as a vegetable. Tropical America. MORTON 1976, TANAKA; F85{S}, H4, J82, M15T, M82

*Lippia citriodora* -> *Aloysia triphylla*

*Lippia dulcis* - *Phyla scaberrima*

*Lippia geminata* - *Lippia alba*

*Lippia graveolens* - *Mexican oregano, Te de pais* {S}. The leaves have an intense aroma of oregano and are preferred by many over European oregano. They are used for flavoring fish, sausages, *pozole*, tomato sauces\* and many other dishes that require a strong oregano flavor. Dried leaves may be brewed into an herbal tea. Sold in specialty stores that carry Mexican and Southwestern foods. Tropical America. MORTON 1976, UPHOF; A7{DF}, C43M{PL}, E91G, I16{DF}, J66{PL}, K18M{DF}, K49M, L34{DF}, N19M{PL}

*Lippia micromera* - *Dominican oregano, False thyme* {PL}. The small, thyme-scented leaves and young stems are used for flavoring soups, salads, meats and other foods. Cultivated locally in Hawaii, Guyana and Trinidad. South America. MORTON 1976, OMAWALE, TANAKA; M82

*Nashia inaguensis* - *Moujean tea, Pineapple verbena* {PL}. Fresh or dried leaves, with a very fruity scent reminiscent of pineapple, are

brewed into a pleasant flavored tea. Or they are brewed with other teas to add a vanilla-like flavor. Bahamas, cultivated. BUCHANAN; C43M, E48, F93G, G96, H94M, K57, L90J, N84

*Nyctanthes arbor-tristis* - *Tree of sadness* {S}. Flowers are the source of a saffron-yellow dye used as a colorant for food. Southern Asia. CORREA, UPHOF; A79M, D56M, F85, N84, 093, P5, Q12, Q18, Q46

*Phyla alba* - *Lippia alba*

*Phyla scaberrima* - *Aztec sweet-herb, Orozuz, Sweet lippia* {PL}. The aromatic leaves are occasionally eaten in salads, or used as a condiment. More often they are chewed for their intensely sweet flavor or used to sweeten teas and other beverages. The licorice-flavored roots are chewed. Central America, Caribbean. KUNKEL, WILLIAMS, L.; C43M, C43M{S}, E48, F37T, F93G, G96, H94M, 112, 174, J76, J82, L90J, L94M, M82, R47{S}, etc.

*Stachytarpheta indica* - *Stachytarpheta jamaicensis*

*Stachytarpheta jamaicensis* - *Bastard vervain, Blue porterweed* {S}. Dried leaves are used as a tea or to adulterate China tea, and have been exported to Europe as *Brazilian tea*. Stem tops are used in Java as a flavoring. In Central America, a foaming, porter-like brew is made from the leaves. Caribbean region. BURKILL, MORTON 1977, TANAKA, UPHOF; N84, 053M

*Tectona grandis* - *Teak, Djati* {S}. The leaves are added to the water in which unripe jackfruit is boiled prior to being used in the famous Javanese dish *Gudeg*—chicken with jackfruit. The leaves give the fruit a fresh, reddish color. In Germai, boiled teak-wood shavings yield a red dye used for coloring Easter eggs. *Arrack* is often matured in teak wood to develop a distinctive flavor. The leaves act as a host for *Rhizopus* spores in *tempeh* manufacture. Tropical Asia. CAMPBELL-PLATT, MOLLISON NEWALL, OWEN [Pre, Re]; F85, N84, 053M, Q46

*Verbena hastata* - *Blue vervain* {S}. Leaves are used as a tea substitute. The pleasantly bitter seeds are roasted, ground into a meal, and used for fried cakes and *pinole*. This meal can be leached to remove some of the bitterness. North America. FERNALD, GIBBONS 1979, KIRK; C43M, C43M{PL}, D92M, E61{PL}, F37T{PL}, F80, G47M, H61M, J39M, J39M{PL}, J41M, J41M{PL}, J82{PL}, 053M

*Verbena officinalis* - *Vervain, Kuma-tsuzum* {PL}. Young leaves are parboiled, seasoned and eaten. Also used as a tea substitute. The flowers are fermented into wine or used as a garnish. An extract of the plant flavors the French liqueur *Verveine du Velay*, which comes in both green and yellow versions. In Turkey, salt flavored with vervain flowers is popular. Eurasia. KUNKEL, MACNICOL [Re], RAY, G, TANAKA; A2{S}, A97, C43M, D92M{S}, F35M, G40{PD}, I39{S}, J76, J82, J82{S}, K54{PD}, K85, 053M{S}

*Vitex agnus-castus* - *Chaste tree, Monk's pepper* {S}. The seeds are used as a substitute for pepper. Leaves are also employed as a spice. Forms one of the ingredients of the legendary Moroccan spice mixture *ras el hanout*. Mediterranean region, cultivated. KUNKEL, UPHOF, WOLFERT 1973; A49D{DF}, B21P{DF}, C9{PL}, C9M, C43M{PL}, F80, F85, H4{PL}, K38, N37M{PL}, N84, 053M, P17M, R47

*Vitex cannabifolia* - *Vitex negundo van cannabifolia*

*Vitex cienkowskii* -> *Vitex doniana*

*Vitex doniana* - *Black plum, Prune noire* {S}. The sweet fruit pulp, having somewhat the flavor of prunes, is eaten fresh, mixed with other fruits or made into sweetmeats and beverages. Young leafy shoots are eaten as a potherb or used for sauces. The leaves also furnish a substitute for tea. Tropical Africa. DALZIEL, MARTIN 1987, UPHOF, VON MAYDELL; F85

*Vitex negundo* - *Wu-chih-kan* {S}. Both the roots and the leaves are made into a tea-like beverage. The seeds are occasionally used as

a condiment. China. KUNKEL, TANAKA; A93M{PL}, C36IPL}, C43M, C43M{PL}, F80, F85, G66, J82, K38, M69M{PL}, M82{PL}, N40M, N84, 093, Q12, Q46, etc.

*Vitex negundo* var. *cannabifolia* - *Ninjin-boku* {PL}. The dried seeds are ground into a flour which is mixed with wheat flour and made into noodles. Eastern Asia. TANAKA; H4,174

#### VIOLACEAE

*Viola canadensis* - *Canada violet* {PL}. Young leaves and flower buds are eaten raw in tossed salads. When boiled as potherbs, the leaves and flowers are mild-flavored and are best mixed with other greens of more pronounced taste. The flowers can be candied like rose petals and have been used to give flavor to vinegar. Leaves make a good substitute for tea. North America. HARRINGTON, H.; D75M, E33M, E63M, H49, 144, J39M, K22, K85, M82, N9M, N9M{S}, N37M, N84{S}

#### *Viola cucullata* - \**Viola sororia*

*Viola odorata* - *Sweet violet* {S}. Young leaves are eaten in salads and soups, or dipped in batter and fried. Flowers are candied, used as garnishes, made into syrup, jellies, and marmalade, or added to gelatins, ices, vinegar, honey, wines, and salad dressings. Leaves and flowers can be used to make a soothing tea. The leaf extract is employed to flavor ice cream, candy, and baked goods. Macaronesia and Eumsia. BRYAN [Cul, Re], LATHROP, LEGGATT [Re], MACNICOL [Re], MORTON 1976; D92M, E7M, E63M{PL}, F80, H25M{PD}, J66M{PD}, K85{PL}, M98{PL}, N9M, N9M{PL}, N19M{PL}, N71M, N84, 053M

*Viola papilionacea* - *Blue violet* {PL}. The leaves, rich in vitamins A and C, are gathered when young and cooked and served like spinach. They are especially good when mixed with watercress, peppergrass, *Barbarea*, shepherd's purse, or other members of the mustard family. Flowers are made into jams, jellies, sweetmeats, syrup, and aspic salads. North America. CROWHURST 1972, GIBBONS 1966b [Pre, Re], KINDSCHER, ZENNIE [Nu]; E33M, F51, H61M{S}, J39M, J42, M77M, M82, N7T, N9M, N9M{S}

*Viola pedata* - *Birdfoot violet*, *Wild okia* {PL}. Young leaves can be added to salads, boiled or steamed to make a palatable cooked green, or added to soups as an okra-like thickener. Dried leaves are made into tea. The flowers can be candied. North America. PETERSON, L.; BO, C9, D75M, E33M, E63M, H49, J39M, J40, J43{S}, M82, N7T, N9M, N9M{S}, N84{S}

*Viola sororia* - *Marsh blue violet*, *Wild okra* {PL}. Tender young leaves, stems and flowers can be added to salads or cooked as potherbs. Because of their mucilaginous qualities, the leaves are occasionally used as a thickener for soup. North America. CROWHURST 1972, FERNALD, PETERSON, L.; D75M, E33M, E63M, H63, K22, K63G{S}, L91M{S}, M82, N84{S}, Q24{S}

*Viola tricolor* - *Johnny-jump-up*, *Heartsease* {S}. The small, fragrant flowers are eaten in salads, tossed into mesclun mixtures, or used as an attractive garnish. They can be frozen in ice cube trays and then added to punch bowls. Eurasia, cultivated. LEGGATT [Re], MORSE [Re]; A53M, E63D, I63Z, K66, M82{PL}, N71M, N84

*Viola x wittrockiana* - *Pansy* {S}. The flowers and leaves, stronger in flavor than other violets, are eaten in salads, desserts, soups, iced drinks, candied, or used as a garnish. Fresh or dried flowers can be used for tea. BRYAN [Cul, Re], LARKCOM 1984, LEGGATT [Re], MACNICOL [Re], REILLY; A25, B77M, C69, D68, F35M{PD}, G27M, G82, H57M, H61, H85M, H95, 191, J20, K49M, L42, M49, M95M, etc.

#### CULTIVARS

**Gourmet Brand Salad Mixture:** Large flowered, early-blooming pansy mixture selected to provide a large number of flowers over the longest harvest season. E91G

#### VITACEAE

#### *Cissus capensis* - *Rhoicissus capensis*

*Cissus discolor* - *Trailing begonia*, *Banerg* {PL}. Young stem tips and leaves are used for giving dishes an agreeable, sour taste. The leaves can also be eaten raw. Tropical Asia. BURKILL, OCHSE; F85{S}, E48, G96,157, N84

*Cissus quadrangularis* - *Edible-stemmed vine* {S}. Leaves and shoots are used in the preparation of *papadums* and curries. The fruits are edible. Tropical Asia. BURKILL, HEDRICK 1919, TANAKA, WATT; AOM{PL}, E48{PL}, F85, N84, P5, S28M

*Rhoicissus capensis* - *Cape wild grape* {S}. The purplish-black fruits are used for making jellies, said to be of brilliant color and excellent flavor. Young leaves and shoots are cooked and eaten. Southern Africa. FCK, F., HEDRICK 1919, TANAKA, UPHOF; N84, S28M

#### *Rhoicissus tomentosa* - *Rhoicissus capensis*

*Tetragium harmandii* - *Ayo* {PL}. The sour leaves and fruits are used to color foods. Fruits are cooked with other foods to add flavor or they are made into jellies. Southeast Asia to the Philippines. BROWN, W., TANAKA, UPHOF; E48

*Vitis aestivalis* - *Summer grape*, *Pigeon grape* {PL}. Fruits are eaten raw or used to make juice, jellies, jams, conserves, pies, and wines. Dried fruits are eaten as snacks or in baked goods. The stems yield a sweet, watery sap that is potable. North America, cultivated. TURNER 1979 [Re]; E29, K63G{S}, N84

*Vitis amurensis* - *Amur River grape* {S}. The fruits are eaten raw or are manufactured into juice and wine. Leaves are eaten as a boiled vegetable. Withstands temperatures of -40°C., making it a possible source of winter-hardiness for *V. vinifera*. Eastern Asia, cultivated. TANAKA, UPHOF, ZEVEN; D95{PL}, E7M, G66, K63G, P49

*Vitis berlandieri* - *Spanish grape* {S}. Fruits are eaten raw or made into wine, being of a rich, pleasant flavor. Also used in breeding and as a rootstock. Southwestern North America. HEDRICK 1919, TANAKA, ZEVEN; Z25M. (for cultivars see Rootstocks, page 510)

*Vitis californica* - *California grape* {PL}. The juicy fruits are eaten raw, dried, or made into jelly, pies, and wine. Tendrils are eaten raw as a pleasantly sour snack. The boiled leaves are used to wrap other foods. Southwestern North America. CLARKE, HEDRICK 1919, KIRK; B92, D95, G59M{S}, G60,198M, N84{S}

*Vitis candicans* - *Mustang grape* {PD}. Fruits are dark purple or wine colored and have a tough skin. They are mostly used for pies and jellies or brewed into wine. Southwestern North America. MEDSGER. D81P

#### CULTIVARS {GR}

**Schrank:** Trouble free native grape. Produces a deep bluish-black fruit. Makes an excellent low maintenance grape arbor. Will grow in highly alkaline soils. N33

#### *Vitis capensis* - \**Rhoicissus capensis*

*Vitis x champini* - {S}. Natural hybrid. The very large fruits are edible. Southwestern North America. REHDER, TANAKA; T41M, U7G. (for cultivars see Grape, page 374 and Rootstocks, page 510)

*Vitis cinerea* - *Sweet winter grape* {S}. Fruits are eaten fresh, dried for later use, or made into jams and jellies. Sap of the vine is used as a beverage. North America. MEDSGER, UPHOF, YANOVSKY; U7G, U7J

*Vitis coignetiae* - *Crimson glory vine*, *Yama-budo* {PL}. The fruits are eaten raw or brewed into wine. Young stems and leaf stalks are boiled and eaten. Japan. TANAKA; D95, E87, H4, K38{S}, K63G{S}, N84{S}, R77, R83

*Vitis coriacea* - *Vitis shuttleworthii*

*Vitis labrusca* - *Fox grape* {S}. The fruits have a distinct musky odor and taste. They are eaten raw, dried, preserved, made into juice, jellies, jams, pies, preserves, and syrup, used in beverages, candies, and ice cream, or fermented into wine and vinegar. A jelly is also made from the skins. Leaves have a pleasant acid flavor and are eaten cooked, stuffed, used to wrap other foods, or preserved in salt. Eastern North America. ANGIER [Re], GIBBONS 1962 [Pre, Re], MEDSGER, UPHOF; H4{PL}, L55J. (for cultivars see Grape, page 374)

*Vitis monticola* - *Sweet mountain grape* {S}. The large, thin-skinned fruits are white or amber-colored and have tender, juicy, sweet pulp. Southwestern North America. HEDRICK 1919; U7G, U7J, W3M

*Vitis munsoniana* - *Bird grape*, *Bullace grape* {S}. Fruits are round, nearly black, thin-skinned, acid in flavor, and are eaten fresh when fully ripe. Young leaves and stems may be cooked as greens. The old stems will yield sap for drinking. Southern North America. MEDSGER, MORTON 1977; F85

*Vitis quadrangularis* - \* *Cissus quadrangularis*

*Vitis riparia* - *River bank grape*, *Frost grape* {PL}. The juicy, somewhat acid fruits are eaten raw or dried. Sap of the vine is used as a beverage. In hybridizing, it can be crossed with *V. vinifera* to introduce resistance to phylloxera. Also used as a rootstock. Eastern North America. HEDRICK 1919, MEDSGER, YANOVSKY, ZEVEN; B47, B61M{S}, D95, F67, G66{S}, 147{S}, J39M{S}, K64, K89, K89{S}, M35M, N84{S}. (for cultivars see Rootstocks, page 510)

*Vitis rotundifolia* - *Muscadine*, *Scuppermon* {S}. The fruits, which grow in loose clusters, are pleasant to eat raw and are excellent for jellies and pies. They are also made into juice, sauces, syrup, wine, and fruit leathers. The cultivars with black or purple-colored fruits have a flavor that is very much like that of the jaboticaba. Southeastern North America, cultivated. FERNALD, GIBBONS 1979, MEDSGER; A82{PL}, B94M{PD}, E29{PL}, F80, F85, F93{PR}, H35{PD}, N84. (for cultivars see Muscadine, page 429)

*Vitis rupestris* - *Sand grape*, *Sugar grape*, *Bush grape* {S}. Fruits are bluish-black, very sweet, and are eaten out of hand. Can be crossed with *V. vinifera* to introduce resistance to phylloxera. Also used as a rootstock. Eastern North America. CROWHURST 1972, HEDRICK 1919, ZEVEN; U7G, U7J. (for cultivars see Rootstocks, page 510)

*Vitis shuttleworthii* - *Calloosa grape*, *Leatherleaf* {S}. Ripe fruits are eaten raw or used for jelly making. Young leaves and stems may be cooked as greens. Old stems will yield sap for drinking. Eastern North America. MORTON 1977, STURROCK; T73M, U7G

*Vitis simpsonii* - *Currant grape*. Fruits are edible. Used in breeding resistant varieties for Florida and other hot areas. Southern North America. STURROCK, TANAKA; (for cultivars see Grape, page 374)

*Vitis smaltiana* - *Vitis simpsonii*

*Vitis solonis* - The fruits are edible. Also used as a rootstock and in hybridizing. North America, (for cultivars see Rootstocks, page 510)

*Vitis vinifera* - *European grape* {PD}. The fruits are eaten raw, dried into raisins, preserved in syrup, made into wine, juice, jellies, liqueurs, vinegar, pies, etc. Fortified wines include *port*, *sherry*, *angelica*, *madeira*, *marsala*, *vermouth*, and *muscatel*. *Champagne*, *Asti Spumante*, and *Cava* are examples of sparkling wines. In parts of Italy, pasta cooked in grape wine instead of water, called *pasta alia defigeira*, is eaten to celebrate the first pressing of olive oil. *Zibebes* are berries that have dried on the vine. *Dibs* or *pekmez*, evaporated grape juice or grape molasses, is used to sweeten tea. Grape pomace is made into *grappa*, *marc* and other spirits. Seeds are

used to garnish cheeses or are pressed for their oil. Grape seed oil is the favored oil for cooking meat in *fondue bourguignonne*. *Verjuice* or *verjus*, the juice of unripe grapes, is used to lend tartness to sauces and other foods. *Dolmas* and *sarmas* are grape leaves wrapped around rice, Zante currants, pignolias and other fillings. Champagne, Sherry, Balsamic, and Cava vinegars are popular gourmet items. In Germany, low-acid drinking vinegars called *essig*—made from rare white wines such as *Trockenbeerenauslese* and *Eiswein*—are often flavored with honey and flowers and taken as an aperitif. *Fromage de Vignerons* and *Ubrico* are cheeses that have been aged and cured with wine or grape must. The flowering shoots, having an agreeable, tart, fruity berry-like flavor, are a popular seasonal vegetable in Greece. Or they can be pickled. In the Mediterranean region, grapevine cuttings are widely used for smoking food. *Enocianina* or *grape skin extract*, derived from certain wine grapes, is employed commercially for coloring alcoholic and non-alcoholic beverages, and in its powdered form is used in drink mixes. *Cream of tartar*, derived from the insides of wine barrels, is added to candies and frosting for a creamier consistency, to egg whites to improve stability, and to baking powder mixtures as an acid ingredient. Eurasia, cultivated. ANDREWS, C. 1996 [Re], BROWN, G, BRYAN [Re], GRAY, P. [Cul], HAWKES [Re], HERBST, S., JAFFREY, JEFFORD, KREMEZI 1994 [Re], LEUNG, MACNICOL, ROOT 1980a, ROBINSON, J. 1994, UPHOF, \ON WELANETZ, WALDRON [Re], WEINZWEIG 1996; A7, A7M, C94M, D81P, F85{S}, F85J, G47J, H15T, H34M, H90G, I23M, I64M, J3, K43, L13P, L99, N54. (for cultivars see Grape, page 374 and Rootstocks, page 510)

*Vitis vinifera* Monopyrena Group - *Corinthian grape*, *Currant grape* {PD}. The fresh fruits, no larger than peas, have a sweet, juicy agreeable flavor, and are eaten fresh or dried. When dried, they are known as *passonilla* and furnish the dried currants of commerce. Also used in the preparation of sweet and aromatic *passito* wines, Italian dessert wines made from dried grapes. In Kalamata, Greece they are used for the production of vinegar. C94M. BIANCHINI, FAIRCHILD 1938, HEDRICK 1919.

## CULTIVARS {GR}

**Black Corinth:** (Staphis, Zante Currant, Champagne Grape) Very small, spherical fruits; skin very thin and tender, reddish-black; flesh very juicy, neutral to spicy in flavor, mostly seedless; ripens early. Vine vigorous, productive if girdled or treated with a growth regulator. Cluster small to medium, well filled to compact. Marketed as Champagne grapes when fresh, as Zante currants after drying. Probably originated in Greece. RICHARDSON, J. [Cul], WINKLER; B31{DF}, C60{PR}, C60{DF}, E1{SC}, E13G{PR}, E39, E39{SC}, E47M{DF}, J98{SC}, J98{OR}, K96M{PR}, LIM, LIM{SC}, N40{PR}, N84, R77, S59, etc.

**Carina:** Small black fruit that matures early. Not as inclined to break-down as is Black Corinth. Dries readily into very small raisins of soft texture with a pleasing tart taste. Should be spur pruned. Black Corinth type developed by A.J. Antcliff in Australia in the 1960's. ROBINSON, J. 1994; S59

**Hannaman:** A sport of Black Corinth that is heavier bearing and later maturing. Small black fruit that matures early. Dries readily into soft, pleasantly tart raisins. Should be spur pruned. S59

**White Corinth:** Small, round fruit, similar to Black Corinth; skin greenish-white to golden yellow when fully matured; flesh sweet and juicy with a sugar content of 20 to 22%. Good fresh or dried. Vine much more productive than Black Corinth. Cluster size similar to Black Corinth. C60{PR}, C60{DF}

*Vitis vulpina* - *Vitis riparia*

## WINTERACEAE

*Drimys aromatica* - \* *Drimys lanceolata*

*Drimys lanceolata* - *Native pepper*, *Mountain pepper* {PL}. The black, pungent fruits and seeds are used as a substitute for pepper and allspice. Fresh or dried leaves are similarly employed. The flower buds are added to salads or pickled like capers. A pleasant

herbal tea can be brewed from the bark. Also the source of an essential oil that flavors confectionery. Becoming highly sought after by gourmet bushfoods restaurants. Australia. HEDRICK 1919, ROBINS [Cul, Re], UPHOF; *B41*, *B76MIDF*}, *D95*, *E63*, *N61*{S}, *N79*, *N79*{PR}, *N79*{DF}, *N84*{S}, *032M*{DF}, *053M*{S}, *R49*

*Drimys winteri* - *Winter's bark*, *Chachaca*, *Palo de mambo* {S}. The aromatic, pungent bark is powdered and used as a condiment in parts of Mexico and Brazil. Chile-Argentina. HEDRICK 1919, UPHOF; *E63*{PL}, *F80*, *K63G*, *N61*, *N84*

*Tasmannia lanceolata* - *Drimys lanceolata*

## ZAMIAACEAE

*Dioon edule* - *Chamal* {S}. Seeds are eaten boiled or roasted. They also yield a starch or flour, called *Mexican arrowroot*, used in *tortillas*. Mexico. BROUK, GRIEVE, HEDRICK 1919, UPHOF; *A79M*, *C9M*, *C78*{PL}, *D43*{PL}, *F69*{PL}, *F80*, *G91M*{PL}, *K47G*, *N43M*{PL}, *N51*{PL}, *N84*, *P17M*, *R33M*

*Encephalartos caffer* - *Caffir bread* {PL}. The trunk and the female cones are the source of a starch used to make a type of bread. Southern Africa. HEDRICK 1919, UPHOF; *K47G*{S}, *N43M*

*Encephalartos hildebrandtii* - *Hottentot bread* {PL}. Husks of the seeds are dried and ground to a flour used in the preparation of a porridge, called *ugali* or *chapatii*. Southern Africa. MENNINGER; *C78*, *D43*, *F85*{S}, *I84M*, *K47G*{S}, *N43M*, *N84*

*Lepidozamia peroffskyana* → *Macrozamia denisonii*

*Macrozamia communis* - *Burrawang* {S}. The seed kernels are eaten after proper processing. The Aborigines used several methods including leaching and ageing. Aged seeds have a distinctive flavor reminiscent of mild cheese, and were ground into flour for making cakes. Leached kernels are eaten raw, wrapped in paperbark and baked, or made into bread. Makes a light, fluffy bread with a yeasty cheese-like flavor that goes well with soups and savory dishes. Australia. CHERIKOFF [Pre]; *A41GJPL*}, *A79M*, *C9M*, *C78*{PL}, *D87E*{PL}, *I28*{PL}, *I84M*{PL}, *K47G*, *N43M*{PL}, *N79M*, *N84*, *093*, *P17M*, *R33M*

*Macrozamia denisonii* - *Burrawang* {S}. Stems are the source of an edible starch. The fleshy outer layer of the seeds is eaten after proper preparation. Australia. CRIBB, TANAKA; *C78*{PL}, *D43*{PL}, *D87E*{PL}, *F85*, *I28*{PL}, *K47G*, *N43M*{PL}, *N84*, *093*, *094*, *P5*, *Q32*, *R33M*

*Zamia floridana* - *Coontie* {PL}. The roots, when properly prepared, were the source of *Florida arrowroot*, used for bread and a milky gruel known as *sofkee*. Seminole Indians, in making their *sofkee stew*, cooked it with the meat of various wild game and vegetables such as corn, tomatoes, and beans. Southeastern North America. MEDSGER, MORTON 1977, POLVAY; *C78*, *D43*, *F69*, *G91M*, *H4*, *093*{S}, *Q41*{S}

## ZINGIBERACEAE

*Aframomum angustifolium* - *Madagascar cardamom*, *Wild cardamom* {PL}. The fruits contain an agreeable acid pulp and are eaten fresh. Dried seeds are used like pepper for seasoning. In the Near East they are added to coffee. Eastern Africa, Madagascar. MORTON 1976, TREGOLD, UPHOF; *J73*

*Aframomum korarima* - *Kewrerima*, *Ethiopian cardamom* {DF}. Fruits are used as a seasoning for tea, cakes, sausage, stews, and breads and are ingredients in the Ethiopian spice mixtures *awaze* and *shiro*, and Ethiopian steak tartar (*kitfo*). East Tropical Africa, cultivated. KUNKEL, MESFIN [Re], ZEVEN; *H51*, *H51* {PD}

*Aframomum melegueta* - *Grains of Paradise*, *Melegueta pepper*, *Guinea grains* {DF}. The aromatic, pungent seeds are used for flavoring wine, beer, cordials, liqueurs, meats, and breads. Mixed with ginger and cinnamon, they flavored the wine known as

*hippocras*. Also an ingredient of *ras el hanout*. American food manufacturers use them in ice cream, candy, and soft drinks. They were an important article of trade in Europe as early as the 13th century. The fruit pulp around the seeds is eaten or chewed as a stimulant. West Tropical Africa, cultivated. LOVELOCK, MENNINGER, MORTON 1976, ORTIZ 1973 [Re], ROOT 1980b, VONWELANETZ, WOLFERT 1973; *A7*, *A20M*, *E14T*, *F37T*, *F65*, *F85*{S}, *G73*, *K2*, *L36M*, *N7D*

*Alpinia caerulea* - *Native ginger* {S}. Tender, young tips of the rhizome have a distinct ginger-like flavor and may be eaten. The pleasantly acid pulp that surrounds the seeds is also edible. Australia. CRIBB; *A28*{PL}, *C95*, *L43*{PL}, *N79*{PL}, *N84*, *P5*, *P38*

*Alpinia galanga* - *Greater galangal*, *Laos* {PL}. The slightly pungent rhizomes are employed as a flavoring in *masaman* and other curries, soups, meat and fish dishes, or are mixed with other seasonings. Source of an essential oil used to flavor liqueurs such as *Chartreuse*, *Angostura* and other bitters, and soft drinks Young shoots are eaten raw or steamed. The flowers and flower-buds are eaten raw, steamed, pickled, added to soups, or mixed with chili paste. Red fruits are edible. Tropical Asia, cultivated. COST 1988 [Cul, Re], CRAWFORD [Re], JACQUAT, MORTON 1976, OCHSE, ROUTHIER 1989 [Cul, Re], SHURTLEFF 1979, VON REIS; *A7*{DF}, *A45*{DF}, *A49D*{DF}, *C43M*, *E13G*{PR}, *E14T*{DF}, *F37T*, *H4*, *I8M*{DF}, *I77G*, *K17J*{DF}, *L90G*{DF}, *L90G*{PR}, *N84*{S}, *P38*, etc.

*Alpinia officinarum* - *Lesser galangal* {S}. The reddish-brown rhizomes have a spicy aroma and a pungent taste somewhere between pepper and ginger. They have been used to flavor vinegar and the liqueur called *nastotka*. Leaves are also edible. Southeast Asia. BROUK, BURKILL, GRIEVE, LEYEL 1987b, MARTIN 1975, UPHOF; *F85*

*Alpinia speciosa* - *Shell ginger* {S}. The stems, leaves, and flowers are boiled and eaten. In Tonga, the leaves are wrapped around fish before cooking. Tropical Asia, cultivated. ALT-SCHUL, BURKILL, TANAKA, WHISTLER, W.; *A41G*{PL}, *F85*, *H4*{PL}, *I77G*{PL}, *J27*{PL}, *K8*{PL}, *N84*, *093*, *P5*, *P38*, *Q32*

*Alpinia zerumbet* - *Alpinia speciosa*

*Amomum cardamomum* - *Amomum compactum*

*Amomum cardamon* - *Elettaria cardamomum*

*Amomum compactum* - *Round cardamom*, *Kepulaga* {PL}. Young, pungent shoots are eaten raw, roasted, or cooked and served with rice. The fruits have a sweet, turpentine aroma and flavor and are used as a spice or chewed to sweeten the breath. Seeds are used in cakes. Malaysia. BURKILL, MORTON 1976, UPHOF; *C36*, *H4*, *I53M*, *L56*, *N84*

*Amomum kepulaga* - *Amomum compactum*

*Amomum subulatum* - *Greater cardamom*, *Nepal cardamom*, *Brown cardamom*, *Black cardamom* {DF}. Seeds are used as an inexpensive substitute for true cardamom, having a distinctly camphorous or eucalyptus-like flavor. One of the ingredients of *char marsala*, a spice mixture widely used in Afghan cuisine. The whole, dark brown pods are crushed and added to rice pilafs. Tropical Asia. DEVI, MATTOO [Re], MORTON 1976, NORMAN [Re], SABERI [Re]; *A7*, *A7*{PD}, *C34G*, *F74*, *GO*, *I74*{PL}, *LI6*, *K18M*

*Amomum xanthioides* - *Bastard cardamom*, *Wild Siamese cardamom* {S}. Seeds are used in China to flavor liqueurs. They have been exported to India and England as substitutes for true cardamom, although their strong camphor flavor is not as pleasant. Malaya. GRIEVE, MORTON 1976; *F85*

*Boesenbergia pandurata* - *Temoo kuntji*, *Chinese keys*, *Krachai* {PL}. The strong, spicy, swollen rhizomes are consumed in soups, stews and sambals or made into pickles. Both the rhizomes and the hearts of the stems are eaten raw as a side-dish with rice Young



leaves and shoots, along with the rhizomes, are cut finely, mixed with coconut and spices, wrapped in a banana leaf and steamed. Malaysia, Indonesia. GRIGSON, J. 1986 [Re], JACQUAT, LOH-UNCHIT [Re], OCHSE, TANAKA, UPHOF; A45{DF}, C34G, E8M, P38

*Curcuma alismatifolia* - *Siam tulip* {PL}. The flowers are consumed as a vegetable in Cambodia. Southeast Asia. UPHOF; H4, J27, I77G, L43, N84

*Curcuma angustifolia* - *East Indian arrowroot*, *Tikhur* {PL}. Rhizomes are the source of a starch, called *Travancore starch*, which forms a good substitute for West Indian arrowroot. Southern Asia. HEDRICK 1919, UPHOF; H4

*Curcuma aromatica* - *Yellow zedoary*, *Wild turmeric* {PL}. The rhizome is pounded and used in curries as a substitute for turmeric. Southeast Asia. BURKILL, TANAKA; R22

#### *Curcuma domestica* - *Curcuma longa*

*Curcuma longa* - *Turmeric*, *Indian saffron* {PL}. The powdered rhizomes are used as a yellow coloring agent and condiment in curries, prepared mustards, cheeses, butter, gravies, sauces, rice, pickles, etc. They are also an ingredient of *kra ry* powder from Thailand. Leaves wrapped around fish flavor it during cooking. They are also an ingredient of *Rendang*, a traditional buffalo meat dish of West Sumatra. The young shoots and rhizome tips are eaten raw. India, cultivated. BOND [Re], COST 1988 [Cul], JACQUAT, MORTON 1976, OCHSE, OWEN [Re], SHURTLEFF 1979, UPHOF, YOONG [Re]; A28, C43M, E13G{PR}, F37T, H4, I74, I77G, I81T{PR}, I81T{DF}, J82, L43, L62M, L90J, M82, P38, etc.

*Curcuma mangga* - *Temu manggi* {S}. Young shoots and the tender, white tips of the rhizomes are eaten raw or boiled. Slices of the young rhizomes are cooked with coconut milk and chili paste. Flower clusters are steamed and eaten with rice or used in stews. Southeast Asia. MORTON 1976, OCHSE; Z25M

*Curcuma parviflora* - *Krachiao khao* {PL}. In Thailand, the young leaves are blanched and served with *nam phrik* (chili sauce). The flowers are boiled and eaten with *nam phrik kapi*—a shrimp paste and chili sauce. Southeast Asia. JACQUAT; A28, L43, N84

*Curcuma xanthorrhiza* - *Tern lawak* {PL}. Rhizomes are the source of a starch that is made into porridge or pudding-like delicacies. A sweet drink is made by cooking the dried rhizomes in water and adding sugar. The heart of the stems and the rhizome tips are eaten raw. Inflorescences are cooked and served with rice. Southeast Asia. BURKILL, OCHSE; P38

*Curcuma zedoaria* - *Zedoary* {PL}. The leaves, which resemble lemongrass in flavor, are cooked with fish as seasoning. Dried rhizomes are used as a condiment in liqueurs and bitters, including the Italian brand *Ramazzotti* and *Swedish bitters*. Also the source of a starch that is used like arrowroot. The heart of the young shoots is eaten raw or cooked. Slices of the young rhizomes are added to salads. India, cultivated. BOND [Re], BROWN, G., MORTON 1976, NORMAN, OCHSE, TANAKA, TREBEN; H4, I77G, J27, L43, N7D{DF}, N84, P38

*Elettaria cardamomum* - *Cardamom*, *Small cardamom* {PL}. Aromatic seeds are used to flavor curry powder, cakes, sausages, drinks, cordials, bitters, gingerbread, pickles, *Qahwah* coffee, candies, etc. One of the principal ingredients of the Ethiopian hot pepper mixture known as *mit'mit'a*. In India, the seeds are chewed after meals to sweeten the breath. For the traditional *Massaman* curry, originating with the Muslims of southern Thailand, cardamoms are roasted in their shell and added whole to the curry as a garnish. The young shoots are eaten raw, steamed, or roasted. Leaves are used for wrapping foods before cooking. Tropical Asia, cultivated. CUSUMANO [Cul], DAGHER, GRIEVE, LOH-UNCHIT, MESFIN [Re], MORTON 1976, OCHSE, PASSMORE, ROOT 1980b, UPHOF; C43M, C81M, E48, F37T, G96,

H51{PD}, I53M, J27, J82, K17J{PD}, K22, L36M{DF}, L90K{ED}, M53, M82, etc.

#### *Gastrochilus panduratum* -> *Boesenbergia pandurata*

*Globba marantina* - *Yellow dancing girl ginger* {PL}. The small bulbils are used as a flavoring material. Tropical Asia. BURKILL, TANAKA; F85{S}, H4, J27, N84, O53M{S}, R22

*Hedychium coronarium* - *Garland flower*, *Butterfly ginger* {PL}. Young buds and flowers are steamed or blanched and served with chili sauce. They are also used for flavoring. Tropical Asia. JACQUAT, KUNKEL, TANAKA; A28, A41G, A79M{S}, C36, E48, H4, H49, I28, I53M, I77G, J27, M16M, N84{S}, P38{S}

*Kaempferia galanga* - *Galanga*, *Kenchur*, *Proh hom* {PL}. Young leaves and tender rhizomes are eaten raw, steamed, in curries, or cooked with chili paste into a savory side dish. The rhizomes are also used as a condiment, pickled, or used in the preparation of *beras*, a sweet, spicy beverage. Dried rhizomes are used as a substitute for turmeric in curry powder. Tropical Asia, cultivated. COST 1988 [Cul], JACQUAT, MORTON 1976, OCHSE, OWEN [Re], SHURTLEFF 1979; A7{DF}, A45{DF}, C34G{DF}, F73D, F73D{DF}, G73, H4, I77G, I81M, I81M{DF}, J27, L43, N84, R22

#### *Kaempferia pandurata* - \* *Boesenbergia pandurata*

*Kaempferia rotunda* - *Kunji puti* {PL}. The young leaves are eaten raw, steamed, or used in stews. Tubers, which have a hot taste, are also eaten. Also one of the ingredients of the famous Ayurvedic tonic *Chyavanprash*. Tropical Asia. BURKILL, MORTON 1976, OCHSE, SIVARAJAN, UPHOF; H4, I53M, I77G, J27, L43, N84

*Nicolaia elatior* - *Ondje*, *Torch ginger* {S}. Inflorescences are eaten raw, steamed, roasted, or used in curries. The heart of the stems is cooked and served with rice. Half-ripe fruits are eaten in soups and stews. Ripe fruits are eaten as delicacies or made into sweetmeats. Mature seeds are eaten raw. Malaya, cultivated. BURKILL, OCHSE; A79M, F85, K8{PL}, O93

#### *Phaeomeria magnifica* - \* *Nicolaia elatior*

#### *Phaeomeria speciosa* - \* *Nicolaia elatior*

*Zingiber amaricans* - *Lampuyang pahit* {S}. The young flower spikes, deprived of the bracts, can be eaten raw, cooked, or added to stews. Rhizome tips, both the old bitter ones and the non-bitter younger ones, are eaten raw with rice. Malaysia, Indonesia. OCHSE; Z25M

*Zingiber mioga* - *Mioga ginger*, *Japanese gingpr* {PL}. Young shoots are blanched and used in soups, tempura and tofu dishes, adding a pleasant spicy aroma and flavor. They are also pickled or chopped finely and used as a garnish for sashimi. The aromatic pale yellow flowers, having a sharp flavor, are added to soups, fried foods, and vinegared dishes, and are also pickled with salt, vinegar or sake lees. Occasionally available fresh in Japanese markets. Eastern Asia, cultivated. COST 1988, MORTON 1976, SHURTLEFF 1975, YASHIRODA; A28, C95, H4, I77G, L43, N84

*Zingiber officinale* - *Ginger*, *Shdga* {PL}. Rhizomes are widely used to flavor cakes, chutneys, curries, stir-fried dishes, beverages, pastry, candies, pickles, etc. The juice of the rhizomes is similarly employed. They are sold dry, powdered, or preserved in syrup. Also used in *ginger ale*, *ginger beer*, wine, brandy, and herbal teas. Very young rhizomes—known as *stem ginger*, *young ginger*, or *green ginger*—are peeled and eaten raw in salads, pickled, or cooked in syrup and made into sweetmeats. In Australia, the young rhizomes are preferred for making crystallized ginger. Pickled ginger—known as *omazu-shdga*, *beni-shoga* or *gari*—is commonly eaten with *sushi* dishes. Young, slightly spicy shoots are eaten as a potherb or pureed and used in sauces and dips. When pickled and dyed red they are known as *hajikami-shogi*. Young inflorescences are eaten raw in *khaao yam*. The leaves are used to wrap food for grilling. Culti-

vated. BENGHIAT [Re], COST 1984 [Re], COST 1988, CUDE, DAHLEN [Cul, Re], HARRINGTON, G. [Cu, Cul], JACQUAT, JAFFREY, MARTIN 1975, MORTON 1976, OCHSE, ORTIZ 1973 [Re], TANAKA, TSUJI, UPHOF; C43M, E97, F37T, G20M{PD}, H4, H49, I81T{PR}, I81T{DF}, J82, L36M{DF}, L43, L97G{PD}, P38

#### CULTIYARS

Chinese Yellow: Dwarf, bushy plant, only reaching 3 feet in height. Small, narrow rhizomes. Mild, distinctive, light yellow flesh. More flavorful and more potent medicinally than the standard white type of Hawaii, Florida and Fiji. D57, G17

Zingiber spectabile - *Golden-shampoo ginger* {PL}. Rhizomes are used for flavoring. Malaysia, Indonesia. BURKILL, TANAKA; A79M, C36, F85{S}, H4, I77G, L43, N84{S}, P38

Zingiber zerumbet - *Zerumbet, Wild ginger, Pinecone ginger* {PL}. In Malaysia, the young leaves and shoots are cooked as vegetables. The ancient Hawaiians used the leaves as a steam flavoring for meats that were cooked in underground ovens. In Tonga, they are wrapped around fish before cooking. Young rhizome tips and inflorescences are eaten raw with rice or chili sauce. Tropical Asia, cultivated. DEGENER, JACQUAT, MORTON 1976, OCHSE, WHISTLER, W.; A28, A79M, H4, H49, I74, I77G, J27, K8, L43, N84, P38

#### ZYGOPHYLLACEAE

Guaiacum officinale - *Lignum sanctum, Guajacan negro* {S}. Source of a resin used for flavoring cakes and chicle. It is also added to edible oils to prevent acidification. Caribbean region. KUNKEL, TANAKA; A79M, D56M, F80, F85, N84

*Larrea divaricata* - *Larrea tridentata*

*Larrea mexicana* - \**Larrea tridentata*

*Larrea tridentata* - *Creosote bush* {S}. Flower buds are pickled in vinegar and used like capers. The stems and leaves are used as a

substitute for tea. Twigs are chewed to alleviate thirst. A resin, obtained from the leaves and twigs, delays or prevents butter, oils, and fats from becoming rancid. Southwestern North America. CLARKE, KUNKEL, UPHOF; C43V, C98, E66M, F63M, F80, F85, I98M, JO, J25M, J25M{PL}, K15, N84

*Nitraria schoberi* - *Nitre bush, Dillon bush* {S}. The edible fruits are olive-like, red or purple, and slightly salty but with a very pleasant flavor. They may be eaten raw or cooked. In Tibet they are added to *aker*, a traditional milk brandy made from yak's milk, to improve the taste and enhance the sugar and alcohol contents. Eastern Mediterranean region to Australia. CRIBB, HEDRICK 1919, KURMANN, ROBINS, UPHOF; F80, N79M, N84, O33, P17M, R15M, R47, S92

*Peganum harmala* - *Syrian rue, Uzerlik* {S}. Seeds are used as a condiment in Turkey. Mediterranean region. OZTURK, TANAKA; A26, A61{PL}, C43M{PL}, D92M, E81M, F68T, F85, I74{PL}, J73, J82, J82{PL}, L90J{PL}, O53M

*Tribulus terrestris* - *Puncture vine, Land caltrops, Goat's head, Gokshura*{DF}. Young leaves and shoots are boiled and eaten. In Uganda, they are cooked and eaten with *Gynandropsis gynandra* or with sour milk. The seeds are occasionally ground into flour and made into bread or mixed with other flours in making pastries. The fruits are brewed into an herbal tea. Widespread. BHANDARI, GOODE, MARTIN 1975, MORNINGSIAR, SIVARAJAN, TANAKA; H36, J82{S}, L21T, N7D, N84{S}

*Zygophyllum fabago* - *Bean caper* {S}. The flower buds are pickled and used as a substitute for capers. Mediterranean region to Southwest Asia. HEDRICK 1919, TANAKA; V84M, W3M, Y89M, Z19

### ALPHABETICAL LISTING OF FUNGI FAMILIES

#### AGARICACEAE

*Agaricus arvensis* - *Horse mushroom* {SR}. Fruitbodies are edible, choice. The flesh is thick, firm, white, with a scent reminiscent of almonds or aniseed, and a delicious flavor. Some are up to one foot across when mature. They may be eaten raw in salads, broiled, sauteed, stuffed, in soups, fritters, sauces, casseroles, etc. CRIBB, FERNALD, GIBBONS 1962 [Re], LAUNERT, MABEY [Cul], MILLER, O., STEINECK [Cu], UPHOF; D87M

*Agaricus augustus* - *The prince* {CU}. The fruitbodies are edible. Flesh is thick, meaty, white, with the odor of anise. The caps are large, up to a foot wide. A choice edible that can be eaten raw and is also excellent stuffed with crabmeat, creamed on toast, or in scrambled eggs or soups. MILLER, O., STEINECK [Cu]; D87M{SR}, E21, I11M, I49{SN}, M87, M87{SN}

*Agaricus bisporus* - *Button mushroom, Champignon* {SN}. Fruitbodies are edible. The common mushroom found in food stores. Widely eaten raw in salads, sauteed, stuffed, marinated, fried, or used in soups, sauces, stews, gravies, etc. Recommended for growing outdoors in garden beds. CARCIONE [Pre], CZARNECKI 1986 [Cul, Re], GRIGSON, J. 1975 [Cul, Re], KERRIGAN, STAMETS 1983 [Cu], STEINECK [Cu], VILMORIN [Cu]; D87M{SR}, D93M{PD}, E21{CU}, E21B{KT}, I49, I49{CU}, M87, M87{CU}. (for strains see Button Mushroom, page 315)

*Agaricus bitorquis* - *Spring agaric, Rodman's agaric* {SR}. Fruitbodies are edible, choice. Closely related to the common button mushroom, but is larger, meatier, much firmer, better flavored, and has a longer shelf life. Can also be grown under warmer weather conditions. Cultivated commercially in Europe because of its resis-

tance to the virus that plagues *A. bisporus*. ARORA, D., STAMETS 1983, STEINECK [Cu]; D87M

*Agaricus brunnescens* - *Agaricus bisporus*

*Agaricus campestris* - *Meadow mushroom, Field mushroom* {SR}. Fruitbodies are edible, choice. This is the common, delicious *Agaricus* found on lawns throughout North America. They have thick, firm flesh, either white or tinted reddish brown. Raw, they make a tasty savory if the stalk is removed and the cap filled with cream cheese. Otherwise they may be used to flavor casseroles and rice dishes, or fried in butter and thickened with a little flour and milk. CRIBB, FERNALD, GRIGSON, J. 1975 [Cul, Re], MABEY, MICHAEL [Re], MILLER, O., STEINECK [Cu]; D87M

*Agaricus silvaticus* - *Sylvan mushroom, Scaly wood mushroom* {SR}. Fruitbodies are edible. The flesh is thick, firm, white, slowly bruising reddish brown when young or remaining unchanged. It has a pleasant odor and a mild flavor. Can be served raw, grilled, in sauces, or fried with eggs. To keep the food it is cooked with from turning brown, the dark gills are cut off. FARLEY, MILLER, O., STEINECK [Cu], TANAKA; D87M

*Agaricus rodmanii* - *Agaricus bitorquis*

*Agaricus subrufescens* - *Almond mushroom* {SN}. The fruitbodies are edible, choice. They are said to have the flavor of sweet almonds. Grows during warmer weather than the button mushroom and is less demanding of growing conditions and substrates. Recommended for growing in vegetable gardens. This variety was popular at the turn of the century and was cultivated commercially on the

East Coast. KERRIGAN, TANAKA; D87M{SR}, I74{KT}, J60, M87, M87{CU}, M87{KT}

STRAINS {CU}

**State:** Originally from an old university collection. Characteristics of the mycelium on agar suggest that it is an eastern form of the species. IIM

*Lepiota rachodes* - *Shaggy parasol*, *Scaly lepiota* {CU}. Fruitbodies are edible. The flesh is soft and white. Very flavorful when young, especially fried, but somewhat tough when old. The tough stalks are not useable. Faintly aromatic with a mild taste. In gardens it can be cultivated in composting areas. ANONYMOUS 1986 [Re], MABEY, MILLER, O., STEINECK [Cu], TANAKA; E21

*Schizophyllum commune* - *Sepa*, *Hed teen tukkae* {CU}. The fruitbodies are eaten, although they are somewhat tough. In Tropical Africa, they are boiled for one or two hours in water to which vegetable salt has been added, then mixed with peanuts, salt and oil. This preparation is eaten with *bukari*, a staple starchy food. In Thailand, they are eaten with meat in curries or fried with egg. JACQUAT, PARENT; C7M, M69

AMANITACEAE

*Amanita caesarea* - *Caesar's mushroom*, *Royal agaric* {SR}. Fruitbodies are edible. The flesh is firm, white, with a pleasant odor and taste. When in the button or egg stage it is sliced and eaten raw with olive oil, lemon juice, salt and pepper. The older caps can be grilled, fried, stewed, or broiled. Considered a delicacy by the ancient Greeks and Romans. BIANCHINI [Cu], GRAY, P. [Cu], UPHOF; D87M

ASPERGILLACEAE

*Aspergillus niger* - *Tempeh mold* {CU}. A common bread mold that is occasionally found in tropical tempeh and tempeh inocula. Also found in *ogi*, *yakju* and *kicap* fermentations. Grown on sugar residues, it converts the sugars into commercial citric acid, a food additive. A food supplement known as *NutraFlora* is produced by fermenting sucrose and water with a pure strain of the mold. It is a mildly sweet, concentrated form of *fructooligosaccharides* valued for its ability to feed indigenous friendly intestinal flora, low calorie count, and high fiber content. Available in powdered form that can be sprinkled on cereal and fruit or stirred into beverages. SCHERY, STEINKRAUS; C7M, D81T, E13, E94{ED}, G37P, K26M, M69

*Aspergillus oryzae* - *Koji mold*, *Hama-natto mold*, *Hishio mold* {PD}. This mold is also involved in the fermentation of *misu*, *amazake*, *shayu*, *tamari*, *mirin*, *taosi*, *nuruk*, *chiang-yiu*, *meju*, *inyu*, *yukiwari-natto*, *sake*, *kecap*, *brem*, *yakju*, *ragi tapeh*, *kicap*, *tauco*, *doenjang*, and *kochujang*. In Japan, koji pickles are very popular. Koji is used for removing the odor from garlic, which is then mixed with ginseng and honey to form a nutritional supplement known as *garlic balls*. HESSELTINE, STEINKRAUS, UPHOF, YAMAGUCHI [Re]; E60P. (see also Starter Cultures, page 537)

*Penicillium camembertii* - *Camembert cheese mold*, *White mold* {CU}. A mold that takes part in the fermentation of Camembert as well as Brie, Neufchatel, Gournay fleuri, Pennsylvania Dutch cup, Pont l'Evêque, and St. Maure cheeses. BROUK, KOSIKOWSKI, PEDERSON, UPHOF, WALTER; C7M. (see also Starter Cultures, page 537)

*Penicillium candidum* - \**Penicillium camembertii*

*Penicillium caseicola* - *Penicillium camembertii*

*Penicillium chrysogenum* - *Stilton cheese mold* {CU}. One of the organisms reported to have a role in the formation of Stilton cheese. UPHOF; E13, K26M, M69

*Penicillium roqueforti* - *Roquefort cheese mold*, *Blue mold* {CU}. The conidia of this mold form the dark green veins in Roquefort as well as Gorgonzola, Stilton, and blue cheeses. Also essential in the curing of *Iberian ham*, the mold forming a generous coating on the outside surface which fixes the surrounding microorganisms respon-

sible for stabilizing fat and rounding off the final curing process. BROUK, CAPEL, DOMINE, KOSIKOWSKI, PEDERSON, SCHERY, UPHOF, WALTER; C7M. (see also Starter Cultures, page 537)

AURICULARIACEAE

*Auricularia auricula* - *Kikurage*, *Wood ear*, *Jew's ear* {DF}. The fruitbodies are thick, gelatinous, and virtually stemless. In China and the Far East they are grown commercially, dried, and used in stews, Japanese-style fish sausages, and soups, especially miso and hot and sour soups, often combined with dried lily buds (*Hemerocallis* sp.). Although bland and tasteless, they readily absorb the flavors of other foods. COST 1988 [Cu, Re], MABEY, MILLER, O., OCHSE, SHURTLEFF 1975, TANAKA; A7, C34G, D87M{SR}, E13G, E13G{PR}, E20M{SN}, E21B, F17, H73{PR}, IIM{CU}, 18M, J11, L17, M87{CU}, M87{SN}, N40{PR}, N40, etc.

*Auricularia polytricha* - *Arage-kikurage*, *Cloud ears* {CU}. Fruitbodies are consumed as food. They are usually sold dried and are reconstituted for use in cooking. After soaking, they are chewy, gelatinous, slippery, and have little taste although they take on the flavors of other ingredients. Used in soups, casseroles, stir-fried dishes, and as an ingredient of the Chinese dishes *bahmi* and *kimlo*. CHANG, W. [Re], CRIBB, CZARNECKI 1986 [Cu, Re], OCHSE, SCHNEIDER 1986 [Re], SOLOMON, STAMETS 1993 [Cu], UPHOF; A7{DF}, C43M{SN}, E21, E21{DF}

BOLBITIACEAE

*Agrocybe aegerita* - *Brown swordbelt* {CU}. Fruitbodies are consumed as food. Small to medium-sized, with a yellowish-brown cap. Occasionally cultivated and sold in the markets of the Mediterranean area. In southern Italy, it is cultured on poplar wood. In the ornamental garden it can be cultivated on logs, like other wood-inhabiting species. STAMETS 1993 [Cu], STEINECK [Cu], UPHOF; E21, 149, 149{SN}, M87, M87{SN}

BOLETACEAE

*Boletus bicolor* - *Two-colored boletus* {SR}. Fruitbodies are edible, good to excellent. Very attractive, with vividly contrasting rosy to red caps and yellow pores. Thick, pale yellow flesh. ARORA, D., MILLER; D87M

*Boletus edulis* - *Cepe*, *Porcini*, *Steinpilz* {DF}. The fruitbodies are edible, choice. One of the most highly prized of all mushrooms. Thick, meaty and richly flavored—they are delicious in many kinds of dishes such as risotto, pasta, omelettes, soups, sauces, stews, *vol-au-vent*, etc. Very young specimens are particularly good preserved in oil. The caps are excellent broiled, grilled, sauteed or baked. Readily available dried in gourmet stores, occasionally fresh. The dried mushrooms retain their strong flavor exceptionally well. BIANCHINI, GRIGSON, J. 1975 [Cu, Re]; C94M, D87M{SR}, D93M{PD}, E14T, E56, H19M, H25M{PR}, H25M{PD}, H73{PR}, H73, 13, 18M, J11, L15G, L15G{PR}, L17, L99, N40, etc.

*Boletus mirabilis* - *Admirable boletus* {SR}. Fruitbodies are edible, choice. The flesh is firm, lemon-yellow, sometimes reddish when bruised. Some strains may have a distinctive lemon-like flavor. ARORA, D., MILLER, O.; D87M

*Suillus grevillei* - *Pine-tree bolete*, *Larch bolete* {SR}. Fruitbodies are edible, good. The flesh is lemon-yellow and becomes spongy in older specimens. The odor is pleasant, the flavor mild. The surface of the cap is easily peeled away. The stalk should be thoroughly cleaned before cooking. MILLER, O., STEINECK [Cu], TANAKA; D87M

*Suillus luteus* - *Slippery jack*, *Chilean porcini*, *Callampas* {DF}. The fruitbodies are edible, good to choice. They are covered with a viscid or slimy skin which readily peels off. The tube layers should also be removed before cooking. Tender and flavorful, especially good in sauces, marinades and gravies. Can be dried or pickled. Large quantities of the dried mushrooms are exported from Chile.

ARORA, D., CZARNECKI 1995, FARLEY, FISCHER, UMAMURRAY [Re], UPHOF; A7, E14T, F37T, G5, H25M, H73, J58

#### CANTHARELLACEAE

*Cantharellus cibarius* - *Chanterelle, Golden chanterelle, Girolle* {DF}. The fruitbodies are cooked and eaten, preserved in oil, or dried for later use. The flesh is firm, light yellowish, and has a truly delicious flavor. One of the most famous and highly valued mushrooms, they are used in stews, soups, omelettes, grain dishes, sauces, or sauteed in butter or oil. The dried powder, known as *gold dust*, is sprinkled on omelettes, salads, pastas, soups, etc. CUSUMANO [Cul, Re], CZARNECKI 1986 [Cul, Re], FERNALD, GIBBONS 1962, GRIGSON, J. 1975 [Cul, Re], LAUNERT, MICHAEL [Pie], MILLER, O., QUAINANCE, SCHNEIDER 1986 [Pre, Re], STEINECK [Cu], UPHOF; A7, CIITIPR], C11T{DF}, C94M, C96, D87M{SR}, E56, H25M{PR}, H73{PR}, J11, L15G, L15G{PR}, L99, M34{PR}, M41M{DF}, N40, N40{PR}, etc.

*Cantharellus cinnabarinus* - *Red chanterelle* {SR}. The fruitbodies are edible, good to very good. Striking bright-red to reddish orange or flamingo pink caps and stems with a distinctive, peppery flavor. Best used in salads, or they can be added to casseroles, omelettes, and sauteed dishes. Colorful in combination with golden or yellow chantarelles. ARORA, D., CZARNECKI 1986 [Cul, Re]; D87M

#### *Cantharellus clavatus* - \**Gomphus clavatus*

*Cantharellus infundibuliformis* - *Yellowfoot chanterelle* {DF}. Fruitbodies are edible, good. Usually considered somewhat thin-fleshed and lacking a strong flavor compared to other chantarelles. When cooked, the caps disintegrate rapidly, while the stems retain most of their shape. Not suitable for canning, but they dry and freeze well. Harvested commercially in the Pacific Northwest and in Finland. ARORA, D., CZARNECKI 1995 [Cul], FISCHER; A7, E56, D87M{SR}, H25M{PR}, M34{PR}

*Cantharellus subalbidus* - *White chanterelle* {SR}. The fruitbodies are edible, choice. Dull white or whitish cap. Firm, meaty, dense white flesh, of very rich flavor. Makes a good substitute for the golden chanterelle. Ideal for marinating or prolonged refrigeration. ARORA, D., CZARNECKI 1995; D87M

#### *Cantharellus tubaeformis* - \**Cantharellus infundibuliformis*

*Craterellus cornucopioides* - *Black chanterelle, Horn of plenty* {DF}. The funnel-shaped fruitbodies are eaten, and are universally considered choice. They have a strong, delicious earthy flavor, especially when dried, powdered or preserved in oil. Excellent in soups and stews, and they make one of the few mushroom sauces that goes exceptionally well with fish. ARORA, D., BIANCHINI, CZARNECKI 1986 [Re]; A7, C96, M41M

*Craterellus fallax* - *Black trumpet-of-death, Horn of plenty* {DF}. The trumpet-shaped fruitbodies are edible, choice. Thin, fairly brittle flesh, very aromatic and intensely flavored. Excellent sauteed as a side dish or added to omelettes. Often dried and ground into a powder used for seasoning soups, sauces and other foods. Also suitable for pickling. CZARNECKI 1995 [Cul, Re], FISCHER; D87M{SR}, E21B, E56, E63G{PR}, E63G, G5, H25M, H25M{PR}, H73, I1M, J11, L17, M34{PR}

*Gomphus clavatus* - *Pig's Ears* {SR}. The fruitbodies are eaten, and are generally considered very good to choice, although their flavor is not distinct. An unusual looking mushroom resembling a sawed-off, lopsided, purplish club. Notable for its firm texture which is usually retained during cooking. Makes an excellent addition to a casserole. ARORA, D., CZARNECKI 1995 [Re]; D87M

#### CLAVARIACEAE

*Sparassis radicata* - *Cauliflower mushroom* {DF}. The fruitbodies are edible, choice. An unusual and elegant mushroom, somewhat reminiscent of a cauliflower head. Specimens of thirty to fifty

pounds are known, but young, smaller ones are preferred because they are fleshier. Slew, thorough cooking is necessary to tenderize it. Sauteing or parboiling, followed by baking or stewing is recommended. Excellent in soups, stews and other dishes that require long cooking. ARORA, D., CZARNECKI 1995 [Cul], FISCHER, MILLER, O.; A7, E56, H25M{PR}, H73{PR}

#### CLAVICIPITACEAE

*Cordyceps sinensis* - *Dong chong xia cao, Caterpillar fungus* {DF}. A Chinese tonic mushroom harvested with the carcass of the larval insect from which it grows, hence the name. Traditionally cooked with duck, chicken, pork and fish in soups and stews, the cordyceps enhancing the flavor. Sometimes used in rice congee dishes (porridges). Also an ingredient of ginseng essence and other herbal mixtures. Harvested by trained experts reminiscent of truffle hunters. BENSKEY, BOWK FLAWS 1995 [Re], TAN [Re], TEEGUARDEN; E2M, E21, G19P, H36, L21T

#### COPRINACEAE

*Coprinus cinereus* - *Ne-naga-no-hitoyo-take* {CU}. Fruitbodies are much esteemed as a delicious food by the natives of different parts of the Malayan Archipelago. TANAKA, UPHOF; C7M

*Coprinus comatus* - *Shaggy mane* {SN}. Fruitbodies are edible, choice. The firm caps have a distinct taste and are excellent baked, cooked with eggs, made into ketchup, or simmered in butter with a rich sauce made of the flavorful, black juice that cooks out of them. They should be prepared for the table as quickly as possible or they will dissolve into a black inky mass. CRIBB, CZARNECKI 1986 [Cul, Re], FERNALD, GIBBONS 1962, GRIGSON, J. 1975 [Cul, Re], MABEY, MICHAEL [Re], MILLER, O., STAMETS 1983 [Cu], STEINECK [Cu], UPHOF; E21{CU}, E21{KT}, I1M{CU}, 149, 149{CU}, J60, M87, M87{CU}, M87{KT}, N44, N44{KT}

#### *Coprinus macrorrhizus* - \**Coprinus cinereus*

*Coprinus micaceus* - *Small inky-cap* {CU}. Fruitbodies are consumed as food, having a delicate flavor. It is best to harvest them when young, while the gills are still white to very light gray. When the caps are simmered in butter, a great deal of black, watery juice forms which may be thickened with flour to make a rich creamy sauce. Or they can be baked with milk, a beaten egg, seasonings, and dry bread crumbs to absorb the liquid. FERNALD, MILLER, Q, UPHOF; D87M

#### CRYPTOCOCCACEAE

*Brettanomyces bruxellensis* - *Lambic beer yeast* {CU}. A yeast involved in the fermentation of the *lambic beers* of Belgium, lightly hopped beers made from a mixture of barley malt and unmalted wheat. It mostly occurs in breweries located near cities. GUINARD, STEINKRAUS; U7. (see also Starter Cultures, page 537)

*Brettanomyces lambicus* - *Lambic beer yeast* {CU}. One of the microorganisms that takes part in the *lambic beer* fermentations. Produces acid and alcohol and also contributes to the special flavor of the beer. It is the main yeast of breweries located in the Belgian countryside. GUINARD, PEDERSON, STEINKRAUS; A99, B55M. (see also Starter Cultures, page 537)

#### *Candida holmii* - \**Torulopsis holmii*

*Candida kefir* - *Kefir yeast* {CU}. One of the principal yeasts involved in the fermentation of kefir. It converts lactose to ethanol and carbon dioxide during the cooler ripening period. CAMPBELL-PLATT; C7M

*Mycoderma* sp. - *Lactic mycoderma*. Microorganism that grows on the surface of certain cheeses while they cure, especially Neufchatel cheese. PEDERSON; (for sources see Starter Cultures, page 537)

*Torulopsis holmii* - *Kefir yeast, Sourdough bread yeast* {CU}. A lactose-negative yeast that is involved in the production of *kefir*

grains, and also *sourdough bread*. STEINKRAUS; T34. (see also Starter Cultures, page 537)

#### DEUTEROMYCETES

*Geotrichum candidum* - *Lactic oidia* {CU}. Intermediate between yeasts and molds, these microorganisms are used in the manufacture of several varieties of cheeses. They are also involved in the fermentations of *kanji*, *gari*, *pito*, *torani*, *pozol* and *toddy*. HESSELTINE, STEINKRAUS; C7M. (see also Starter Cultures, page 537)

*Monilia sitophila* -> *Neurospora sitophila*

*Neurospora sitophila* - *Onchom mold*. The essential mold involved with the fermentation of *onchom*. Different strains are known to produce different pigmentation, with orange, yellow, pink, and white colors all appearing on the same *onchom* cake. SHURTLEFF 1979, STEINKRAUS, UPHOF; (for sources see Starter Cultures, page 537)

*Oidium lactis* - *Lactic oidia*. Intermediate between yeasts and molds, this microorganism is used in the manufacture of several varieties of cheese. It also takes part in the fermentation of *poi* and *chicha*. HESSELTINE, STEINKRAUS; (for sources see Starter Cultures, page 537)

*Oospora lactis* - *Lactic oidia*. Intermediate between yeasts and molds. Used along with *Oidium lactis* and *Geotrichum candidum* in the manufacture of various cheeses. It is also involved in the fermentation of *piima*. (for sources see Starter Cultures, page 537)

#### HYDNACEAE

*Herichium coralloides* - *Bear's head tooth*, *Fungus icicles* {PR}. The fruitbodies are consumed. They have a very distinct, branching form with delicate, long white teeth and a subtle, nut-like flavor. These beautiful mushrooms are best prepared by slowly sauteing in butter and serving with vegetables. Or they can be chopped and added to sauces and gravies. MABEY, MILLER, O., UPHOF; C11T, C11T{DF}

*Herichium erinaceus* - *Medusa's head*, *Lion's mane*, *Pom pom blanc* {KT}. Fruitbodies are eaten. They are very attractive, with coarse tooth-like spines hanging from the body. Tasty when young, but reportedly turns sour with age. After first being parboiled, they are excellent seasoned with garlic butter. ARORA, D., STAMETS 1993 [Cu], TANAKA; C27, C43M{SN}, D75T, D87M{SN}, E21, E21{CU}\ E21{SN}, E63G, E63G{PR}, H25M{PR}, H73{PR}, I1M, I3{SN}, I49{CU}, I49{SN}, 174, M87, M87{CU}, M87{SN}, N40{PR}, etc.

#### STRAINS {CU}

**Gerhard:** A much-sought-after delicacy from the forests of northern Switzerland. Can be grown in backyards on fresh cut oak or maple logs. I1M

*Hydnum repandum* - *Hedgehog mushroom*, *Pied de mouton* {DF}. The fruitbodies are edible, choice. Very distinct, with spines or "teeth" instead of gills. Excellent texture and flavor, well suited for long, slow-cooked dishes such as casseroles. Young specimens are preferred, as older ones may be acrid or bitter. However, any peppery or bitter flavor can be dissipated by cooking. Suitable for pickling, drying or canning. ARORA, D., LAUNERT, MABEY [Cu], STEINECK [Cu], TANAKA; A7, E56, E63G{PR}, H25M{PR}, H73{PR}, M34{PR}, M34 {PD}

#### HYPOCREACEAE

*Hypomyces lactiflorum* - *Lobster mushroom* {DF}. Fruitbodies are edible, choice. Striking, bright fluorescent-orange mold-like fungi that parasitize various species of *Russula* and *Lactarius*, covering them with a pimpled or powdery surface layer of tissue. Both the parasite and host are eaten, the texture and flavor of the host being completely transformed. Very rich and meaty, excellent sauteed or added to omelettes. Sold in local markets in Mexico. ARORA, D., CZARNECKI 1995, FERNALD, FISCHER, GIBBONS 1962, MILLER, O.; A7, E14T, E21B, E56, G5,

H25M{PR}, H73, H73{PR}, J11, M41M, N40, N40{PR}

#### LYCOPERDACEAE

*Calvatia gigantea* - *Giant puffball* {SN}. The fruitbodies are edible, choice. They often grow to the size of a football, and occasionally to five feet across. Best eaten when young, white, and firm-fleshed. Somewhat bland, but very adaptable in the kitchen. May be braised, fried, grilled, broiled, sauteed, etc. Excellent sliced and fried like pancakes or cubed like tofu and added to clear soups or salads. Suitable for drying. ARORA, D., CZARNECKI 1986 [Cul, Re], FERNALD, MASEFIELD; N44, N44{KT}

*Lycoperdon pyriforme* - *Pear-shaped puffball* {CU}. The fruitbodies are edible, of good quality especially when young and the inside is firm and pure white. The sterile bases, when cooked separately, are said to have a flavor similar to morels. Considered one of the better puffballs. ARORA, D., FISCHER; I1M

#### MONASCACEAE

*Monascus purpureus* - *Chinese red rice mold*. The essential organism for production of *Chinese red rice*, used as a food coloring and also for flavoring. The best strains produce a dark red, water-soluble pigment that readily mixes with other natural pigments and with food. Red rice is made into a liquor called *red-dew wine* or *hung-lu-chiu*. HESSELTINE, HSU, STEINKRAUS, UPHOF; (for sources see Starter Cultures, page 537)

#### MORCHELLACEAE

*Morchella angusticeps* - *Black morel* {CU}. Fruitbodies are edible, choice. The caps have black ridges, hence the name. Usually considered to have a stronger, smokier flavor than the yellow morel. They should not be eaten raw or undercooked or with copious amounts of alcohol. ARORA, D., FISCHER, MILLER, O., STAMETS 1993 [Cu], TANAKA, WEBER; A38M{DF}, C11T{PR}, C11T{DF}, E14T{DF}, E21, E21{KT}, E2HSN, G0{DF}, H73{PR}, I3{SN}, 149,149{SN}, I49M{KT}, J60{SN}, M87, M87{SN}

*Morchella crassipes* - *Thick-footed morel* {PR}. The fruitbodies are edible, choice. Distinguished by its massive stalk and enlarged base. In eastern North America, many connoisseurs prefer it over all other morels. Sometimes considered to be a late form of the yellow morel. ARORA, D., FISCHER; H73

*Morchella esculenta* - *Morel*, *Yellow morel* {SN}. The fruitbodies are cooked and eaten or dried and stored. The meaty texture and rich flavor of the morel makes it one of the best of all edible fungi. It can be stuffed and baked, sauteed in butter, slow simmered in cream or stock, or combined with light meats, fowl, pasta, rice, potatoes, sauces, etc. Dried morels are said to improve in flavor as they age. BURR, CZARNECKI 1986 [Cul, Re], FERNALD, MABEY, MILLER, O., SCHNEIDER 1986 [Pre, Re], STEINECK [Cu], UPHOF, WEBER [Re]; A38M{DF}, C11T{PR}, C11T{DF}, C27, C94M{DF}, D93M{ED}, E21{SN}, E63G{KT}, H73{PR}, 149, I49{CU}, L99{DF}, M41M{DF}, M87, M87{CU}, M87{KT}, N40 {PR}, N40{DF}, etc.

*Morchella esculenta van crassipes* -> *Morchella crassipes*

#### MUCORACEAE

*Actinomucor elegans* - *Sufu mold* {CU}. The mold generally used in the commercial manufacture of *sufu*. It is one of the best for the production of *pehtze*, the fresh soybean curd inoculated with the grayish hairlike mycelium of the mold. HESSELTINE, STEINKRAUS; T34. (see also Starter Cultures, page 537)

*Mucor hiemalis* - *Sufu mold*, *Pehtze mold* {CU}. A mold that has a contributory role in the production of *sufu* and *pehtze*. HESSELTINE, STEINKRAUS; C7M, E13, M69

*Mucor miehei* - *Rennet mold* {PD}. Source of a microbial enzyme widely used as a coagulant in commercial cheese making. Often sold

as *vegetable rennet*, or occasionally as *Marzyme Supreme*. ROBINSON, R. 1991, ROBINSON, R. 1995; H28

*Rhizopus oligosporus* - *Tempeh mold* {CU}. Pure cultures of this mold are the best so far discovered for the production of *tempeh* from soybeans and other substrates. It also takes part in the fermentation of *shiro-koji*, *ragi tap eh*, *onchom*, *kecap*, and *tauco*. HESSELTINE, SHURTLEFF 1979, STEINKRAUS; M69, M87. (see also Starter Cultures, page 537)

*Rhizopus oryzae* - *Tempeh mold* {CU}. A mold that takes part in the fermentation of *tempeh* made from velvet bean (*Mucuna pruriens*), called *tempeh benguk*. In the production of *tempeh* from soybeans, it is valued for its long hyphae, which form a highly cohesive mycelium and firm cakes. It is also involved in the production of *onchom*, *ragi tapeh*, *lao-chao*, *brem*, and *tauco*. HESSELTINE, SHURTLEFF 1979, STEINKRAUS; T34

*Rhizopus stolonifer* - *Tempeh mold*, *Pozol mold* {CU}. One of the molds suitable for the production of *tempeh*, although it has lower protease activity than other species which limits its ability to digest proteins. Also involved in the production of *pozol*, a fermented corn product of southeastern Mexico. HESSELTINE, SHURTLEFF 1979, STEINKRAUS; C7M, D81T, E13, K26M, M69

#### PARMELIACEAE

*Cetraria islandica* - *Icelandic moss* {DF}. After boiling to remove its bitter principle, this lichen yields an edible jelly resembling *blancmange*, which is considered highly nutritious and digestible. In Iceland and other northern areas, it has been used in the preparation of puddings and soups, and when powdered, in the making of a type of bread. The powdered form can also be mixed with cocoa or chocolate. It has aromatic, bitter tonic properties which are used commercially in the formulation of various liqueurs and bitters. BURDOCK, FERNALD, GRIEVE, LAUNERT; F37T, GO, H46, K18M, N7D

#### PHALLACEAE

*Dictyophora indusiata* - *Bamboo mushroom* {DF}. A rare and exotic tropical mushroom enclosed in a lacy white, netlike "veil". It has a crunchy texture and a unique musty, earthy flavor. The dried fungus is reconstituted in water, then simmered until tender. Usually reserved for banquet dishes and fine vegetarian cuisine. Available dried at Chinese markets in different grades, some being extremely expensive. ARORA, D., PASSMORE; G19M

#### PLUTEACEAE

*Volvariella volvacea* - *Paddy-straw mushroom*, *Chinese mushroom* {SN}. The fruitbodies are cooked and eaten or dried for later use. Considered a delicacy, they are used in soups, sauces, stews, casseroles, omelettes, or steamed or stir-fried dishes. Commonly harvested in the early button stage, when they are most flavorful. Dried and canned products are available in Chinatown markets. CHANG, S. [Cu, Nu], CZARNECKI 1986 [Cul, Re], GRIGSON, J. 1975 [Cul, Re], HERKLOTS, STAMETS 1983 [Cu], STEINKRAUS [Pre], UPHOF; A7{DF}, C27G{DF}, E13G{DF}, E21, E21{CU}, I8M{DF}, 149, I49{CU}, J11{DF}, J60, M87, M87{CU}, N40{DF}

#### POLYPORACEAE

*Ganoderma lucidum* - *Ling chih*, *Reishi*, *Mannen-take* {SN}. Fruitbodies are edible. In Chinatown markets, a commercial mushroom confection is available—a pale, translucent, semi-soft candy made from the boiled extract of liqg chih. LINCOFF, STAMETS 1993 [Cu]; C27, C27G{PD}, C43M, D87M, E20MIKT}, E21{CU}, E21{DF}, E21{KT}, E21B{KT}, I1M, I1M{CU}, 13, 149, I49{CU}, 174, J60, J82{KT}, M87, etc.

*Grifola frondosa* - *Hen-of-the-woods*, *Mai-take* {SN}. Fruitbodies are edible, choice. They are large, fleshy, up to two feet broad with many smaller overlapping caps. One of the truly delicious mushrooms, they are cooked in soups and stews or prepared as tempura

(dipped in batter and deep fried). Also excellent when pickled. ARORA, D., CZARNECKI 1986 [Cul, Re], KAYE, LEIBENSTEIN [Re], MILLER, O., STAMETS 1993 [Cu], TANAKA; C27, D87M, E21{CU}, E21{DF}, E21{KT}, F10{DF}, H25M{PR}, H73{PR}, 13, I19M{DF}, 149, I49{CU}, 174 {KT}, J11{PR}, J60, J82{KT}, L89{KT}, M87, etc.

*Grifola umbellata* - *Zhu ling*, *Umbrella polypore*, *Chorei-mai-take* {CU}. The fruitbodies are edible, choice. They are reportedly of gourmet quality on a par with *G. frondosa*, but much more tender and not requiring long, slow cooking. ARORA, D., FISCHER, MILLER, O., STAMETS 1993 [Cu], TANAKA; I1M, M87, M87{SN}

*Laetiporus sulphureus* - *Sulphur-shelf*, *Chicken-of-the-woods* {SN}. Fruitbodies are eaten when fresh or dried, the edible portion being the trimmed margin of the young caps. The fresh mushroom is bright sulphur-yellow to orange and tends to be tough. It should be cut into very thin slices crosswise and stewed for a half-hour or more, or it can be parboiled, chopped finely and mixed with bread crumbs and a white sauce. FERNALD, GIBBONS 1962, MILLER, O., STEINECK [Cu], UPHOF; C11T{PR}, C11T{DF}, C43M, D87M, E21, H25M{PR}, H73{PR}, I1M, 149, I49{CU}, M87, M87{CU}, N44, N44{KT}

#### *Lentinula edodes* - *Lentinus edodes*

*Lentinus edodes* - *Shii-take* {KT}. Fruitbodies are eaten raw in salads, cooked, added to soups, fried, broiled, or oil-roasted. Dried ones are similarly used after soaking in warm water, or shredded and used in soup stocks. An essential ingredient of *sushi* in western Japan, and also Kwangtung-style Chinese dishes. Also used in omelettes, sauces, gravies, pasta dishes, etc. A tea is brewed from them. There are three grades of shiitake mushrooms—*donko*, *koko* and *koshin*, the thick-fleshed *donko* being the most desirable and expensive. CZARNECKI 1986 [Cul, Re], MORI [Nu, Re], SCHNEIDER 1986 [Pre, Re], SHURTLEFF 1976, SNYDER [Re], STAMETS 1983 [Cu], TANAKA, UPHOF; C11T{PR}, C11T{DF}, C27, C94M{DF}, C96{PR}, D75T, E21, E21{SN}, E32{KT}, E63G{PR}, F10, F10{DF}, G47B{DF}, H73{ER}, I19M{DF}, J60{SN}, M87, M87{CU}, etc. (for strains see Shiitake, page 520)

#### *Polyporus frondosus* - *Grifola frondosa*

#### *Polyporus sulphureus* - *Laetiporus sulphureus*

#### *Polyporus umbellatus* - *Grifola umbellata*

*Poria cocos* - *Tuckahoe*, *Indian bread*, *Fu ling*, *Hoelen* {DF}. The fruitbodies, growing wild on the roots of pine trees, are edible. They were consumed as food by the American Indians. In China, they are employed for making a gel-like food known as *Guilinggao*, often combined with rock sugar and water chestnut and eaten as a dessert. Also used in Chinese tonic soups, wines, breads, cakes and porridges. One of the ingredients of *Mu #16* tea. Cultivated forms are available. BENSKEY, FLAWS 1994, FLAWS 1995, HSU, LEUNG, TANAKA, TIERRA, UPHOF; E2M, E14T, E21, E60P{PD}, E66T{PD}, F37T, GO, G19M{PD}, G19P, G47B{PD}, G73, H36, H36{PD}, K18M, E2M, L34, M15M/PE}, N7D, etc.

#### RUSSULACEAE

*Russula aeruginea* - *Green russula* {SR}. The fruitbodies are edible, good. Dull green to dark green caps. Brittle, white flesh with a mild flavor. One of the best green russulas for culinary use Very good in casseroles and other dishes. ARORA, D., CZARNECKI 1995 [Cul]; D87M

*Russula mariae* - *Velvet russula* {SR}. Fruitbodies are edible, good. Striking, dark crimson or maroon caps. Thin, brittle flesh with a mild flavor. Good in casseroles and other dishes. ARORA, D., CZARNECKI 1995 [Cul]; D87M

*Russula xerampelina* - *Shrimp russula* {SR}. The fruitbodies are edible, choice. Mild, creamy-white flesh, unusually meaty for a

Russula. Strong odor reminiscent of shrimp or lobster, accentuated by cooking or drying. One of the best edible Russulas. Excellent stuffed with grated cheese, chives, walnuts and parsley, and then broiled. ARORA, D., CZARNECKI 1995 [Cu], MILLER, O.; D87M

#### SACCHAROMYCETACEAE

*Hansenula anomala* - *Ragi yeast* {CU}. A yeast that is involved in the fermentation of *ragi tapeh*, as well as *arrack, kanji, to rani, tapeh ketan, tapeh ketella, brent, and yakju*. HESSELTINE, SHURTLIFF 1979, STEINKRAUS; T34. (see also Starter Cultures, page 537)

*Kluyveromyces fragilis* - \**Kluyveromyces marxianus*

*Kluyveromyces marxianus* - *Primary yeast, Nutritional yeast* {DF}. This yeast is grown on cheese whey or molasses to produce food yeast, which is used as a nutritional supplement. It also has a role in the fermentation of *kefir* and *pozol*. Genetically modified strains produce an enzyme, *chymosin*, which is used as a rennet in the manufacture of cheese. CAMPBELL-PLATT, KOSIKOWSKI, PEDERSON, ROBINSON, R. 1995, STEINKRAUS, UPHOF; B31, E60P, G47C, H14I, H28{PD}, N7D

*Saccharomyces beticus* - \**Saccharomyces cerevisiae*

*Saccharomyces carlsbergensis* - *Saccharomyces cerevisiae*

*Saccharomyces cerevisiae* - *Wine yeast, Beer yeast, Bread yeast* {CU}. As well as occurring naturally in many fermented products, pure cultures of this yeast are widely used in the food industry. The numerous products include *sake, kustarak, champagne, sherry, pulque, ginger beer, sourdough bread, toddy, red rice, hopper, lebadura, whiskey, brewer's yeast, primary yeast, puto, ragi tapeh, kisra, ogi, pozol, chicha, kaffir beer, busaa, tesguino, cocoa, tibi, chu-chong-tsaw, and yakju*. BROUK, HESSELTINE, PEDERSON, SCHERY, STEINKRAUS, UPHOF; C7M, D81T, E13, G37P, K26M, M69. (see also Starter Cultures, page 537)

*Saccharomyces delbrueckii* - \**Torulopsis delbrueckii*

*Saccharomyces fragilis* - *Kluyveromyces marxianus*

*Saccharomyces kefir* - \**Candida kefir*

*Torulopsis delbrueckii* - *Kefir yeast, Sherry yeast* {CU}. A lactose negative-yeast that takes part in the fermentation of *kefir*, as well as *sherry* and *colonche*. BROUK, PEDERSON, STEINKRAUS; T34. (see also Starter Cultures, page 537)

*Torulopsis taboadae* - *Torulopsis delbrueckii*

#### STROPHARIACEAE

*Hypoloma capnoides* - *Smoky-gilled hypholoma, Conifer tuft* {CU}. The fruitbodies are edible, good to choice. They have a sweet, nutty, aromatic flavor and are excellent in stir-fries. They are of best quality when still young. One of the few gourmet mushrooms adapted to cultivation on conifer stumps and logs. ARORA, D., FISCHER, STAMETS 1993 [Cu], STEINECK [Cu]; E21

*Hypoloma sublatentium* - *Perplexing hypholoma, Brick cap, Chestnut mushroom, Kuri-take* {SN}. Fruitbodies are boiled and eaten or cooked in soups. The taste is mild, not bitter. They are usually treated with vinegar before being cooked. Cultivated forms are available in Japan. CZARNECKI 1995, FISCHER, MILLER, O., TANAKA, UPHOF; E20M, E20M{CU}, E21{CU}, M87, M87{CU}

*Naematoloma capnoides* - *Hypoloma capnoides*

*Naematoloma sublatentium* -> *Hypoloma sublatentium*

*Pholiota cylindrica* -> *Agrocybe aegerita*

*Pholiota nameko* - *Nameko* {SN}. Fruitbodies are edible, choice, covered with a slippery wet coating. Also called *button mushrooms*

in Japan where they are sold fresh or in cans. They are frequently used in miso soups, steamed in a pipkin, or mixed with grated daikon as a topping for chilled tcfu. KAYE, SHURTLIFF 1975, STAMETS 1993 [Cu], STEINECK [Cu], TANAKA, TSUJI [Re], UPHOF; E21{CU}, E63G{PR}, G20M{ED}, 149,149{CU}, 174, M87, M87{CU}, M87{KT}

*Pholiota* sp. - *Cinnamon cap* {PR}. The fruitbodies are eaten, choice. Attractive, brown-capped mushroom with white stems. Excellent crunchy texture and delicate flavor. Retains its texture after cooking, making it ideal for soups and sauces. Also good in vegetable and meat sautees and stir fries. Can be frozen to enhance its taste. Developed by Gourmet Mushrooms. E63G, H73

*Stropharia rugoso-annulata* - *King stropharia, Garden giant, Wine cap* {SN}. Fruitbodies are edible, choice. A large, thick-fleshed mushroom with reddish tinged caps and an excellent flavor. Recommended for culture by home growers in outdoor cold frames or garden beds. It commonly occurs in grounds where potatoes have been planted. MILLER, O., STAMETS 1983 [Cu], STEINECK [Cu]; D87M{SR}, E21, E21{KT}, 13,149,149{CU}, 149M{KT}, 174, J60, L89{KT}, M87, M87{CU}, M87{KT}

#### STRAINS {CU}

**Gullivar:** A strain notable for its very large size. The original culture was made from a wild specimen with a cap of 15 inches in diameter. Produces associated buttons the size of grapefruits, weighing over a pound each. IIM

**Pallidus:** Produces an attractive "albino" mushroom that is medium to large in size. IIM

#### TERFEZIACEAE

*Picoa carthusiana* - *Oregon black truffle* {PR}. The fruitbodies are edible, choice. A black to dusky slate-violet underground fungi resembling the true truffles, *Tuber* spp. Delicious either raw or cooked, comparing favorably with European truffles. Somewhat larger and milder in flavor than the Oregon white truffle. ARORA, D., CZARNECKI 1995 [Re]; M34

*Terfezia boudieri* - *Terfaz, Moroccan truffle* {PD}. Fruitbodies are consumed as food in North Africa, Asia Minor, and the Mediterranean region. They are an ingredient of a lamb stew that is a traditional dish of Moroccan Jews. Sold in local markets, and available canned in Middle Eastern stores in North America. UPHOF, WOLFERT 1973 [Re]; A7

#### TREMELLACEAE

*Tremella fuciformis* - *Silver ear, White fungus, Bai mu er, Shuet yi* {DF}. Fruitbodies are eaten. They have very little flavor, but are esteemed for their excellent crunchy texture, somewhat reminiscent of seaweed or bird's nests. In Chinese cuisine, they are usually reserved for clear tonic soups made with chicken or pork. Used as a cheap substitute for the more expensive *snow fungus*—actually the sex glands of the Beijing snow frog. BENSLEY [Nu], COST 1988, COTTERELL [Pre], GRIGSON, S., LEE, G. [Re], PASSMORE, TAN [Re], UPHOF; A7, C27G, H36

#### TRICHOLOMATACEAE

*Armillaria magnivelare* - *Tricholoma magnivelare*

*Armillaria mellea* - *Armillariella mellea*

*Armillaria ponderosa* - *Tricholoma magnivelare*

*Armillariella mellea* - *Honey mushroom, Chiodini, Nara-take* {CU}. The fruitbodies are edible, choice. They are eaten cooked, pickled, salted, dried, marinated, or added to soups. Dried ones may be reconstituted in water, coated with flour, seasoned and fried in oil. FARLEY, MILLER, O., TANAKA, UPHOF; C7M, C11T{PR}, C11T{DF}, D87M{SR}, M69

*Clitocybe nuda* - *Blewits, Murasaki-shimeji, Masked tricholoma* {CU}. Fruitbodies are edible, choice. Its striking violet color, firm

texture, and good taste give this species high culinary appeal. This mushroom should not be eaten raw, only after cooking or parboiling. Also good for mixing with other mushrooms and for drying. Recommended for home cultivators and natural culture techniques. CZARNECKI 1986 [Cu], Re], GRIGSON, J. 1975 [Cu], Re], MILLER, O., STAMETS 1983 [Cu], STEINECK [Cu], TANAKA; D87M{SR}, E21,149,149 {SN}, M87, M87{SN}

*Flammulina velutipes* - *Enoki-take*, *Velvet stem*, *Winter mushroom* {SN}. The crisp, mild-flavored fruitbody is eaten raw in salads and sandwiches, boiled, sauteed, or used in sukiyaki, one-pot cookery, and as a garnish for clear soups and broths. Cultivated forms, having been grown in darkened environments, are long, thin, and pale white in color. CUSUMANO [Cu], Re], CZARNECKI 1986 [Cu], Re], MILLER, O., SCHNEIDER 1986 [Pre, Re], SHURTLEFF 1975, STAMETS 1983 [Cu], STEINECK [Cu], TANAKA, UPHOF; D87M{SR}, E13G{PR}, E21{CU}, E21{KT}, G5{PR}, H73{PR}, 149, 149{CU}, 174, J60, M87, M87{CU}, N40{PR}, N44, N44{KT}, etc.

#### STRAINS

**Yoki:** Selected strain from Japan. Likes cool growing conditions. Grow on an oak sawdust and bran mixture in light or darkness, indoors or out. I1M{CU}

*Hypsizygus tessulatus* - *Buna-shimeji*, *Yamabiko hon-shimeji*, *Beech mushroom*, *Clam shell* {SN}. The fruitbodies are edible, choice. They have a firm, crunchy texture and a sweet, nutty, delicious flavor. Excellent in soups and stir-fries. Best picked when young and firm. One of the best of the gourmet oyster-type mushrooms. Highly esteemed in Japan. Available fresh, dried or powdered. CZARNECKI 1995, STAMETS 1993 [Cu]; E13G{PR}, E21{CU}, E63G{PR}, H73{PR}, I1M{CU}, J11{PR}, M87, M87{CU}, M87{KT}, N44, N44{KT}

#### STRAINS {PR}

**Alba:** Distinctive strain with a bright, white color and a rich, exotic flavor. H73

*Hypsizygus ulmarius* - *Elm mushroom*, *Shiro-tamogi-take* {SN}. Fruitbodies are edible. The flesh is firm, hard, tough, and white throughout. The odor is pleasant and yeast-like, the taste mild. If the older caps are used only the tender parts should be cooked, though the very young ones can be used entire. FERNALD, GIBBONS 1962, MILLER, O., STAMETS 1993 [Cu], STEINECK [Cu], TANAKA; E21{CU}, N44, N44{KT}

#### STRAINS {CU}

**Bellefonte:** A vigorous strain that originated in the wild. Grows on elm and other hardwoods. I1M

*Lepista nuda* - *Clitocybe nuda*

*Lyophyllum aggregatum* - \**Lyophyllum decastes*

*Lyophyllum decastes* - *Hon-shimeji*, *Japanese honey mushroom*, *Fried chicken* {PR}. Fruitbodies are edible, choice. They are put in soups, or boiled and then eaten with vinegar. In Japan, they are cultured in bottles, producing a bunch of fruiting bodies with tan to grayish-brown caps averaging one inch in diameter. KAYE, MILLER, O., SHURTLEFF 1975, TANAKA; G5, H25M, N40

*Lyophyllum ulmarium* - + *Hypsizygus ulmarius*

*Lyophyllum* sp. - *Shimeji*, *Japanese oyster mushroom* {SN}. Fruitbodies are edible, choice. Young caps are black to elegant gray in color, becoming light brown as they mature. The stems have a more chewy texture than other oyster mushrooms. Very young clusters are sometimes harvested before the caps expand for use in gourmet Japanese cooking. Best suited for spring, summer and fall home cultivation. HOMMA [Re], KAYE; E20M, E20M{CU}, G5{PR}, 174 {KT}

*Marasmius oreades* - *Fairy ring*, *Fall mousseron* {DF}. Fruitbodies are edible, choice. Although slightly leathery in texture they have a very good flavor that enhances soups, stews, sauces, gravies and vegetable dishes. Can be picked over a comparatively long

period. Also dried for winter use. Common in lawns, meadows and other grassy areas where they form circles or rings that expand in size each year. May be grown in gardens or in strips of grass between rows of dwarf fruit trees. Occasionally sold in markets. FERNALD, GIBBONS 1962, GRIGSON, S., LAUNERT, MI-CHAEL [Pre, Cu], MILLER, O., STEINECK [Cu], UPHOF; A7, C11T{PR}, C11T{DF}, H25M, H25M{PR}, M34{PR}

*Pleurocybella porrigens* - *Angel wings*, *Angel trumpets* {PR}. The fruitbodies are edible, good to very good. They are an attractive, vivid pure white to milky-white in color, but are somewhat thin and mild-flavored compared to the common oyster mushroom, although their stalks are considered more tender. ARORA, D., FISCHER, MILLER, O., TANAKA; H25M, H73

*Pleurotus abalonus* - *Pleurotus cystidiosus*

*Pleurotus cornucopiae* w. *citrinopileatus* - *Golden oyster*, *Savory oyster*, *Hime-hira-take* {SN}. Fruitbodies are edible, choice. They are small to medium, lemon yellow in color, and are highly aromatic. Has slightly thinner flesh than other pleurotes and is therefore more delicate. Can be grown in gardens on short logs or long, prostrate tree trunks. The bright color will enliven parts of an ornamental garden lying in partial shade. STAMETS 1993 [Cu], STEINECK [Cu], TANAKA; D75T{KT}, E20M{CU}, E20M{KT}, E21B{KT}, E63G{KT}, E63G{PR}, G5{PR}, I1M, 149,149{CU}, 174, J60, M87, M87{CU}, M87{KT}, etc.

#### STRAINS

**Summer Gold:** (#25) Warm weather strain. Heavy producer of striking bright golden mushrooms. Excellent sauteed or stir-fried, although the golden color is lost. Produces mushrooms in clusters, often the size of both of a man's hands. Has survived the winter in Wisconsin, where the first flush occurs in June. K97

*Pleurotus cystidiosus* - *Abalone mushroom*, *Maple oyster mushroom* {CU}. Fruitbodies are edible, good to choice. Can be used in stir-fries, white sauces, or cooked with lamb. Cultivated commercially in parts of Asia, especially Taiwan and Thailand. Available fresh or dried. STAMETS 1993 [Cu]; A7{DF}, M87, M87{SN}

*Pleurotus djamor* - *Pink oyster*, *Flamingo oyster*, *Strawberry oyster*, *Rose oyster* {KT}. The fruitbodies are edible, good to choice. Striking reddish to pink tropical mushrooms. Generally considered tougher and more tart than other oysters. They have a very short shelf life, only four to five days. The colors may vary or fade depending on age, strain and light conditions, and they disappear on cooking. Drying may preserve some of the pinkish tones. CZARNECKI 1995 [Cu], Re], STAMETS 1993 [Cu]; E20M{CU}, E20M{KT}, E21, E21{CU}, H73{PR}, I1M, I1M{CU}, 174, M87, M87{CU}

#### STRAINS {SN}

**#172:** Produces mushrooms with pink to pale salmon-colored caps. More fragile-looking than other oyster mushroom strains. G55M

*Pleurotus eryngii* - *King oyster*, *Trumpet royale*, *Cardarella* {SN}. Fruitbodies are edible, choice. They are medium to large with a light, reddish-brown cap and a tan stem. A robust fleshy mushroom with a sweet flavor and a meaty texture, considered the best flavored oyster mushroom by many. Native of the southern European steppes and sub-tropical areas of North Africa. STAMETS 1993 [Cu], UPHOF; E21{CU}, E63G{PR}, H73{PR}, I1M, I1M{CU}, 149, 149{CU}, J60

*Pleurotus ostreatus* - *Oyster mushroom*, *Tree oyster*, *Hira-take* {SN}. The young, tender fruitbodies are stewed, sauteed in butter, prepared as tempura, used in soups, sauces, polenta, and casseroles, or sometimes dried or preserved in oil for later use. In Italy, they are served with salt cod, pork loins, or sausages. One of the most dependable mushrooms for home cultivation. Has the strongest flavor of the cultivated pleurotes. BIANCHINI, CZARNECKI 1986 [Cu], Re], FERNALD, MILLER, O., SCHNEIDER 1986 [Pre, Re], STAMETS 1983 [Cu], STEINECK [Cu], STEINKRAUS [Cu], TANAKA; C11T{PR}, C11T{DF}, C27, C27{KT}, D75T{KT},



E21, E21{KT}, E32{KT}, 13,149, J11{PR}, J60, L16{DF}, M87, M87{KT}, etc.

#### STRAINS {SN}

**#21:** Fall fruiting strain. Very heavy producer of tasty, grayish-white mushrooms. Most production occurs in late fall, with some spring fruiting in certain years when conditions are right. K97

**# 23:** Spring fruiting strain. Light colored caps with good eating quality. Produces good quantities early in the season before insects become a problem. Sometimes yields a small crop in the fall and during a cool summer. K97

**#119:** Produces mushrooms with a grayish-purple cap. Requires lower temperatures and CO<sub>2</sub> levels than other strains. G55M

**Black:** (Black Oyster) Distinctive, blackish mushrooms. Similar to Blue Capped, but with a more robust flavor. Can be used in a similar manner. Developed by Gourmet Mushrooms. E63G{PR}

**Blue Capped:** (Blue Oyster) A strain with bluish-gray caps. Produces 1 to 1 1/2 pounds of mushrooms over a period of 6 to 8 weeks in flushes of 2 to 3 weeks apart. Requires a room temperature of 60 to 75° F. and strong indirect light. D75T{KT}, E21{CU}, E63G{KT}, E63G{PR}, H73{P£}, I74{KT}, J60{CU}, M87, M87{CU}

**Fall Blue:** (#27) Cool and cold weather strain. Very attractive blue oyster whose strong points are excellent eating qualities and heavy production during the cool, insect free autumn season. A good strain to use for winter preserving. Should do well in early winter in southern states. K97

**Florida:** (Florida Oyster, Bikini Oyster) Cap whitish to gray to pale yellow brown. Flesh thin and white. This strains preference for warmer temperatures recommends it for cultivation during the late spring through early fall. Original strain is from wild specimens first cultivated in 1958 by S.S. Block of Gainesville, Florida. STAMETS 1983; D87M{SR}, I1M{CU}, 149,149{CU}, M87, M87{CU}

**Frost Queen:** Often fruits outdoors in mid-winter in central Pennsylvania during the annual "January thaw". I1M{CU}

**Sonoma Brown:** Large, brownish-gray mushrooms produced in abundance. Subtle, distinctive flavor. Sonoma Brown is a trademark of Gourmet Mushrooms. E63G{KT}

*Pleurotus ostreatus* var. *columbinus* - *Columbine oyster* {CU}. Fruitbodies are eaten, choice. A rare variety of the oyster mushroom, usually distinguished by its nearly perfect, even cap margin and broadly convex cap. Recommended for ornamental gardens, combined with yellowish and brownish species. ARORA, D., STAMETS 1993, STEINECK [Cu]; M87, M87{SN}

#### STRAINS

**Camelot:** Heavy fruiting, fast growing, flavorful strain that may produce tan, salmon, gray or even blue colored mushrooms. Does not require cold shock and often begins fruiting after just one week of exposure. Performs well on wheat straw. Should receive a minimum of 10 hours light per day. I1M

#### *Pleurotus porrigens* - *Pleurocybella porrigens*

*Pleurotus pulmonarius* - *Phoenix oyster*, *Indian oyster*, *Gray oyster*, *Sajor caju* {SN}. Fruitbodies are edible, choice. Medium to large with a white stem and dark brown cap. Excellent for stir frying. Young specimens are much superior in flavor and texture. A sub-tropical, heat-loving species from the Himalayan foothills. Requires little or no heat shock for fruiting. STAMETS 1993 [Cu]; C11T{PR}, C11T{DF}, D75T{KT}, E21, E21{CU}, E21B{KT}\ I1M{CU}, 149,149{CU}, J60

#### STRAINS

**Amvcel 3014:** Fast-growing, self-fruitful strain adapted to many types of growing conditions and substrates. Particularly well-suited to warmer growing and fruiting conditions. Depending upon which cultural practice is used, it will form clusters of large mushrooms or smaller, single mushrooms. A41

**Western Biologicals #1:** A grey brown strain. Fast fruiting at 15 to 25° C. Tolerant of adverse environmental conditions. M87, M87{CU}

**Western Biologicals #2:** A chocolate brown strain. Fast fruiting at 15 to 25° C. Not as tolerant of adverse environmental conditions as Western Biologicals #1. M87, M87{CU}

#### *Pleurotus ulmarius* *Hypsizygus ulmarius*

#### *Tricholoma conglobatum* - *Lyophyllum decastes*

*Tricholoma magnivelare* - *White matsutake*, *American pine mushroom* {DF}. Fruitbodies are edible and are highly esteemed, especially by Japanese Americans. Distinctive, chewy texture and spicy, resinous, aromatic flavor. Excellent in stir-fried dishes, grilled, or added to soups. Will not lose its character when combined with cheese or other strong flavored foods. Exported to Japan, where the native matsutake has become scarce. ARORA, D., CZARNECKI1995 [Re], FISCHER, LEIBENSTEIN [Re], TSUJI; A7, C96, E21B, E56, G5, H25M{PR}, H73{PR}, M34{PR}, M41M, M87{CU}, M87{SN}

#### TUBERACEAE

*Tuber aestivum* - *Summer black truffle*, *Red-grained black truffle*, *Truffe de la Saint-Jean* {PR}. Fruitbodies are edible, choice. They can be eaten fresh when very young. Otherwise they are baked, sauteed in butter or olive oil, added to soups, etc. One of the ingredients of certain liver sausages, called *Trüffel Leberwurst* in Germany. Considered inferior to the Piedmontese and Perigord truffles. Once collected commercially in Great Britain, near the Winterslow region of Wiltshire. Usually harvested from the first of May to the end of November in Italy. BIANCHINI, BROUK, CARLUCCIO [Re], MABEY, TORINI, UPHOF; B71G, C94M, C94M{PD}, H19M, L15G, L99, M34, M34{PD}

#### *Tuber albidum* - *Tuber borchii*

*Tuber borchii* - *March truffle*, *Tuscan white truffle* {PD}. The fruitbodies are eaten, choice but less valued than the Piedmontese and Perigord truffles. Distinctive, resinous aroma and flavor somewhat reminiscent of matsutake, with overtones of garlic. Loses flavor when cooked and becomes very spongy. Often available bottled in its own juices. Usually harvested from mid-January to the end of April in Italy, and sometimes also in the fall. Popular in Tbscan cooking. BIANCHINI, TORINI; M34, M34 {PR}, N51M

*Tuber brumale* - *Truffe violette*, *Winter black truffle* {PR}. The fruitbodies are eaten, of fine quality but slightly less desirable than the Piedmontese and Perigord truffles. Stores well when cut into slices and dried. Sold in local markets and consumed in various dishes. Much of the commercial supply is harvested in France. In season from the first of January to mid-March. ROOT 1980b, STEINECK [Cu], TORINI, UPHOF; M34, M34{PD}

*Tuber californicum* - *California truffle* {PR}. Fruitbodies are edible. They are solid, firm, marbled, and have a very strong flavor that goes well in gravies and sauces. ARORA, D.; M99M

*Tuber gibbosum* - *Oregon white truffle* {PR}. Underground fruitbodies are edible, very choice. James Beard rated them equal to the Italian white truffle. In preparing them for cooking, they need only be brush-cleaned, and slivered, grated, or crushed. Use them in pates, omelettes, as an insert under the skin of cooking turkey or chicken, or to flavor rice, barley, bulghur, eggs in the shell, sour cream, cheeses, butter, sausage, wine, and brandy. They are harvested commercially in the Pacific Northwest and marketed throughout North America. ANONYMOUS 1987 [Pre, Re], CZARNECKI 1986 [Cul, Re]; C11T, C11T{DF}, M99M

*Tuber himalaiense* - *Chinese truffle*, *Himalayan black truffle* {PR}. The underground fruitbodies are edible, good. Dark chocolate in color and with a moderate aroma and flavor. Exported from China to Europe in large numbers, both fresh and dried. Often adulterated with other species. M34, M34{DF}, M34{PD}

*Tuber magnatum* - *Piedmontese truffle*, *White truffle*, *Alba truffle* {PR}. Underground fruitbodies are edible, very choice. The most celebrated and expensive of all truffles. They have a strong, penetrating aroma and flavor, somewhat reminiscent of garlic. Raw shavings are excellent for flavoring risotto, pasta, egg dishes, cheese fondues, *bagna cauda*, and are particularly good prepared as "truffles parmesan". Often placed in containers with eggs, to which they impart their delicious flavor. Specimens weighing one pound or more are occasionally found. Does not keep as well as the Perigord truffle, only about seven days. Usually harvested from the first of October to the end of December in Italy. BIANCHINI, CARLUCCIO [Re], GRIGSON, J. 1975 [Cul, Re], UPHOF; B71G, H15T, H25M, H25M{PE}, M34, M34{PD}

*Tuber melanosporum* - *Perigord truffle*, *Black truffle*, *Winter black truffle* {PR}. Underground fruitbodies are edible, very choice. While the Piedmont truffle is very good raw, the black truffle is best cooked. For example, in *tartufo alia narsina* in which the truffles are finely sliced in layers with cheese and butter, seasoned with basil, nutmeg, oregano, and bay leaves, and then baked. They are widely used to flavor pates, eggs, butter, sauces, pastas, risotto, etc. Sometimes sold in jars of arborio rice, to which they impart flavor. Truffles can be canned, frozen, or preserved in cognac or armagnac. In season from mid-November to mid-March. BIANCHINI, CZARNECKI 1986 [Cul, Re], GRIGSON, J. 1975 [Cul, Re], PICART [Cu, Re], ROOT 1980b [Cul], UPHOF; B71G, C11T, C11T{PD}, C94M, C94M{EE}, H15T, H19M, H25M, H25M{PD}, L15G,

## ALPHABETICAL

### ALARIACEAE

*Alaria esculenta* - *Murlins*, *Dabberlocks*, *American wakame*, *Lady's tresses* {DF}. The main fronds, excluding the midribs, are steeped in water for a day or two and eaten as a vegetable, either fresh or dried. The sweet, crunchy midrib is added to salads, sandwiches, soups, stews, etc. Reproductive, finger-like sporophylls, having a flavor reminiscent of peanuts, are eaten fresh. Will yield a satisfactory food gel for home gelatin making. LAUNERT, MADLENER 1977 [Pre, Re], MADLENER 1981 [Re]; C73P, E60P, H15, H15M, H25M{PR}, H91, H19M

*Alaria marginata* - *Winged kelp*, *California wakame* {DF}. Fresh or dried blades may be used like spinach or cabbage for wrapping various fillings, or they can be added to soups and vegetable dishes. The chopped fresh midrib makes a sweet, crunchy addition to a salad. When fried, the sporophylls are said to have the flavor of peanuts. One of the sources of kelp meal used as a food supplement. LEWALLEN [Re], MCCONNAUGHEY [Pre, Re], ROOS-COLLINS [Re]; E56, H50, H91, I23G, I59D, I81T, J83U

### *Egregia laevigata* - \**Egregia menziesii*

*Egregia menziesii* - *Feather boa*, *Boa kelp* {DF}. Although thick and tough, young parts may be harvested and used as a vegetable. They become tender with brief cooking. The small, oblong floats or bladders, harvested from young or old algae, make an attractive and interesting addition to soups, stews and stir-fried dishes. CLARKE [Re], MCCONNAUGHEY [Pre]; H50

*Eisenia bicyclis* - *Arame* {DF}. The blades are eaten fresh or sun dried for later use. They can be added to soups and salads, cooked with tofu or vegetables, or marinated in a dressing of vinegar and soy sauce. Considered by some to be more delicious when fried in oil. Resembles hiziki, but softer in texture and with a milder, sweeter flavor due to a high mannitol content. Popular with natural foods enthusiasts and those following a macrobiotic diet. ARASAKI [Re], BRADFORD [Pre, Re], MADLENER 1977 [Re], MCCONNAUGHEY; A52M, E47M, E56, E60P, E66T, F88, G47B, H91, H19M

L99, M34, M34{PD}

### USNEACEAE

*Evernia prunastri* - *Oak moss* {DF}. A lichen that was reportedly used by the ancient Egyptians as a leavening agent in bread making, a practice which is apparently still practiced by the Copts and Arabs. It has also been reported that it was added to bread as a flavoring or for its ability to imbibe and retain odors. Source of various extracts used commercially for flavoring baked goods, candy, beverages, soups, puddings, etc. BURDOCK, HEDRICK 1919, MORTON 1976, UPHOF; A49D, E14T, F32D, F86G, GO, G73, G84, K2, K18M, M15M, N7D, N19M

### USTILAGINACEAE

*Ustilago maydis* - *Corn smut*, *Huítlacoche*, *Cuítlacoche* {EE}. Fruitbodies are cooked and eaten as a delicacy or dried for later use. Their texture and flavor are unique. In Mexico, they are sold in markets and are widely eaten in omelettes, crepes, soups, stews, and vegetable dishes. Some Mexican gardeners encourage the smut by scratching the base of a plant, and pile soil against the scratch so that the fungus spores infect the plant's tissues. They are harvested while still light in color and succulent. FELL 1982ft KAVASCH [Re], QUINTANA 1986 [Re], UPHOF, WEATHERWAX, WILSON, G., YANOVSKY; A7, B73T, B73T{PR}, C34G, H25M, H25M{PR}, H73, M41M

## OF ALGAE FAMILIES

*Undaria pinnatifida* - *Wakame*, *Miyok* {DF}. The sweet, delicately textured blades are eaten, either fresh or dried. In Japan, they are most often used for *aemono* and miso soups. Also eaten in salads, tofu preparations, made into *kinchi*, or cooked with rice vinegar. Often cooked with bamboo shoots to soften their tough fibers. Baked and ground into a powder, it is added to a popular Japanese rice-and-broth dish called *chazuke*, or used as a garnish for brown rice and cereal dishes, *ita wakame*, similar to nori sheets, can be toasted and use for wrapping rice balls or crumbled and sprinkled on other foods. *Kuki-wakame* or stalk wakame, the midribs, are prized as a delicacy and are commonly salted or preserved in vinegar. The sporophylls, known as *mekabu*, have a strong, salty flavor and sticky texture and are excellent added to root vegetable stews. ARASAKI [Re], BISSELL, BRADFORD [Re], LEE, F. 1988 [Re], MADLENER 1977 [Pre, Re], MATIGNON [Re], SHURTLEFF 1975 [Pre, Re]; A7, A52M, C34G, C73P, D3M, E22, E56, E60P, E66T, F88, G20M, G47B, I8M, H91, H91{ED}, I19M, I19M{ED}, I76T, etc.

### BANGIACEAE

*Bangia fusco-purpurea* - *Cow hair*, *Hair seaweed*, *Fa-tsai* {DF}. A black, hairlike sea vegetable most often found in a dry form that must be reconstituted by soaking in water. Very fragrant but completely tasteless, it absorbs the flavors of other foods and provides a slippery, bouncy texture. It can be added to soups and salads, but is most often an ingredient of *Lohan's Delight*, a Buddhist vegetarian dish. Traditionally prepared with dried oysters during the first two weeks of the Chinese New Year. In Fujian, fresh or dried rolls of cow hair are cut into small pieces and fried in oil until crisp. MADLENER 1977 [Nu, Re], SO [Re], XIA; C27G, M32T{CU}

*Porphyra columbina* - *Kiwa*, *Iwa nori*, *Karengo* {DF}. One of the best tasting sea vegetables, either raw or toasted. Soft, tender, chewable fronds with a mild flavor. Excellent tossed on salads, pasta, grains, mushrooms and vegetables. Also very good prepared as a relish and served with fish or shellfish fritters. Esteemed by the Maoris, who it as a delicacy on special occasions. In Chile, it is mixed with sea lettuce and fried with small pieces of meat. FULLER [Re], MADLENER 1977, MCCONNAUGHEY, SCHNEIDER 1997; E47M, E56, E56{PD}, H91, H91

*Porphyra perforata* - *Winter nori*, *California nori* {DF}. The blades are steamed, stir-fried, simmered in soy sauce, or wrapped around fish and sautéed. When dried, they may be toasted and eaten as a snack or ground and added to soups, breads and pastries. The Kwakiutl and Haida Indians of British Columbia developed an elaborate process that yields what is considered a highly superior product in terms of tenderness. MADLENER 1977 [Pre, Re], MCCONNAUGHEY [Pre, Re], ROOS-COLLINS; H50, H91, I23G, I59D, J83U, J83U{PD}

*Porphyra tenera* - *Ama-nori*, *Asakusa-nori*, *Sushi nori* {DF}. Source of the thin, purplish-black nori sheets widely used for wrapping vinegared rice (sushi). Also available in several other dried forms—pretoasted (*yaki-nori*), seasoned (<*ajitsuke-nori*), crumbled (*imomi-nori*), and garnish (*matsuba-nori*). Has the best flavor, texture and aroma of all the commonly marketed *Porphyra* species. In China, it is eaten in sea vegetable soups, with soy sauce, or used for making a gel used in cooking. Has been cultivated in the Orient since the 1600's. ARASAKI [Re], MADLENER 1977 [Pre, Re], SHURTLEFF 1975 [Re]; A7, C34G, E56, E60P, F88, G20M, G47B, H91

*Porphyra umbilicalis* - *Purple laver*, *Atlantic nori*, *Sloke* {DF}. The flattened, leaf-like thallus is eaten, either raw or cooked. *Laverbread*, a gelatinous puree of the algae is sold in corner grocery stores in Wales and is the main ingredient of several traditional Welsh recipes including a breakfast cake made by sprinkling the puree with oats, and then frying in bacon fat or butter, and laver sauce—served like mint sauce to accompany various meats, especially mutton. DWIES [Re], IRWIN [Re], LAUNERT [Re], MADLENER 1977 [Pre, Re], MICHAEL [Pre, Re]; E60P, H15, H15{ED}, H15M, H91, I19M

*Porphyra yezoensis* - *Susabi-nori* {DF}. The ruffled fronds are widely used in Asia for the production of dried nori sheets, which are popular for making *tsukudani*. Hardier and heavier yielding than *Porphyra tenera*, accounting for over 85 percent of the crop in Japan. SHURTLEFF 1975, TANAKA; H15

#### CERAMIACEAE

*Plocaria tenax* - *Sea-swallow nest algae* {DF}. The fronds are used for making the famous and expensive Chinese *bird's nests* or *yin waw*, widely consumed in tonic soups and jellies. Bland and delicate, but readily absorbs the flavors of other ingredients and provides texture. Often combined with chicken, duck, ham, rock sugar, etc. Cliff dwelling swallows of Southeast Asian islands line their nests with a hardened, gelatinous mixture of saliva and the predigested fronds. CHANG, W. [Pre, Re], COST 1988, LEYEL 1987a, SO [Cul, Re], TAN [Re], TANAKA; C27G, G19M

#### CLADOPHORACEAE

*Cladophora* sp. - *Khai*, *Kaipen* {DF}. A freshwater algae collected from ponds and other stagnant waters near the Mekong River and sold in the markets of Laos. Traditionally added fresh to soups and stews for flavor. Also dried and pressed into sheets along with finely sliced vegetables, then sprinkled with sesame seeds. The dried product may be grilled or briefly deep fried. SING [Re]; H3T

#### DICHOTOMOSIPHONACEAE

*Dichotomosiphon tuberosus* - *Khai* {CU}. A freshwater algae collected from ponds and other stagnant waters during the rainy season and sold in the markets of Luang Prabang, Laos. SING; M32T

#### FUCACEAE

*Ascophyllum nodosum* - *Yellow wrack*, *Knotted wrack* {DF}. One of the principal sources of *alginate*, used commercially for thickening soups, emulsifying ice-cream and salad dressings, and as a gelling agent for confectionery, puddings, gelatins, jellies and other foods. Also made into thin films which are used as edible sausage casings. BROUK, LEUNG, MASEFIELD, MATIGNON [Re]; F86G, L34

*Fucus vesiculosus* - *Bladder wrack*, *Rockweed* {DF}. The fresh parts are boiled or stewed with fish, meat or vegetables by placing them in linen or cheesecloth bags which are then suspended in a large soup pot. The bladder wrack is removed, but it adds a sweet, delicious flavor to the dish. The salt water-filled bladders act as a steaming agent for cooking foods in the traditional *New England clambake*, the steam contributing a sweet, savory, salty flavor to the dish. Dried plants are used for making an excellent herbal tea. GIBBONS 1964, LAUNERT, MADLENER 1977 [Pre, Re], MATIGNON [Re], NEUSTADT; A49D, B21P, C29T{ER}, E14T, F37T, F86G, GO, H50, I181T, J3{ER}, J83U{OR}, K2, K18M, L34, M15M, etc.

#### GELIDIACEAE

*Gelidium amansii* - *Tengusa*, *Shie-hua-ts'ai* {DF}. The most important source of *agar-agar* or *kanten*, a colloidal extract used like gelatin or pectin in various foods including confectionery, Oriental-style jellies, baked goods, and dairy foods Available in bundled strips or cakes, or in cut, flaked, granulated or powdered forms. Sometimes eaten alone with soy sauce and vinegar. Cakes of jelled *kanten* are used for making *tokoroten* noodles, popular in Japan. The name *tokoroten* is derived from the original, crude gel-like dish made by boiling *Gelidium* species and allowing them to coagulate. This has been eaten in Japan for over 1,200 years. ARASAKI [Re], BURDOCK, LEUNG, MADLENER 1977 [Pre, Re], MADLENER 1981 [Re], SHURTLEFF 1975, TANAKA; A45, A52M, E56, E60P, F88, G20M, G47B, H91, I19M, I76T, M15M, N7D

#### GIGARTINACEAE

*Chondrus crispus* - *Irish moss* {DF}. A major source of *carrageenan*, a gum used widely for gelling, thickening, emulsify and stabilizing various foods such as commercial ice cream, cream cheese, yogurt, salad dressings, puddings and gravies. Also used for clarifying wines and beers. When simmered with water or milk, the fresh or dried parts produce a basic jelly or *blancmange*, respectively. Otherwise, they can be used for puddings, drinks, aspics and gelatin desserts. In France, they are traditionally mixed with *Laminaria saccharina* and made into a butter-like spread called *pain d'algues*. Occasionally used as a vegetable in soups and stews. ARASAKI, IRWIN [Re], LEUNG, MADLENER 1977 [Pre, Re], MADLENER 1981 [Re], MABEY, MATIGNON [Re], MICHAEL [Re]; A20M, A98, A99, B21P, B54M, C17, C25P, E14T, E68, F37T, F37T{PL}, F99, G40, J52, K18M, K54, L34, N17, etc.

*Gigartina exasperata* - *Turkish bath towel* {DF}. The broad, thick blades can be chopped coarsely and used as a substitute for gelatin in making vegetable aspics. Contains nearly fifty percent carrageenan, and is harvested commercially for this thickening product in the Pacific Northwest. MCCONNAUGHEY, ROOS-COLLINS [Re]; H50

*Gigartina papillata* - *Grapestone* {DF}. The blades can be used as a substitute for gelatin in making vegetable aspics. They are very good in soups and stir-fries. Also used occasionally for making sweet pudding desserts, although a noticeable seaweed aftertaste may occur. Harvested for the carrageenan industry in the Pacific Northwest. LEWALLEN [Cul], MADLENER 1977 [Re], MCCONNAUGHEY, ROOS-COLLINS [Re]; H50

#### GRACILARIACEAE

*Gracilaria bursa-pastoris* - *Ogo nori* {PR}. The branches are chopped and eaten raw in salads, pickled, as tempura, added to soups, or salted for later use. Usually not as crisp and tender as *limu manaua*, but used interchangeably in recipes. Sold in grocery stores and fish markets throughout Hawaii. ABBOTT, FORTNER [Re]; G1

#### STRAINS

**Long Red:** Long, thin branching stems, up to 2 inches in length; crisp and very tender, with a mild salty flavor. Preferred for making *poke* because it adheres better to the raw fish. Should be stored at room temperature, drained and fluffed daily. Color mutation of a

wild type that occurred at Royal Hawaiian Sea Farms. Selected by Steven Katase. K7M

*Gracilaria coronopifolia* - *Limu manauaea*, *Ogo* {PR}. The branching stems are eaten fresh, and are salted or frozen for later use. Traditionally mixed with other limu and eaten with fish and meat, or added to vegetable soups. Used as a thickener for chicken stew cooked with grated coconut or coconut milk. One of the best liked sea vegetables in Hawaii where it is sold in a variety of preparations—pickled like kim chee, dressed in a vinegar sauce (*namasu*), or combined in a raw fish *po-ke*. ABBOTT [Cul, Pre], FORTNER [Re], JOSSELIN [Re], UPHOF.

#### STRAINS

**Maui Red:** Short, thin, branching stems; attractive reddish-purple color; juicy, crisp and tender; similar to Short Red but milder in flavor. Often coated in commeal and deep-fried. Also good in sandwiches and for garnishing. Color mutation of a wild type that occurred at Royal Hawaiian Sea Farms. Selected by Steven Katase. K7M

*Gracilaria lichenoides* - *Ceylon moss* {DF}. One of the algae species used in the production of *agar-agar*. In tropical areas such as India and Sri Lanka, the fine, string-like, white strands are used in soups and jellies which may be flavored with milk, wine or spices. GRIEVE, HEDRICK 1919, MACMILLAN, TANAKA; GO, K18M

*Gracilaria salicornia* - *Ogo nori* {PR}. The stems are traditionally eaten in raw seafood dishes, especially salmon *poke* and kim chee-style pickles. They have a crisp, juicy texture and a flavor more earthy than other sea vegetables. One of the species farmed in Hawaii and exported to the American mainland. SCHNEIDER 1997.

#### STRAINS

**Thick Brown:** Short, thick branching stems, up to 1/8 inch in diameter; juicy, crisp and sturdy, with a relatively strong mushroom-like flavor. Preferred for kim chee-style pickles because the crunchier, more sturdy stems hold up better. Color mutation of a wild type that occurred at Royal Hawaiian Sea Farms. Selected by Steven Katase. K7M

**Thick Green:** Short, thick branching stems, slightly less thick than Thick Brown; an attractive olive green color; juicy and crisp, with an earthy mushroom-like flavor. Preferred for making kim chee-style pickles because of its sturdy qualities. Often cooked with red-fleshed fish like salmon for color contrast. Color mutation of a wild type that occurred at Royal Hawaiian Sea Farms. Selected by Steven Katase. K7M

*Gracilaria tikvahiae* - *Ogo nori* {PR}. The stems are eaten fresh in vegetable and seafood salads, pickled, or used as a garnish. They have a crisp, juicy texture and an earthy, mushroom-like flavor. One of the species domesticated in Hawaii and grown for export to the American mainland. SCHNEIDER 1997.

#### STRAINS

**Short Red:** Short, thin, branching stems, 1 1/4 to 1 1/2 inch in length; attractive reddish-purple color; juicy, crisp but tender with an excellent mild, salty flavor. Preferred for making *poke* because the thinner stems adhere better to raw fish. Color mutation of a wild type that occurred at Royal Hawaiian Sea Farms. Selected by Steven Katase. K7M

*Gracilaria verrucosa* - *False Ceylon moss*, *Sea moss* {CU}. Young, tender parts are eaten raw in salads, mixed with pasta, pickled, or cooked with other vegetables. In Japan, they are boiled with rice or blanched and used as a garnish for sashimi. Source of the *Irish moss* drinks of the Caribbean. Also a major source of *agar-agar*, and *tokoroten*—a gel-like product eaten with vinegar and soy sauce. *Yokan*, a popular Japanese confection, consists of agar-agar jelly, sugar and mashed beans. ARASAKI, BENGHIAT [Re], MADLENER 1977 [Pre, Re], MADLENER 1981 [Re], MATIGNON [Re], ROOS-COLLINS [Re], TANAKA; M32T, M69

*Gracilaria* sp. - *Sea sprouts* {PR}. The branching stems are eaten. One of the sources of fresh *ogo nori*, a very popular Hawaiian sea vegetable.

#### STRAINS

**Long Brown:** Thin, branching stems, 2 or more inches long; crisp and juicy, mild, salty flavor. Should be stored in a refrigerator, where it will last for about 5 days. Popular with prominent Hawaiian chefs for adding to sandwiches and garnishing. Color mutation of a wild type that occurred at Royal Hawaiian Sea Farms. Selected by Steven Katase. K7M

*Gracilaria* sp. - *Sea sprouts* {PR}. The branching stems are eaten. One of the sources of fresh *ogo nori*, a sea vegetable enjoyed throughout Hawaii.

#### STRAINS

**Long Green:** Very thin, branching stems, 2 inches or more long; strong mushroom or garlic-like flavor. Especially good when added to sandwiches like sprouts, or used as a garnish. Also cooked with red-fleshed fish like salmon for color contrast. Should be stored in a refrigerator, where it will last for about 5 days. Color mutation of a wild type that occurred at Royal Hawaiian Sea Farms. Selected by Steven Katase. K7M

### HALYMENIACEAE

*Grateloupia filicina* - *Limu huluhuhwaena*, *Mukade-nori* {CU}. In Hawaii, the slippery, hair-like branches are finely chopped and lightly salted, and then eaten in salads or with raw liver, beef stew, limpet, raw fish relish, or dried and broiled octopus. In China, they are added to soups or boiled until they form a gel, which is then flavored with sweet or salty seasonings. ABBOTT, FORTNER [Re], MADLENER 1977 [Re], XIA; M32T

### HIMANTHALIACEAE

*Himantalia elongata* - *Haricots de mer*, *Spaghetti des mers* {PR}. Unique sea vegetable resembling flat ribbon-like pasta such as linguine and fettuchine, or haricot beans. The dense, meaty strands can be used like fresh snap beans in sauteed or steamed vegetable dishes, chowders, cold salads, sauces, puddings and seafood dishes, or they can be prepared like linguine—with steamed clams, white wine and garlic. Also an excellent garnish. In France, a paste of haricots de mer flour and milk is used as a substitute for pork fat in makiif pate. MATIGNON [Re], SCHNEIDER 1997; H25M, H25M{PD}

### LAMINARIACEAE

*Hedophyllum sessile* - *Sea cabbage*, *Sweet kombu* {DF}. The blades are used as a vegetable, either fresh or dried. They have a high sugar content. MCCONNAUGHEY; H91, I59D

*Laminaria dentigera* - *California kombu* {DF}. The dried fronds are occasionally used as a wrapping for various fillings. They are more often sliced or powdered and used as a base for soup stock. Small pieces may be fried in oil, then sprinkled over cooked grains, potatoes, or popcorn. MCCONNAUGHEY [Pre, Re]; H50, H91, I59D, J83U

*Laminaria digitata* - *Fingered tangle*, *Finger kombu*, *Oarweed* {DF}. A major source of *algin*, used commercially for emulsifying salad dressings, thickening beverages, stabilizing ice cream, and as a gelling agent for confectionery and other foods. The fresh or dried fronds are eaten as a cooked vegetable or used for making soups or soup stock. BROUK, LEUNG, MADLENER 1977 [Pre, Re], MATIGNON [Re]; E14T, E56{E£}, E60P, H15, H15{ED}, H15M, H91

*Laminaria japonica* - *Kombu*, *Ma-kombu* {DF}. The dried blades are shredded or powdered and sprinkled over rice, made into sweet cakes, or used as a seasoning for meats, sauces and other foods. Widely used for *dashi* soup stock, being rich in natural flavor-enhancing sodium glutamate. Dried sheets are fried in oil, coated with sugar, and eaten as a snack or hydrated and cooked with meat and vegetables. Also pickled, wrapped around fish, or made into a

chewy confection known as *kombu-ame*. In Hokkaido, thick kombu is used as a base for kombu grilling or *Matsumae-yaki*, the kombu imparting a delicate flavor to fish, shellfish and other foods. Various grades of sliced, shredded, slivered, shaved, and vinegared kombu are available including *kizami kombu*, *oboro kombu*, *tororo kombu*, *kombu tsukudani*, and *sukombu*. Also divided into two distinct layers with and without chloroplasts—*kuro-tororo* and *shiro-tororo*, the latter being used in a famous Osakan sushi dish of pressed mackerel and vinegared rice (*battera*). Used for making *kombu-cha*—a mixture of equal parts powdered kombu, salt, and sugar dissolved in hot water to form a festive tea-like beverage. *Osha-buri*, a type of vinegared kombu, is used as a masticatory. The holdfast, called *ne-kombu*, is prized for its rich, sweet flavor. ARASAKI [Re], BRADFORD [Pre, Re], MADLENER 1977 [Nu, Re], SHURTLEFF 1975 [Re], TANAKA, TSUJI [Re]; A7, A52M, C34G, E47M, E56{DF}, E60P, E66T, F88, G20M, G20M{PD}, G47B, H15T, H91{DF}, I19M{DF}

*Laminaria longicuris* - *Oarweed, Kelp* {DF}. The broad, elongated blades are eaten, usually after having been dried and then reconstituted by soaking in water. They can be cooked as a vegetable or added to soups and stews. MADLENER 1977 [Pre, Re]; H15, H15{PD}, H15M, I19M

*Laminaria setchellii* - *Pacific kombu* {DF}. The large blades are boiled, cut into strips, and cooked with rice, beans or vegetables. When cooked with beans, the beans reportedly cook tender faster and are easier to digest. Also makes an excellent, rich soupstock. LEWALLEN [Pre, Re], MCCONNAUGHEY; I23G

#### LESSONIACEAE

*Lessoniopsis littoralis* - *Ocean ribbons* {DF}. The blades are used as a vegetable, either fresh or dried. Quicker cooking and sweeter than kombu, they can be sauteed, pickled with lime juice and tamari, or served with rice and shredded daikon. A very mild-flavored sea vegetable. MCCONNAUGHEY, SASS; E60P, H91, I23G, I59D, I81T

*Nereocystis luetkeana* - *Bull whip kelp, Bladder kelp, Sea whip kelp* {DF}. The long, thick, characteristic stipes are cut into lengths, desalted, then candied or pickled. The bulb or float is likewise treated. Pickled stipes may be cut into circles and stuffed with various fillings. *Seatron*, a product resembling candied citron is apparently still available in the Pacific Northwest. Blades covered with herring roe were dressed with candlefish oil and eaten as a delicacy by Kwakiutl and Haida Indians. Eskimos reportedly used the algae to prepare a brew called *hoochinoo*. Dried blades are cooked and eaten. LEWALLEN, MADLENER 1977 [Pre, Re], MCCONNAUGHEY [Pre, Re], ROOS-COLLINS [Re], UPHOF; B21P, D7{ED}, E56{PD}, H50

*Postelsia palmaeformis* - *Sea palm* {DF}. The tall, thick stipes, resembling the trunks of palm trees, are cut into lengths and then pickled, candied, preserved, stir-fried, boiled, steamed, added to soups, etc. They have excellent texture and a delicious flavor. Sun-dried fronds may be eaten as snacks. The tender first-growth fronds—marketed as a gourmet product called *silky sea palm*, may be marinated or lightly cooked, then served with various dressings. LEWALLEN [Re], MADLENER 1977 [Pre, Re], MCCONNAUGHEY [Pre, Re]; E22, E56, E56{PD}, E60P, E66T, F88, G47B, H15, H50, H91, H91{PD}, I19M, I23G, I59D, I59D{PD}, I81T, J83U, J83U{PD}, etc.

#### MONOSTROMATACEAE

*Monostroma latissimum* - *Hiroha-no-hitoe* {DF}. The fresh young fronds are cooked with meat and fish, added to soups, or prepared as a condiment with soy sauce, sugar, mushrooms, Forphyra species, and seasoning. One of the principal sources of *ao-nori* or *green nori*—powder or flakes that are sprinkled on various foods such as rice, eggs, salads, soups, vegetables, and cereals. BRADFORD [Re], MADLENER 1977 [Pre, Re], MCCONNAUGHEY; E56, G20M, G47B, H91, I19M

#### OOCYSTACEAE

##### *Chlorella fusca* - *Chlorella pyrenoidosa*

*Chlorella pyrenoidosa* - *Chlorella* {DF}. Unicellular micro-algae that is used as a food supplement. Contains up to 55 % protein with all the essential amino acids. Also has a very high level of chlorophyll, up to 6%. Other vitamins and minerals supplied include vitamins A, B<sub>6</sub>, B<sub>2</sub>, B<sub>12</sub>, niacin, calcium, iron, and zinc. Usually added to other foods, including breads, pastas, juices, sweets, soups and salad dressings. HILLS, C. 1978, RICHMOND, A. [Cu], SCHERY, TANAKA; C7M {CU}, D28M, E14T, F37T, GO, G47C, H91, I43T, M32T{CU}, N7D

##### STRAINS

**Thermophilic:** A high temperature strain. C7M, M69

*Chlorella vulgaris* - *Chlorella* {CU}. Single-celled microplankton which is rich in protein and is used as a food supplement. Like *C. pyrenoidosa*, it has a very thin cell wall that makes it more digestible than other species. Very widely distributed over almost all the area on earth. HILLS, C. 1978, RICHMOND, A. [Cu]; C7M, M32T

#### POLYBLEPHARIDACEAE

*Dunaliella salina* - *Dunaliella* {DF}. Salt water microalgae that is a potent source of natural beta- and alpha-carotene. Used as a nutritional supplement by natural foods enthusiasts. Offers a richer mixture of carotenes, which are also better absorbed, than synthetic sources. MURRAY; C7M{CU}, G47C, H13M, 166, M32T{CU}

#### RHODOMELACEAE

*Digenea simplex* - *Makuri* {DF}. A red algae occasionally used as food in Japan. An extract was an ingredient of *makuri jelly*, a type of candy sold in Japan during the first half of the Twentieth Century. Source of a popular herbal brew known as *Corsican seaweed tea*. TANAKA, UPHOF; E56, F88, G47B, H91, I19M

#### RHODYMENIACEAE

##### *Palmaria palmata* -> *Rhododymenia palmata*

*Rhododymenia palmata* - *Dulse* {DF}. The reddish-purple fronds are eaten raw as a snack or in salads and sandwiches. They have a delicious flavor and are easily digested. Dried or roasted fronds are eaten as a vegetable, added to soups and breads, or used as a relish or condiment. An esteemed ingredient of ragouts, adding color and a jelly-like consistency. Also employed as a masticatory. In Kamchatka, it is made into an alcoholic beverage. Has one of the highest protein and iron contents of all algae. LAUNERT, MADLENER 1977 [Nu, Re], MATIGNON [Re], UPHOF; A49D, B21P, C73P, D74M, E14T, E56, E66T, F37T, F88, G47B, H15, H15{PD}, H15M, H25M{PR}, H50, H91, I19M, J83U, K18M, L34, etc.

##### STRAINS {PR}

**Sea Parsley:** Unique, miniature version of dulse that resembles Moss Curled parsley. The whole burgundy algae, having a crunchy texture and a mild salty flavor, is eaten raw in salads and sandwiches, dried, broiled, fried, baked, poached, added to salad dressings, or cooked with grains, vegetables, seafood, etc. Especially good as a garnish. Popular with gourmet chefs. Discovered around 1979 in the cold, clean waters of the Bay of Fundy by marine scientists from the National Research Council of Canada. Grown commercially in salt water tanks in greenhouses. I59E, I59E{DF}, I59E{PD}, I59E{PL}

#### SARGASSACEAE

*Cystoseira osmundacea* - *Sea fern, Sister Sarah, Chain bladder* {DF}. Tender portions of the blades and branches can be toasted until crisp, crumbled, and sprinkled on salads, rice or soups. The fresh air bladders, which form small chains, are said to have the flavor of raw peas. They are good in stir fries and tempura. MCCONNAUGHEY, ROOS-COLLINS; I23G

*Hizikia fusiformis* - *Hiziki*, *Hijiki* {DF}. The branching blades are eaten, either fresh or dried. The dried product expands up to five times its weight when soaked in water. Very popular in Japan, where it is boiled, steamed or sauteed, added to salads, or cooked with soybeans, tofu, and vegetables. Also used in soups, combined with *Ulva lactuca*. In China, it is made into a tea-like beverage. Very high in calcium. ARASAKI [Re], BRADFORD [Re], MADLENER 1977 [Pre, Re], MCCONNAUGHEY [Cul], SHURTLEFF 1975 [Nu]; A7, A52M, E47M, E56, E60P, E66T, F88, G20M, G47B, H91, I19M

*Sargassum fusiforme* - *Moku* {DF}. Young parts are used as a vegetable or added to soups. They are also made into a cooling tea. UPHOF; GO, K18M

#### SCENEDESMACEAE

*Scenedesmus obliquus* - {CU}. Unicellular green algae related to *Chlorella*. Has thin, very soft cell walls making it easily digested. Recommended as a food supplement, similar to *Chlorella* and *Spirulina*. Very widely distributed over almost all the area on earth. HILLS, C. 1978, RICHMOND, A. [Cu]; M32T

#### ULVACEAE

*Enteromorpha clathrata* - *Stone hair* {CU}. The branching, hair-like fronds are eaten fresh in salads, boiled in salted water, or steamed with meat. They have a delicate, crisp texture and a bean-like flavor. In China, they are pounded into a nutty powder called *tai tyaufeen* which is combined with sesame oil to form a condiment, or mixed with cane sugar and made into snacks and cakes. MADLENER 1977 [Re], ROOS-COLLINS; M32T

*Enteromorpha compressa* - *Hira-ao-nori* {CU}. The whole algae is dried, powdered and sprinkled on rice, savory cakes, and rice crackers, or consumed as *tsukudani* and in vegetable dishes. Also used as a substitute for true nori (*Porphyra* spp.). TANAKA, XIA; M32T

*Enteromorpha intestinalis* - *Green-nori*, *Green guts* {CU}. The tubular blades are eaten raw in salads, steamed with meat, stir-fried, mixed with sesame oil, made into sweets, or used as a filling for spring roll cakes. When dried, toasted and powdered, it is used as a fragrant condiment over rice, meat, fish, soups, vegetables and other foods. In Shandong, it is mixed with cornmeal and made into a bread. MADLENER 1977 [Nu, Re], ROOS-COLLINS, XIA; M32T

*Enteromorpha linza* - *Usuba-ao-nori* {CU}. The best liked and most desirable species of *Enteromorpha* in China due to its very tender thallus. It is used in vegetable soups, cooked with meat and fish, or dried and powdered for later use. In the markets of Shanghai, very popular sweet and salty breads are baked with a topping of the powder. Very high in protein, about 20%. MADLENER 1977 [Nu], XIA; M32T

*Enteromorpha prolifera* - *Limu 'ele'ele*, *Suji-ao-nori* {CU}. The finely branched fronds are eaten. In Hawaii, they are dressed with salt and allowed to stand until slightly fermented, the fermentation process enhancing the flavor and darkening the color. Traditionally eaten in stews, or with fish and poi. One of the sources for *aonoriko*, a fragrant green powder sprinkled over foods as a seasoning. In Fujian, it is commonly used as a condiment for *chun bing* (spring cake). ABBOTT [Pre], ARASAKI [Re], FORTNER [Pre, Re], SHURTLEFF 1975, UPHOF, XIA; M32T

*Ulva fasciata* - *Limu palahalaha*, *Ribon-aosa* {CU}. The broad, ribbon-like fronds are eaten, alone or mixed with other sea vegetables. In Hawaii, they are chopped into small pieces and served with raw fish, added to soups, dressed with soy sauce and sugar, or combined with chili pepper and onions and made into a relish. Also boiled with squid to form a gelatinous mass when cold. ABBOTT, FORTNER [Re], UPHOF; M32T

*Ulva lactuca* - *Sea lettuce* {DF}. Leaf-like blades are harvested when young and eaten raw in salads or used as a garnish. They are somewhat tough and should be chopped finely before use. Fresh or dried blades are cooked with meat, fish or vegetables, or added to soups and stews. In Barbados, they are made into a tea. Dried blades may be powdered and used as a table seasoning. GIBBONS 1966, MADLENER 1977 [Nu, Re], MATIGNON [Re], MICHAEL, ROOS-COLLINS [Cul]; H25M{PR}, H50, J83U, M32T{CU}

#### ZYGNEMATACEAE

*Spirogyra* sp. - *Thao*, *Phak kai* {DF}. A freshwater algae very rich in calcium and Vitamin A. Mostly eaten raw with chili sauce, used as a substitute for meat in *larp*, added to omelettes and *kaeng som*, or made into a kind of hot sauce. Also dried and pressed into sheets along with finely sliced vegetables, then sprinkled with sesame seeds. The dried product may be grilled or briefly deep fried. Sold in local markets of India, Burma, Laos, Thailand and Vietnam. CRIBB, JACQUAT, JOHNSTON, H., SING [Re]; H3T

## ALPHABETHICAL LISTING OF BACTERIA FAMILIES

#### ACETOBACTERACEAE

*Acetobacter aceti* - *Vinegar bacteria* {CU}. Microorganism responsible for the conversion of alcohol into acetic acid, which is the principal compound of vinegar. BROUK, UPHOF; C7M, M69. (see also Starter Cultures, page 537)

*Acetobacter aceti* ssp. *xylum* - *Kombucha bacteria* {CU}. The principal microorganism involved in the fermentation of *kombucha* or *tea cider*, which has become a very popular supplemental beverage. *Kombucha* that has become too sour can be used as a table vinegar. Also synthesizes cellulose in the production of the film that forms during the Philippine *nata* fermentation. FRANK, STEIN-KRAUS; T34, U7. (see also Starter Cultures, page 537)

*Acetobacter xylum* - *Acetobacter aceti* ssp. *xylum*

#### ACTINOMYCETACEAE

*Bifidobacterium bifidum* - *Bifidus milk bacteria* {CU}. Microorganism used in bifidus milk and bifidus yogurt cultures as well as various "therapeutic" lactic fermentations such as *Biogarde*, *Cultura*, or *A/B milk*. Yields products lacking the acid flavor associated with normal yogurt. An essential component of the human

intestinal microflora. CAMPBELL-PLATT, KURMANN, MURRAY, ROBINSON, R. 1995; T34. (see also Starter Cultures, page 537)

*Bifidobacterium infantis* - *Swiss cheese bacteria* {CU}. Microorganism used in Swiss cheese cultures as well as various "therapeutic" lactic fermentations such as *Bio-milk* or *A/B milk*. An essential component of the human intestinal microflora. ROBINSON, R. 1995; T34. (see also Starter Cultures, page 537)

*Bifidobacterium longum* - *Bio-yogurt bacteria* {CU}. Microorganism used in *Bio-yogurt* cultures as well as various "therapeutic" lactic fermentations such as *Bio-milk*, *Bifighurt*, or *A/B milk*. Poorly adapted to growing in milk, hence normally used in conjunction with other cultures. Yields products lacking the acid flavor associated with normal yogurt. An essential component of the human intestinal microflora. KURMANN, ROBINSON, R. 1995; D28M. (see also Starter Cultures, page 537)

#### BACILLACEAE

*Bacillus cereus* - *Arrozfermentado bacteria* {CU}. A bacteria that has a role in the fermentation of *Arrozfermentado*—2, fermented rice

product of the Andean region, especially Ecuador. It also takes part in the fermentation of *tempeh* and *pozpl*. CAMPBELL-PLATT, SHURTLEFF 1979, STEINKRAUS; C7M, D81T, E13, G37P, K26M, M69

*Bacillus laterosporus* - {PD}. A soil-based microorganism found to be a naturally beneficial substance that helps maintain and build a healthy, friendly flora in the colon and digestive tract. Available in powder and capsule forms known commercially as *Flora Balance*. The powder is mixed with water and taken as a food supplement. CORSELLO [Nu]; F90C

*Bacillus megaterium* - *Kishk bacteria* {CU}. One of the microorganisms involved in the production of *kishk*, a fermented milk-wheat product of the Middle East. Also has a role in the fermentation of *tesquino* and *yakju*. STEINKRAUS; C7M, D81T, E13, G37P, K26M, M69

*Bacillus subtilis* - *Natto bacteria* {CU}. A microorganism involved in the fermentation of cooked soybeans into *natto*. During the process the proteins of the beans are broken down to amino acids, making the finished product highly digestible. STEINKRAUS; C7M, D81T, E13, G37P, K26M, M69. (see also Starter Cultures, page 537)

#### BREVIBACTERIACEAE

*Bacterium linens* -> *Brevibacterium linens*

*Brevibacterium linens* - *Red bacteria* {CU}. Short, reddish, rod-like bacteria responsible for the taste and orange color of Limburger, Brick, Fontina, Bel P&ese, Tilsit, St. Paulin, Pont l'Eveque, Brie and other cheeses. BROUK, KOSIKOWSKI, PEDERSON WALTER; M69. (see also Starter Cultures, page 537)

#### LACTOBACILLACEAE

*Lactobacillus acidophilus* - *Acidophilus milk bacteria*, *Thermophilic cheese bacteria* {CU}. A bacteria which converts lactose, or milk sugar, into lactic acid, thus making it more digestible. In the commercial production of *acidophilus* milk, skim or partially defatted milk is used. Also used in non-dairy, supplemental acidophilus beverages. STEINKRAUS; C7M, D81T, G47C{PD}, E13, M69. (see also Starter Cultures, page 537)

*Lactobacillus brevis* - *Kefir bacteria* {CU}. The microorganism that produces "kefirin", a polysaccharide gum that holds together the bacteria and yeasts in *kefir grains*, the starter culture used in kefir manufacture. STEINKRAUS; T34. (see also Starter Cultures, page 537)

*Lactobacillus brevis* ssp. *coagulans* - *Suguki bacteria* {PD}. The strain of *Lactobacillus* that activates the fermentation process in the production of the famous pickled Suguki turnip of the Kyoto region in Japan. G20M

*Lactobacillus bulgaricus* - *Yogurt bacteria*, *Thermophilic cheese bacteria* {CU}. A bacteria used in most *yogurt* and some cheese starter cultures. It grows best at temperatures of 110 to 116° F, and produces total acids of 2.0 to 4.0%. STEINKRAUS; T34. (see also Starter Cultures, page 537)

*Lactobacillus casei* - *Thermophilic cheese bacteria* {CU}. A good agent for the maturing of cheese due to its action on casein. It can be found on the majority of cheeses allowed to mature. The temperature for optimal growth is 86° F. Also takes part in the fermentation of *koumiss*, *kefir*, *kishk*, *laban*, *dahi* and bread. HESSELTINE, MALLOS [Re], STEINKRAUS, UPHOF; C7M, E13, M69. (see also Starter Cultures, page 537)

*Lactobacillus helveticus* - *Thermophilic cheese bacteria* {CU}. Used with *Streptococcus thermophilus* to form a lactic cheese culture that grows best at high temperatures, from 110 to 115° F. It also takes part in the fermentation of *dahi* and *busaa*. KOSIKOWSKI, PEDERSON, STEINKRAUS; T34. (see also Starter Cultures, page 537)

*Lactobacillus lactis* - *Swiss cheese bacteria*. A lactic-acid producing bacteria that has a contributing role in the fermentation of Swiss cheese. CAMPBELL-PLATT. (for sources see Starter Cultures, page 537)

*Lactobacillus plantarum* - *Pickle bacteria* {CU}. A lactic-acid producing bacteria that plays a major role in all vegetable fermentations, producing *high* acidity, often yielding three to four times as much D-lactic acid as species of *Leuconostoc*. BROUK, PEDERSON, STEINKRAUS, UPHOF; T34.

*Lactobacillus sanfrancisco* - *San Francisco sourdough-bread bacteria* {CU}. A microorganism that has been isolated from sourdough, or *sauerteig bread* of the San Francisco area, and which is responsible for the characteristic sour flavor. STEINKRAUS; T34. (see also Starter Cultures, page 537)

#### MICROCOCCACEAE

*Micrococcus* sp. - *Sausage bacteria*. A microorganism used with *Pediococci* and *Lactobacilli* in the manufacture of dry and semi-dry sausages. PEDERSON; (for sources see Starter Cultures, page 537)

#### NOSTOCACEAE

*Aphanizomenon flos-aquae* - *Klamath blue-green algae*, *Super blue-green algae* {DF}. Freshwater micro-algae consumed as an energizing food supplement. Usually sprinkled on other foods as a condiment, or mixed with juice as a drink. Contains significant levels of protein, chlorophyll, vitamin B<sub>12</sub>, amino acids, beta carotene and trace minerals. More assimilable than spirulina or chlorella. Harvested from the mineral-rich waters of Upper Klamath Lake, Oregon, freeze-dried, and marketed in powder, capsule or liquid form. MCKEITH [Nu, Re]; E56, G36, G36{£D}, G36M, G47C, H13M, I19M, L3J, M32T{CU}

*Nostoc commune* - *Star jelly*, *Fairies\* butter*, *Fat choy*, *Ishi-kurage* {DF}. A freshwater blue-green algae that is consumed raw, dried, stir-fried, sauteed with oysters, in sweet dessert soups, or with sugared vinegar. It is also made into a jelly which is then eaten or used as a thickener for other foods. Available dried in Chinese markets. ARASAKI, BROUK, BURKILL, CRIBB, JOHNSTON, H., MADLENER 1977 [Nu, Re], TANAKA; C27G, M32T{CU}

#### OSCILLATORIACEAE

*Arthrospira platensis* - *Spirulina platensis*

*Spirulina maxima* - *Techuitlatl* {CU}. A blue-green algae traditionally collected and made into soups and cake-like foods by the inhabitants of Lake Chad in Africa and Lake Texcoco, near Mexico City. Also suitable for culturing as a food supplement. HILLS, C. 1978, NATIONAL RESEARCH COUNCIL 1975a, SCHERY; M32T

*Spirulina platensis* - *Spirulina*, *Tecuítlatl* {DF}. A blue-green algae found in saline, usually alkaline, waters. The crude protein in spirulina can reach as high as 72%, which is highly digestible. It also has a high content of vitamins and minerals, including vitamins A, B<sub>2</sub>, B<sub>12</sub>, E, H, and K, calcium, iron, and niacin. Dried into cakes, it was eaten with *mole* by the Aztecs. Near Lake Chad, similar flat greenish cakes called *díhe* or *douhe* are made into a nourishing soup or a thick gravy which is used as a seasoning on millet balls. The powdered form is used as a food supplement in drinks, wafers, protein powders and *pastalina*, a soy-whole-wheat-spirulina noodle. BEASLEY [Re], HILLS, C. 1978, HILLS, C. 1979, JOHNSTON, H., NATIONAL RESEARCH COUNCIL 1975a, RICHMOND, A. [Cu, Re]; D28M, E47M, F37T, F86G, F88P{PD}, GO, G47C, /457{PD}, 166, 18IT, K18M, M15M, N7D. (see also Starter Cultures, page 537)

#### PROPIONIBACTERIACEAE

*Propionibacterium freudenreichii* ssp. *shermanii* - *Swiss-cheese bacteria*, *Propionic cheese bacteria* {CU}. The bacteria that

produces propionic acid, which is responsible for the characteristic flavor and eye formation of Swiss and Gruyere cheeses. BROUK, UPHOF, WALTER; (for sources see Starter Cultures, page 537)

#### PSEUDOMONADACEAE

*Xanthomonas campestris* - *Xanthan gum bacteria* {DF}. A bacteria used in the production of *xanthan gum*, a polysaccharide employed by the food industry as a stabilizer, emulsifier, thickener, suspending agent, and foam enhancer. It is added to foods such as French dressing, chocolate milk, puddings, etc. Also used by the natural foods industry and home bakers to produce gluten-free breads and other baked goods made from rice, potato, tapioca, scy, etc. Produced by a pure-culture fermentation of glucosa Available as a cream-colored powder readily soluble in cold or hot water. HAGMAN [Re], LEUNG; A25G, B31, D4, D43G, E68M, GO, G29,166, M15M

#### STREPTOCOCCACEAE

*Enterococcus faecium* - {CU}. A microorganism used as a source of a nutritional supplement that replenishes friendly bacteria in the colon. T34

##### STRAINS {PD}

**Cerneile SF 68:** A superior strain of lactic acid producing bacteria developed by the AB Cerneile Company of Sweden. Multiplies faster than acidophilus and other cultures. Marketed as *Ventrix* and *Ventrix-Acido*. C19

#### *Leuconostoc citrovorum* - *Leuconostoc cremoris*

*Leuconostoc cremoris* - *Aromatic lactic bacteria* {CU}. Used in combination with *Streptococcus* species to form a lactic starter culture. Also involved in the fermentation of *ripened-cream butter*, wine and *piima*. KOSIKOWSKI, PEDERSON, STEINKRAUS; T34. (see also Starter Cultures, page 537)

*Leuconostoc oenos* - *Wine bacteria*. A heterofermentative lactic acid bacteria that is dominant in French wines. It performs a secondary malolactic fermentation which converts malic acid to lactate. CAMPBELL-PLATT; (for sources see Starter Cultures, page 537)

*Pediococcus cerevisiae* - *Lambic beer bacteria* {CU}. Lactic acid bacteria that occurs with *Brettanomyces* yeasts in the production of lambic beers. It is also involved with fermentations of *kimchi*, *sauerkraut*, pickles and wine. GUINARD, STEINKRAUS; A99, B55M. (see also Starter Cultures, page 537)

#### *Pediococcus damnosus* - *Pediococcus cerevisiae*

*Pediococcus* sp. - *Sausage bacteria*. A bacteria used with Micrococci and Lactobacilli in the manufacture of dry and semi-dry sausages. PEDERSON; (for sources see Starter Cultures, page 537)

*Streptococcus cremoris* - *Villi bacteria*, *Mesophilic cheese bacteria*, *Aromatic lactic bacteria* {CU}. A bacteria involved in the *villi* fermentation and the fermentation of certain cheeses. It has a temperature range of 72° C., and produces 0.9 to 1.0% total acids. STEINKRAUS; T34. (see also Starter Cultures, page 537)

*Streptococcus diacetiiactis* - *Mesophilic cheese bacteria*, *Aromatic lactic bacteria* {CU}. Used in the manufacture of sour cream, butter and various cheeses. It also takes part in the fermentation of *dahi*. KOSIKOWSKI, PEDERSON, STEINKRAUS; (for sources see Starter Cultures, page 537)

*Streptococcus lactis* - *Mesophilic cheese bacteria*, *Aromatic lactic bacteria* {CU}. A lactic acid bacteria used in the manufacture of sour cream, butter, buttermilk and certain cheeses. It is also involved in the fermentation of *hakko tofu*, *poi*, *ogi*, *mahewu*, *dahi*, *laban* and *jalebi*. BROUK, KOSIKOWSKI, PEDERSON, STEINKRAUS, UPHOF; C7M, D81T, E13, K26M, M69. (see also Starter Cultures, page 537)

*Streptococcus thermophilus* - *Yogurt bacteria*, *Thermophilic cheese bacteria* {CU}. One of the principal bacteria in *yogurt* and cheese starter cultures. It grows best at temperatures of 110 to 112° F., and produces total acids of 0.9 to 1.1 %. STEINKRAUS; T34. (see also Starter Cultures, page 537)



## MAJOR CROPS

### ALMOND {GR}

#### AMYGDALUS COMMUNIS

All-in-One: The best cultivar for edible landscaping, having showy white flowers that bloom late. Semi-dwarf tree is vigorous, medium upright, self fertile and a heavy bearer. Nonpareil-type, soft shelled nuts with a very good, sweet flavor; quality good to excellent. Shell is well sealed; harvest season is late. STEBBINS; A63, A88M, B74, B93M, C54, D23M, G49,168, I83M, J61M, LI, L33, L47, N20

Butte: Mission x Nonpareil. Nut medium to small, averaging 16 per ounce; shell soft to hard, thick, solid, well-sealed; cracks out about 52% of kernel; kernel medium to small, plump, smooth, few doubles, quality good, pellicle thin; harvested just after Nonpareil. Blooms late; pollinizes with Nonpareil, Mission and Ruby. Tree vigorous; produces well; grows well on almond and peach rootstocks. BROOKS 1972; B71M, D18, E4, K73M, K88T, N20

Carmel: Bud-sport of Nonpareil. Nut small, thick, light colored; kernel comprises 60% of nut, averaging 24 per ounce; lighter color than Nonpareil; quality and flavor good. Harvest 3 weeks later than Nonpareil, 1 week earlier than Mission. Early and regular producer of good quality nuts. Tree medium; bears regularly and in clusters. Pollinizes with Nonpareil and Mission. BROOKS 1972; A9, B71M, D18, D81{PO}, D81M{PO}, E4, K73M, K88T, L47, N20

Double Nut Softshell: So named for a frequent tendency to produce double nuts—2 nuts per shell—with soft shells. Collected near Sache, Xinjiang province, in the vicinity of Kashgar (Kashi), People's Republic of China. U7G{SC}

Eagle's Beak: So named for the distinctive curved beaking at the styler end of the shell. Collected near Sache, Xinjiang province, in the vicinity of Kashgar (Kashi), People's Republic of China. U7G{SC}

Fritz: Small, ovate nut with a solid, thick, hard to semi-soft shell. Kernel medium to small, smooth and of good quality. Pollinizes with Nonpareil, Mission, and Ruby. Harvested late, with Mission. Originated in Modesto, California by Burchell Nursery. Introduced in 1970. JAYNES; B71M, D18, D81M{PO}, E4, K73M

Garden Prince:<sup>1</sup> Medium-sized kernel is a sweet Nonpareil-type; well sealed with a soft shell. Self-fruitful, does not need a pollinizer. Tree a genetic dwarf, approximately 8 to 10 feet tall at maturity; productive; good for container planting. Blooms early, with Nonpareil but may be easily protected by covering with a tarp. STEBBINS; A63, A88M, C54,168, I83M, LI, N20

Hall's Hardy: (Hall, Ridenhower) Parentage unknown, but has the characteristics of a hybrid between an almond and a peach. It's main value is as an ornamental with showy pink blossoms and shiny green leaves. The tree is hardy and the self-fertile flowers bloom relatively late. The kernel is slightly bitter. Originated in Coffeyville, Kansas by a Mr. Hall. B53, C54, D37, D76, H49, I53M, J61M, M83, N20

I.X.L.: Nuts large with, as a rule, single kernels; shell soft, smooth, thin, not always well-sealed; hulls easily, no machine being

needed, nor is any bleaching necessary; flavor very good; ripens in midseason. Tree a sturdy, rather upright grower, with large leaves; pollinates with Ne Plus Ultra. Largely discarded for shy bearing, but desirable in some areas. WICKSON; F91T{SC}

Ingrid: A self-fertile selection developed in Sweden. Recently introduced into the United States. Should grow to about 15 feet tall when mature. Resistant to peach leaf curl. Reportedly hardy in Zones 6 to 9. F43M

Marcona: Excellent, sweet, flavorful almond. The most popular Spanish variety. Peels easily and has just the right oil and fat content for making soft *turrón* or *marzipán*. Also mixed with Nora peppers to make *Romesco* sauce, or they can be fried in olive oil, dusted with sea salt, and eaten as a tapa. Very hard shell. Highly productive. Widely grown in the Alicante region of Spain. L13P{DF}, L13P{PD}, N51M{PD}

Merced:<sup>3</sup> Medium sized nut; shell paper thin, well-sealed, lighter in color than Nonpareil; small, broad kernel, averages 58 to 63% of nut; ripens with Nonpareil. Tree medium-sized, vigorous, upright; blooms with Nonpareil; very prolific; cross-compatible with Nonpareil. Mission x Nonpareil. BROOKS 1972; A9, B71M, D18

Mission:<sup>2</sup> (Texas) Round, hard-shelled nut with a slightly bitter flavor preferred by some; shelling percentage 40 to 45. Resistant to navel orange worm and bird damage. Good for late frost areas as it blooms late; also harvested late, late September or October. Pollinizes with Nonpareil, Ne Plus Ultra, and Carmel. Chilling requirement 284 to 310 hours. The second most important cultivar in California. JAYNES, RUCK; A9, A63, A88M, B71M, B93M, D18, D81M{PO}, E4, H89M, I68{ES}, K73M, L47, M83, N20

Monterey: Elongated nut, 1/2 inch by 3/4 inch; slightly greater width than thickness; hard, well-sealed shell; kernel 1 inch x 1/2 inch; ripens with or just after Mission. Large, vigorous tree; more tolerant of frost than Nonpareil; a heavy and regular bearer; tolerant of brown rot and shot hole fungus. Originated in Merced, California. BROOKS 1997; B71M, E4, K73M, L47

Ne Plus Ultra:<sup>2</sup> Large, flat nut with a soft shell; rather poor quality kernel with relatively large number of doubles; shelling percent 55 to 60. Early blooming and thus subject to frost damage in most areas. Blooms about a week ahead of Nonpareil, for which it is a common pollinizer. Chilling requirements are relatively low. Nuts drop readily. JAYNES; A9, A63, B71M, B93M, D18, D81{PO}, D81M{PO}, E4, G49,168, K73M, K88T, L47, M39M, N20

Nonpareil:<sup>3</sup> The most important almond cultivar in the United States, accounting for over half the commercial production. Smooth, uniform, attractive kernel with paper-thin shell and sweet flavor; light brown in color; shelling percentage 60 to 70. Blooms moderately early, but tends to be somewhat resistant to frost in the early bud stages. Susceptible to noninfectious bud-failure, worm damage, and bird damage. JAYNES; A9, A88M, B71M, D7{PD}, D18, E4, E97P{DF}, F6{DF}, I68, K73M, L15M{DF}, L47, M39M, N20

Padre: Kernel plump, broad, averages 25 to 30 per ounce, resembles Mission; shell hard, resists worm damage, represents 45 to 50% of nut; matures moderately late but before Mission. Tree upright, resembles Mission; a productive and consistent bearer; blooms with Mission. Originated in Davis, California by Dale E. Kester. Introduced in 1983. A9, B71M, D18, E4, K73M, K88T

Peerless:<sup>2</sup> Regular and heavy bearer of a very large nut with a hard shell; shelling percentage 30 to 40. Kernel quality is moderately good. Early blooming and thus susceptible to late frost. Pollinizes with Ne Plus Ultra and Nonpareil. Nuts ripen just after Nonpareil but drop so easily that they are often harvested early. Low chilling requirements. Marketed primarily as an in shell nut during Christmas time. JAYNES; *B71M, D18, E4, K73M, K88T, N20*

Price: (Price Cluster) Consistently high yielder of soft-shelled nuts with a high quality sweet kernel; kernel averages 26 per ounce. The nuts are borne along the branches in clusters; resembles Nonpareil in shape but more plump; some double kernels. Tree very heavy bearing; midseason bloomer. Pollinizes with Mission, Nonpareil, and Ne Plus Ultra. BROOKS 1972; *A63, A88M, B71M, D18, E4, K73M, K88T, N20*

Roy: Relatively soft-shelled nut of good quality. Self-fertile tree with attractive pink blossoms. Blooms later than most almonds and so has a better chance of setting fruit in the Pacific Northwest and similar areas. Recommended for edible landscaping. Originated in Stayton, Oregon. BROOKS 1972; J61M

Ruby: Regular, heavy producer of good quality nuts. The shell is thicker, harder, and better sealed than Nonpareil; kernel averages 53% of nut, 28 kernels per ounce. Tree blooms late, 2 to 3 days after Mission; production high; bears regularly. Harvesting period coincides with Mission. BROOKS 1972; *A9, B71M, D18*

Solano: Attractive, high quality nut, smooth and flat; resembles Nonpareil; 60% kernel to nut ratio; matures 7 to 10 later than Nonpareil. Medium to upright tree; as productive as Nonpareil. Pollen compatible with Nonpareil, Ne Plus Ultra, Mission and others. Originated in Davis, California by Dale E. Kester. BROOKS 1997; *B71M, E4, K88T*

Thompson:<sup>3</sup> Nut small with a soft to paper-thin shell, well-sealed. Plump, white kernel with a mildly bitter flavor, quality good; kernel averages 60% of nut. Productive, early bearing tree, bears consistently; very vigorous; blooms late, usually with Mission. Pollinizes with Mission, and All-In-One. Originated in Clovis, California by L.M. Thompson. Introduced in 1957. BROOKS 1972; *A9, B71M, D81M{PO}, E4, K88T*

Vesta:<sup>3</sup> Shell soft, easily cracked; suture closed and tight making the kernels less subject to worm damage than Nonpareil; kernel very similar to Nonpareil, but larger, flavor good; ripens 10 to 14 days after Nonpareil. Tree very vigorous; consistently productive; blooms with Nonpareil, which it pollinates. BROOKS 1972; F91T{SC}

#### CODES FOR SPECIAL TYPES

1. Genetic Dwarf
2. Low-Chill
3. Papershell

## AMARANTH {S}

#### AMARANTHUS SPP.

##### GRAIN AMARANTH

Mostly *A. cruentus* and *A. hypochondriacus*. The former is the most adaptable of all grain amaranth species, and it flowers under a wider range of day lengths than the others. *A. hypochondriacus* is later maturing which limits its usefulness in more northern areas, however it is the most robust and highest yielding of the grain types.

**1011:** (R1011) 110 days. Considered to be one of the best and most uniform Mexican grain types. Large golden seeds. Late season maturity. Medium-tall plants with green flower heads that turn pink as they mature. Stout stalks resist lodging. Very similar to 1041. Developed at the Rodale Research Center, Kutztown, Pennsylvania. C25M

**1023:** (R101) (*A. hypochondriacus*) 150 days. Very bushy, green plant with no predominant seed head; grows up to 8 feet tall; quite resistant to lodging. Produces large, high quality white seeds. Has shown excellent seedling vigor. Matures very late. Should be planted at high densities to discourage bushiness. Developed at the Rodale Research Center, Kutztown, Pennsylvania. C25M

**1024:** (R103) (*A. typhochondriacus*) Very bushy, green plant with thick, succulent stalks; quite resistant to lodging. Has small seed heads borne across the top of the plant. Produces high quality gold seeds. Matures very late. Should be planted at high densities to discourage bushiness. Developed at the Rodale Research Center. C25M

**1041:** (R149) (*A. cruentus*) Uniform, high-yielding, green plant; height 5 to 6 feet; mostly single-stemmed when planted at recommended densities. Predominantly white-seeded. Medium length growing season. Somewhat resistant to *Lygus* infestations. The most commonly grown cultivar in the United States. Developed at the Rodale Research Center. C25M

Alegria: (*A. cruentus*) Produces blonde seed typically used for the traditional confection *alegria*, which is made with popped seed and honey in central Mexico. 116, N84

Black-Seeded: Very small seeds, 1/30 inch in diameter compared to 1/15 or 1/16 inch which is typical of the white and gold-seeded types. Can be used as a substitute for poppy seeds, or they can be ground into flour for use in dark colored food products. C25M

Burgundy: (*A. hypochondriacus*) 105 days. A widely adapted cultivar. Has yielded well on the Olympic Peninsula of Washington and the windswept plains of north central Kansas. Striking purplish-red foliage, stalks, and seedheads; productive, heavy seedheads; small, creamy white/beige seeds. Height 5 to 7 feet. Young leaves can also be used for greens or in salads. A2, C95, 177, J39, K49T, L3J, L11, N7G, N84

Chihuahuan Ornamental: (*A. cruentus*) From the heart of the Chihuahuan desert, where it is called Sangre de Castilla (the Blood of Noble Spain). The black seed is edible. Can also be used as a potherb. Planted with the summer rains in the low desert. 116, N84

Dreadicus: (Mercado Dreadicus) (*A. hypochondriacus*) 125 days. Large, green, tightly packed, matted seedheads resembling dreadlocks; full of golden seed. Very good flavor. Pale green leaves make good greens. Tall, long-season plants growing 8 to 10 feet; high yields. Very drought tolerant. Originally from the Mexican highlands. A2, C95, F73D, I99M, K46T, K49T, L3J, L77D, N84

Elephant's Trunk: (Elephant's Head) 65-80 days. Unique heirloom brought to the United States from Germany in the 1880's. Named after the stunning deep-red to purple seedhead, which has a long drooping form—an 18 to 24 inch protuberance that resembles the trunk of an elephant. Grows to a height of 3 to 4 feet. B49, C95, D68, F73D, F80, I99M, K49T, L11, L13M, L77D, N7G

Golden Giant: (*A. cruentus*) 120 days. Large orange-golden seedheads on 6 to 8 foot plants; no side branching; green leaves, but golden brown veins, stalks, and flowers. Large seeds are mixed light and dark golden. Early and heavy bearing. Can yield up to a pound per plant. Easily gathered and threshed, but susceptible to lodging. Ornamental. B49, C95, F35M{PL}, I99M, K49M, K49T, L77D, N84

Golden Grain: (*A. typhochondriacus*) Very early maturing strain with golden-yellow to orange foliage and seedheads. Uniform, short plants; height to 4 1/2 feet. Easier for mechanical harvest, but less productive than Burgundy. Midseason in maturity. The grain can be added to most bread recipes for a delightfully crunchy texture. A2, F73D, J25M, L11, L7M

Guarijio Indian: (*A. hybridus* x *A. hypochondriacus*) White-seeded grain type commonly used for *tamales*, *pinole*, or popping. From the Rio Mayo in Sonora, Mexico. Planted in spring or with the summer rains in the low desert. 116, N84

K112: (*A. cruentus*) Rodale selection from a cross of a Mexican grain type and an African grain type. Slightly shorter plant than Mexican types, with a more branched habit. Both seed heads and leaves are red. Produces mostly white seed. Matures earlier than Mexican grain types. Has shown some resistance to the tarnished plant bug (*Lygus lineolaris*). C25M

K266: (*A. cruentus*) Mexican x African breeding line from the Rodale Research Center. Green-flowered plants that mature about a week earlier than 1011 due to the influence of the African grain type parent. Tight seedheads that produce grain that is slightly smaller than typical Mexican grain types. C25M

K283: (*A. cruentus*) Mexican x African breeding line from the Rodale Research Center. Produces flowers with varying shades of red and pink, and tight seedheads with small grain which matures at the same time as K266. Grows somewhat shorter than the Mexican grain type. C25M

K343: (*A. hybridus* x *A. hypochondriacus*) 117 days. Productive grain producer developed at the Rodale Research Center. One of the highest yielding lines in yield trials in Kansas, Nebraska and Minnesota. Grows 5 to 6 feet tall with red flower heads and yellow seed. Has superior resistance to lodging, especially after a frost. Widely grown by a small group of commercial growers. C25M

K432: (*A. hybridus* x *A. hypochondriacus*) 95 days. First semi-dwarf grain amaranth from the Rodale Research Center. One of the earliest and best yielding cultivars. Grows 3 to 5 feet tall with large pale pink flower heads and leaves that are purple-blotched when young. Light tan seeds, of good quality for cooking and baking. Easier to combine than taller types. C25M, G6, J39, K17M, L7M, N84

Kinnauri Dhankar: (*A. cruentus*) 90-100 days. Old landrace from the Himalayan region. Mixed blond, pale green, and burgundy heads with white seeds. Burgundy and pale green leaves. Grows about 8 feet tall. Very decorative. K46T, L3J

Manna de Montana: (*A. hypochondriacus*) 120 days. Delicious, golden-orange grains resemble sesame seeds and can be used in a similar manner. Also used for milling into flour, as a cooked cereal or for popping. Early, uniform and dependable, grows 4 to 6 feet tall. Very heavy seedheads. D29P, K49M, K49T

Mayo Indian: (Mayo Red) (*A. cruentus*) A black-seeded cultivar from Sonora, Mexico. Bright red flower spikes and leaves. Seeds are used for esquite (parched), *pinole* and *atole*. The leaves are used as quelites (greens). Planted in spring or with the summer rains in the low desert. B49, F24D, F80, L7M

Nepalese: (*A. cruentus*) 150 days. High-yielding, fairly late-maturing strain, height 6 to 8 feet. Attractive reddish-pink seedheads. Leaves are also red. Apparently prefers higher elevations but has been grown successfully at low elevations in the West Coast and South. C95, F73D, N84

New Mexico: (*A. hypochondriacus*) Beautiful pink and white inflorescences that yield golden seed. From a dooryard garden near Rinconada, New Mexico. Planted in spring or with the summer rains in the low hot desert. E61

Polish: Intensely purple plant similar to Burgundy, but with deep purple seeds. Recommended by Shoulder to Shoulder Farm as a somewhat better flavored salad green. Originated in Poland. N7G

Popping: (*A. cruentus*) 110 days. High-yielding red and tan seed head; breaks off easily in the wind. White-seeded. May be popped in a frying pan or wok at high heat, no oil needed. As with corn, popping is an interesting alternative to grinding or whole-grain cooking. Grows to about 6 feet tall. A2, F73D, J39, K46T, N84

Prima x Nepal: (*A. hybridus* x *A. hypochondriacus*) Large, densely-spiked red head; very good yields. Prone to lodging. Early in maturity. Stable cross. Introduced by the Rodale Research Center, Kutztown, Pennsylvania. C95, N84

R158: (*A. ementus*) 93 days. A predominately white-seeded, early maturing, refined grain amaranth with red leaves and stems. Vigorous growing plant that lodges easily; an excellent producer. Medium-sized seeds high in lysine. Sow 1/8 inch deep in rows 24 inches apart, thinned to 3 to 4 inches apart. Harvest, thresh, and winnow after frost. Used for flour, popping, or sprouting. Developed at the Rodale Research Center, Kutztown, Pennsylvania. C25M, J39

Rodale Multiflora: (*A. ementus*) 95 days. Green plant with seedheads that vary in color from red, yellow and green to egg-white; height 5 to 6 feet. Produces an abundance of white seeds. Medium to long season. Recommended for its uniformity, shortness, and yield for machine or hand harvest. C95, N84

Sunset Orange: 110 days. Slightly golden, white seeds produced on large, attractive sunset orange seed heads. Young leaves are also useful as cooked greens. High-yielding, 6 foot tall plants with heavy golden-brown stalks. Suitable for use as an ornamental as well as for grain, the seed heads remaining colorful over a long period. J9M

Warihio: 105 days. Ornamental as well as useful. Brilliant red foliage and seed heads. Nutty-flavored seeds are used as grain. Leaves are also eaten. Traditionally used on festive occasions such as the Mexican Day of the Dead ceremonies. Drought tolerant. K49T

#### LEAF AMARANTH

Assam Red: Small, red plant with a hollow stem; soft, sweet, non-fibrous. The whole plant is used as a vegetable. When cooked, the juice retains its reddish color. Very popular in parts of India. N91

Bengal Red: Large, branching plant, often reaching a height of 3 1/2 feet or more; stems and leaves red; slightly fibrous. Both the leaves and stems are used as vegetables. The juice does not retain its red color when cooked. Sown in spring and summer in India. N91

Champa Natia Sag: (Chaulai, Chowlai Bhaji) Dwarf bushy plants. Very sweet leaves and shoots are used in curries. Sown from February to August in India. N91, Q45M, R0, R50

Fote Te: (*A. tricolor*) An excellent leaf amaranth with fine taste. Will bolt in hot weather, especially in northern areas. Recommended for hot, humid areas of the southern states. Originally from Dahomey in Africa. B49

Gujarati White: Large, greenish plant; non-fibrous. In early stages of growth, the whole plant can be used as a vegetable. Later, only the leaves are suitable. Entirely free from diseases. Sown in spring and summer in India. N91

Jamaican Gtllaloo: Very vigorous plant, growing to 7 feet tall, productive and prolific. Both the leaves and tasty stems are used. Can be grown as a winter crop in areas of the Deep South as it will not run to seed like other types do under the short day conditions. A2, D33

Lai Sag: Bushy plants growing to a height of 2 to 3 feet. In India, sown from February to May and again from September to December. S59M, S93M

Lotus's Purple: Vigorous, upright, thick-topped plants; height 5 to 7 feet; large, reddish-purple heads. Heavy yields of dark, purple seeds. Can be used both as a cereal and as a potherb or for salads. F73D, N84

Merah: (Coleus Leaf) 80 days. Very attractive bi-colored, heart-shaped, crinkled, dark-green leaves with red veins, resembles a coleus. Slightly sweet, walnut-like flavor makes an attractive addition to salads. Or its large leaves, 5 inches long and 6 inches wide, can be used for wrapping, like grape leaves. Excellent for the edible landscape. C95,177, J73, K49T, K66, M32, N84

Orissa White: Large, branching, green-stemmed plant; height 3 to 3 1/2 feet or more; somewhat fibrous. Both the leaves and stems are

eaten, the stems being particularly sweet. Popular throughout India. N91

Perfecta: (A. tricolor) Attractive plant with lance-shaped, multicolored leaves of yellow, green and crimson. Popular with specialty growers who harvest the leaves when young for adding to *mesclun* mixtures. Grows to about two feet tall when mature. 177,191

Pinang: 80 days. Light-green leaves, 6 to 8 inches long and 3 to 4 inches wide have a mild, sweetish flavor. Appropriate for use in salads, or they can be cooked like spinach. Plants grow 12 to 18 inches tall. J73, N84

Puteh: (Besar) 80 days. Light green, spade-shaped leaves, 5 to 6 inches long and 5 inches wide with a mild flavor. Good for salads, or they can be cooked like spinach. Plants grow 12 to 18 inches tall. J73, N84

Quintonil: Red stems and maroon tint to leaves. Black seed. The mountain Zapotecs customarily do not plant any green vegetables, but make abundant use of this wild amaranth as a potherb. It is allowed to reseed itself each year in the milpas (cornfields). From 6500 feet altitude; tolerates much rain and cool temperatures. QUINTANA 1994 [Re]; F80, N84

Red Leaf: (A. tricolor) 40-60 days. Small, lightly fuzzy, oval-heart shaped green leaves are overlaid with burgundy red (coleus-like). Multi-stalked plant, 12 to 18 inches tall. Slightly sweet with a unique tangy flavor. Heat tolerant; plant thinly in warm 70° F. soil. A flavorful, colorful salad and cooking green. C20M, D55, G6, Q34, S55, S70

Red Stripe: (A. tricolor) 28 days. Large oval leaves patterned with deep red. Height about 18 inches. Easily grown; heat tolerant. Sow in late spring or summer. Good stir-fried with peppers and onions. A favorite vegetable in China, Japan and Africa. F73D, F80, F85, K49M, L59, L79G

Tampala: (Fordhook Spinach) (A. tricolor) 70 days. Heat-resistant spinach substitute, ready 6 to 8 weeks after sowing; produces all summer. Young, tender leaves cook quickly; also good raw in salads. Stems can be harvested when 4 or 5 inches long and cooked like asparagus. Artichoke-like flavor. K49M

Tiger Leaf: (Tiger Eye) Broad, medium green leaves with a distinct red blotch in the center. Grows to 3 feet tall and is extremely branching, producing many side shoots. Very productive, easily giving a number of cuttings. A79M, D33, E83T, F85

White Round Leaf: (A. tricolor) 50 days. Large, light-green, rounded leaves on bushy plants to 18 inches tall. Easily grown; stands heat well. Sow in late spring through the end of summer. Tender, succulent leaves and young stems are cooked like spinach or added to salads. D55, F85, L59, Q39, S55

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## APPLE {GR}

MALUS BACCATA

MALUS PUMILA

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### CIDER APPLES

Included here are "true" hard cider apples, mostly grown in England, France, Spain and Quebec. They are characterized by high acid and tannin levels which make them unfit for table fruit, but give ciders distinctive flavors and body.

Alford: (Sweet Alford) Sweet type. Medium-sized, conical fruit; skin waxy yellow often blushed with pink; flesh white, juicy, sweet and non-astringent. Harvested in October; milling period up to 3 weeks. Yields a pure sweet cider of good quality. Large, slightly spreading tree with forked twigs due to tip bearing. Originated in England. F88G, F91T{SC}, LI

Amere de Berthecourt: Small, yellowish-green fruit, washed with carmine on the sunny side; juice moderately colored, slightly bitter, perfumed, rich in sugar and tannin; quality excellent. Harvest date October 25 at Geneva, Nov York. Tree very productive, very healthy and vigorous, often drooping under weight of the fruits. Very common in Normandy and Brittany. H90M{SC}, M22, N24M

BreakwellPs Seedling: Bittersharp type. Small to medium-sized, roundish fruit; skin yellow blushed with dark red; flesh white, soft and juicy, mildly sharp, sometimes slightly astringent. Harvested late September to early October; milling period less than 3 weeks, the fruit rotting rapidly. Yields a medium bittersharp, rather thin and light cider of only average quality. Tree medium-sized, spreading, a good pollinator. Originated near Monmouth, England. WILLIAMS, R.; F88G, F91T{SC}, I61M{SC}

Brown Snout: Bittersweet type. Small, conical fruit; skin yellowish-green; flesh white, soft, dry, sweet with slight astringency. Harvested in November; milling period more than 3 weeks. Produces a mild to medium bittersweet cider of average quality. Tree medium-sized, very subject to splitting at the crotches, a good pollinator. Originated in Herefordshire, England. WILLIAMS, R.; H90M{SC}

Brown's Apple: Sharp type. Flattened, dark-red fruit, often with red-stained flesh; acidic juice, low in astringency. Harvested in October. Produces a vintage fruity cider, mildly bittersharp in character. Popular in England since the 1920's. Tree medium-sized, slightly spreading. Originated south of Devon, England. MORGAN, I.; H90M{SC}, M22

Bulmer's Norman: Bittersweet type. Medium to large fruit high in sugar and tannin; ripens in mid-October, ready for milling up to 3 weeks after harvest. Yields a pleasant cider of characteristic flavor and aroma. Rated as "medium bittersweet", between "mild" and "full". Useful for blending purposes. Tree large and vigorous, spreading; cropping heavy but usually biennial; resistant to fire blight. Useless as a pollinator. WILLIAMS, R.; F88G, F91T{SC}, H90M{SC}, I61M{SC}, M22

Chisel Jersey: Bittersweet type. Small to medium-sized, conical fruit; juice well colored, low in acidity, high in tannin, sugar content good. Harvested late October to mid-November; milling period more than 3 weeks. Yields a cider of marked astringency, usually of full body and good flavor and aroma. Tree medium-sized, vigorous, spreading; consistently high yielding. Originated in Somerset, England. WILLIAMS, R.; F88G, F91T{SC}, H90M{SC}, I61M{SC}, M22

Cimitiere: Bittersweet type. Medium-sized, flat to conical fruits; skin greenish-yellow splashed with crimson; flesh sweet with a dash of bitterness, juice highly colored, fairly well perfumed; keeps and ships very well. Useful for blending with cultivars of little color and mucilage. Harvest date October 10 at Geneva, New York. Tree very vigorous and haidy, exceedingly productive. Originated in Blargy, France. U7J{SC}

Dabinett: Bittersweet type. Medium to large, roundish fruit; skin green, blushed with dull red; juice low in acid, tannin medium, sugar content fair; fermentation moderate. Produces a very high quality, soft, full-bodied cider. Harvest date September 25 at Geneva, Nov York. Tree small, spreading; precocious; a regular and heavy bearer; blooms late; pollinates with Michelin. Originated in Somerset, England. WILLIAMS, R.; F88G, L12, M11M{PR}, M22, 081, Q30{SC}

Dymock Red: Sharp type. Small to medium fruit; skin entirely covered with dark mahogany red; flesh soft and tender, slightly sweet with a pleasant acidity; sugar content average, fermentation slow. Yields a high-grade cider that is medium sharp with some astringency. Can be harvested in late September, but will hang on the tree until November. Tree vigorous, upright, productive. Very susceptible to canker and scab. U7J{SC}

**Foxwhelp:** Sharp type. Small to medium fruit; skin yellow streaked with bright red; juice golden, of high specific gravity, aroma and flavor very characteristic; sugar content high, fermentation moderate. Produces a cider of high-vintage quality, containing the correct balance of sugar, acid and tannin. Harvest date October 1 at Geneva, New York. Tree vigorous and productive. Most famous of the older English cider apples. B27M{SC}, C27T{SC}, C30M, E84{OR}, G65M, H90M{SC}, LI, L12, M11M{PR}, M22

**Frequin Rouge:** Bittersweet type. Small to below medium fruit; skin yellow, highly blushed with red; juice very well colored, intensely perfumed, of high flavor; rich in tannin, acidity sufficient; ripens in November, keeps well. Makes an excellent cider of good color. Tree moderately vigorous, upright, very productive. Old French cultivar of unknown origin. U7J{SC}

**Grosse Launette:** Medium to large, roundish fruits; skin greenish-yellow, dotted with russet gray near the stem; juice moderately colored, of good flavor, very bitter and astringent, well perfumed, notably rich in sugar and tannin. Good for blending. Tree vigorous and productive, semi-vertical, excessively fertile. Originated in Bretagne, France. M22

**Harry Masters' Jersey:** Bittersweet type. Small to medium-sized, conical fruit; skin greenish-yellow blushed with dark red; flesh white, dry, sweet and astringent. Harvested in early November; milling period more than 3 weeks. Cider medium to full bittersweet, of very good quality. Tree medium-sized, semi-spreading; bears good crops biennially; pollinates with Yarlington Mill. Originated in Somerset, England. WILLIAMS, R.; H90M{SC}, M22, 081

**Herefordshire Redstreak:** (Redstreak) Bittersharp type. Prominently striped fruit with a sharp culinary flavor. Produces excellent cider. Medium-sized tree with an open spreading habit. Very similar to Foxwhelp. The original Redstreak, introduced in the early 1600's, established the cider growing reputation of Herefordshire, England. MORGAN, J.; A91

**Hughes' Crab:** (Hewe's Virginia Crab) Fruit small, about 1 1/2 inches in diameter, nearly round; skin dull red, dotted with white specks, obscurely streaked with greenish-yellow; flesh fibrous, with an acid, rough, astringent flavor; when ground, runs clear and limpid from the press, and ferments very slowly. Often mixed with rich, pulpy apples, to which it imparts a good deal of its fine quality. BETTS, PROULX; J93, J93{SC}, L90M

**Kingston Black:** Bittersharp type. Medium-sized, conical fruit; skin deep purplish-crimson over yellow-orange ground color; juice moderately sweet, aromatic, pleasantly acidic with an astringent aftertaste. Harvest date September 15 at Geneva, Nov York. Produces a full-bodied, distinctive cider of "vintage" quality without blending. Tree medium-sized, spreading, fairly productive. Difficult to grow. Susceptible to scab and canker. WILLIAMS, R.; A91{SC}, B27M{SC}, C30M, C34, E23Z, E84{OR}, G65M, J61M, LI, L12, M11M{PR}, M22, 081

**Major:** Bittersweet type. Medium-sized, greenish fruit; juice low in acidity, tannin content medium, high in sugar for an early cultivar; ripens in late September and early October. Produces cider that is among the best of the bittersweets of its season. Tree fairly vigorous, spreading, bears well biennially. Highly esteemed in Devon, England. WILLIAMS, R.; C27T{SC}

**Marechal:** Bittersweet type. Large, elongate-conical fruit; skin greenish-yellow, striped with red; flesh creamy white, firm and juicy; juice perfumed, well colored, very bitter and astringent but rich. Good for blending. Harvest date October 5 at Geneva, New York. Tree very vigorous and productive; blooms late. H90M{SC}

**Medaille d'Or:** Bittersweet type. Small to medium-sized, conical fruit; skin golden-yellow, with grayish-brown russeting. Juice very high in sugar, density and tannin; highly perfumed, strongly astringent and bitter, below average in color. Harvest date September 25 at Geneva, New York; milling period more than 3 weeks. Cider full bittersweet, often alcoholic and fruity, of good quality. Tree small

and spreading, haidy, excessively productive. Originated in Normandy, France. One of the principal apples used in the production of *calvados*. WILLIAMS, R.; L12, M11M{PR}, M22

**Morgan Sweet:** Pure sweet type. Very large, greenish-yellow fruit, sweet and juicy. Produces a light, fruity cider ready for drinking before Christmas. Also eaten fresh. Formerly widely grown for early September eatiqg apples supplied to South Wales mining towns. Now reserved for cider making. Apparently originated in Somerset, England in the 18th century. MORGAN, J.; 081, Q30{SC}

**Nehou:** Bittersweet type. Small to medium-sized, conical fruit; skin waxy, butter-yellow, very distinctive; flesh white, soft, easily bruised, juicy, sweet and astringent. Harvest date September 10 at Geneva, New York; ready for pressing up to 3 weeks after harvest. Cider full bittersweet, astringent, fruity, full-bodied, good to excellent in quality. Tree medium-sized, semi-spreading, yields well. Originated in France. WILLIAMS, R.; LI

**Porter's Perfection:** Bittersharp type. Small to medium-sized, conical fruit; skin greenish-yellow blushed with dark red; flesh white, crisp, juicy, sharp with no astringency. Harvested in late November; milling period more than 3 weeks. Cider medium bittersharp, of average to good quality. Tree large, vigorous, spreading, heavy yielding. Originated in Somerset, England. WILLIAMS, R.; F88G, F91T{SC}, I61M{SC}, LI, L1{ES}

**Reine des Hatives:** Bittersweet type. Small to medium-sized, somewhat conical fruit; skin greenish-yellow washed with carmine pink; flesh mild, fairly tender, sugary, highly perfumed, of very agreeable flavor; juice not abundant, fairly colored, slightly bitter. Harvested late September to early October. Tree vigorous, upright; blossoms early; very productive. Originated in Yvetot, France. First fruited in 1872. M22

**Reine des Pommes:** Bittersweet type. Medium to large fruit; skin greenish-yellow, strongly tinted with deep red; juice sugary, well colored, perfumed, very high in density and tannin, low in acidity. Makes a bitter, full-bodied cider of character. Excellent for blending. Harvest date September 25 at Geneva, New York; keeps well. Tree very vigorous, upright, extremely productive. Originated in Bretagne, France. H90M{SC}, N24M

**Stoke Red:** Bittersharp type. Small to medium-sized fruit; skin yellow flushed with red; juice high in tannin and density, acidity moderate, sugar content above average; bitter astringency prominent in after taste. Harvested in late November, ready for milling over a period of more than 3 weeks. Produces a fruity cider of "vintage" quality without blending. Tree medium-sized, spreading, fairly vigorous; precocious; bears heavy crops. Originated in Somerset, England. WILLIAMS, R.; M22

**Sweet Coppin:** Sweet type. Medium to large, conical fruit; flesh white, soft and sweet with no astringency. Harvested late October to mid-November, ready for milling over a period of more than 3 weeks. Yields a pure sweet cider, or occasionally mildly bittersweet. Tree large, semi-spreading; precocious, bears very good crops biennially. Originated in Devon, England. WILLIAMS, R.; H90M{SC}, M22

**Taylor's:** (Taylor's Sweet) Sweet to mild bittersweet type. Greenish-yellow fruit, blushed with red; sweet juice. Harvested early to mid October. Produces sweet or mildly bittersweet cider of fair quality. Mainly used as a pollinator for Tremlett's Bitter. Originated in Somerset, England. MORGAN, J.; H90M{SC}, LI, 081

**Tremlett's Bitter:** Bittersweet type. Medium-sized, conical fruit; skin yellow blushed with red; flesh white, sweet and astringent. Harvest date September 25 at Geneva, New York; ready for milling up to 3 weeks after harvesting. Yields a full bittersweet cider with hard and bitter tannin. Tree medium-sized, spreading; precocious, bears very good crops biennially. Originated in Devon, England. WILLIAMS, R.; C30M, F88G, LI, L12, M11M{PR}, M22, 081

Vilberie: (Villebery) Bittersweet type. Flattened, dark green fruit; full bittersweet juice. Produces cider with a good full-bodied flavor. Harvested early to mid November. Large, spreading tree. Originated near Dinan, Brittany. Introduced into Herefordshire, England in the 19th century. MORGAN, J.; H90M{SC}

Yarlington Mill: Bittersweet type. Medium to large, conical fruits; juice low in acid, sugary, tannin content medium. Produces a medium bittersweet cider of good body, aroma and flavor. Harvest date October 10 at Geneva, Nov York; ready for pressing over a period of more than 3 weeks after harvesting. Tree medium-sized, semi-spreading; precocious, bears excellent and regular crops. A superior all-round cultivar. Originated in Somerset, England. WILLIAMS, R.; A91{SC}, C27T{SC}, C30M, E84{OR}, F88G, F91T{SC}, G65M, H90M{SC}, LI, 081

#### COOKING APPLES

Although the dividing line between cooking and dessert apples is not always sharply defined and there is much overlapping, tart, sharp or sour apples are usually best cooked. Cooking apples which have a high acid content usually become fluffy or frothy when cooked.

#### SUMMER HARVESTING

Arthur Turner: Large, round to conical fruit; skin light green blushed with orange-red, attractive; flesh yellowish-white, coarse, rather dry, pleasantly acid; ripens early, hangs well on the tree and also keeps well. Requires a longer cooking time than other cultivars, bakes well. Tree upright, of moderate to vigorous growth; bears abundant crops regularly; fairly resistant to scab. Originated in Berkshire, England. Introduced in 1915. SANDERS, SIMMONS 1978; M22, 081, Q30{SC}, R83

Cauley: Extremely large fruit, 3 inches or more in diameter, often weighing as much as a pound; skin green with faint red stripes; flesh yellow, crisp, juicy; season early July to the end of August; resembles Yellow Newtown. Excellent for culinary and jelly use. Tree a heavy bearer, averaging 26 bushels per tree. Introduced by the Mississippi Agricultural Experiment Station. BROOKS 1972; C30M

Duchess of Oldenburg: (Duchess) Large, roundish fruit; skin pale greenish-yellow, prominently striped and mottled with bright red and crimson; flesh tinged with yellow, firm, crisp, juicy, sprightly subacid, aromatic; too acid for dessert, good to very good for culinary purposes. Tree medium-sized, upright-spreading becoming roundish. Known in Russia in the 1700's. BEACH; A91, A91{SC}, C58, E84, F53, F88G, G16, G16{DW}, G65M, H65, I49G, LI, L12, L27M, M11M{PR}, etc.

Emneth Early: Medium-sized, conical fruit; skin pale yellow, slightly blushed with red; flesh white, tends to soften quickly, cooks to a froth; ripens very early, during July and August. Tree moderately vigorous, precocious, heavy bearing. Originated in England in 1899. SIMMONS 1978; M22, 081

Gravenstein: Fruit medium-large, oblate to roundish; skin greenish-yellow, blushed with light and dark red; flesh yellowish, firm, crisp, juicy, sprightly subacid, aromatic; dessert quality very good, excellent for cooking; ripens unevenly. Tree large, vigorous; productive; requires a pollinator. A very old European apple of uncertain origin. BEACH; B53, B83, E23Z, E631{PR}, E84, F88G, G79M{DW}, H65, H89M{ES}, I19M{PD}, J61M, LI, L1{ES}, L47, N24M, etc.

Grenadier: Large, flattened globe-shaped fruit; skin pale green, tinged with yellow; flesh white, crisp, acid, cooks to a froth, good for baking; season mid-August to October. Tree moderately vigorous, a regular and heavy bearer; resistant to scab and canker. Of unknown origin, first recorded about 1860. SIMMONS 1978; F88G, M22, 081, Q30{SC}, R83

Hall's Pink:<sup>5</sup> Medium to large, roundish fruit; skin bright red; flesh tinged with red, juicier than Gravenstein; resembles Gravenstein but ripens about 2 weeks earlier. Makes pink apple-

sauce. Tree apparently disease resistant. Originated in Merville, British Columbia, Canada. Introduced in 1980. F88G, M22

Keswick Codlin: Medium to large, roundish heart-shaped fruit; skin pale yellow, slightly blushed on the side exposed to the sun; flesh nearly white, tender, very juicy, brisk subacid, very good for culinary use, too acid for dessert unless very ripe. Makes a delicious soft apple puree. Tree medium to large, moderately vigorous. Originated in northern England, about 1790. BEACH, SIMMONS 1978; E84{OR}, F88G, LI, L12, M11M{PR}, 081, R83

Red Astrachan: Medium to large, roundish fruit; skin yellow or greenish, overspread with light and dark red; flesh white, often strongly tinged with red, crisp, tender, juicy, brisk subacid, aromatic; sometimes slightly astringent; quality good for dessert, excellent for cooking. Tree vigorous, upright-spreading; grows well in hot areas. Originated in Russia. BEACH; A91{SC}, C30M, C58, D69, E84, F88G, G65M, G79M{DW}, H65, I49G, LI, L1{ES}, M11M{PR}, N38M{SC}

White Astrachan: Fruit medium to large, roundish to roundish oblate; skin waxen yellow or whitish, with faint streaks of red, covered with dusky bloom; flesh white, fine-grained, crisp, tender, perfumed, acid; good for culinary use; season August and September. Tree vigorous; productive; does well in hot areas. Originated in Russia about 1748. BEACH; C27T{SC}, LI

#### FALL HARVESTING

Alexander: (Emperor Alexander) Large, uniform, roundish-conic fruit; skin greenish or pale yellow, blushed with bright red; flesh nearly white, firm, coarse, moderately crisp, tender, juicy, mildly subacid; dessert quality fair to good, very good for cooking. Tree vigorous, upright-spreading; hardy; moderately productive. Introduced into England from Russia in 1817. BEACH; A91{SC}, C58, E84, F88G, LI, L12, M11M{PR}, M22, N38M{SC}

Bramley's Seedling: (Bramley) Fruit large; flattened, irregular; skin greenish-yellow, slightly blushed red; flesh yellowish-white, firm, coarse, juicy, acid. Excellent for stewing and baking; best for dumplings and canning. Tree very large and vigorous; productive. Most popular cooking apple in Great Britain. SANDERS, SIMMONS 1978; A39, A53{PR}, A91, A91{SC}, B27M{SC}, C27T{SC}, C58, E84{OR}, F88G, G79M{DW}, J61M, LI, L12, M11M{PR}

Cellini: Medium-sized, round to slightly flattened fruit; skin pale yellowish-green, blushed and streaked with brownish-red; flesh white, tender, sub-acid, with an unusual resinous flavor liked by some; ripens October to November. Tree stocky, very productive. Originated in England. Introduced in 1828. SIMMONS 1978; M22, 081

George Neal: Large, flat-round fruit; skin green changing to whitish-yellow, often slightly blushed red, thin and smooth; flesh greenish-white, crisp, juicy, coarse; flavor excellent, sweet yet somewhat acid; cooks yellow and remains in intact slices; ripens in midseason. Tree of moderate growth, bears freely and regularly. Originated in Kent, England. Introduced in 1923. SANDERS, SIMMONS 1978; M22, 081

Gloria Mundi: Fruit large to very large, roundish; skin greenish-yellow, sometimes with a faint bronze blush; flesh slightly tinged with greenish-yellow, coarse, moderately crisp, rather tender, juicy, mildly subacid; quality fair for dessert, good for culinary purposes or exhibition. Known in New York, New Jersey and Pennsylvania prior to 1804. BEACH; A91{SC}, C30M, E84, 081, Q30{SC}

Golden Noble:<sup>1</sup> Fruit medium to large, round-conical; skin golden-yellow, slightly speckled with grey and brown; flesh creamy-white, slightly soft, juicy, fairly fine-textured; ideal for baking, cooks to a golden rich-flavored froth. Exceeds most other edible apples in vitamin C. Tree small, compact; precocious; bears heavily and regularly. Discovered at Downham, Norfolk, England. Introduced in 1820. SANDERS, SIMMONS 1978; A91{SC}, LI, L12,

M11M{PR}, M22, 081, Q30{SC}

Howgate Wonder: Very large, round-conical fruit; skin greenish-yellow, blushed and striped with orange-brown or red; flesh creamy-white, firm, fine-textured, fairly acid; excellent for culinary use, becoming dirty yellow and cooking to a froth. Tree vigorous; a heavy and regular cropper. Raised in the Isle of Wight about 1915. SANDERS, SIMMONS 1978; F88G, M22, 081, Q30{SC}, R83

Maidenblush: Medium to large, oblate fruit; skin pale waxen yellow, blushed with crimson, very attractive; flesh white, fine-textured, tender, very juicy, subacid; quality good, especially for culinary purposes. Tree medium-sized, vigorous, spreading. Named by Samuel Allinson of Burlington, New Jersey; first described in 1817. BEACH; A91, A91{SC}, B27M{SC}, C27T{SC}, C76M, E84{OR}, F88G, G65M, I49G{SC}, LI, L12, L27M, M11M{PR}, N38M{SC}

Milwaukee: Fruit rather large; distinctly oblate, sides often unequal; skin pale yellow or whitish, more or less blushed with red; flesh whitish tinged with yellow, firm, somewhat coarse, crisp, very tender, very juicy, sprightly, brisk subacid; dessert quality fair to good, well-suited for culinary use. Tree moderately vigorous, upright. BEACH; C58, I49G{SC}, L27M

Peasgood Nonesuch: Fruit large to very large; round, slightly flattened; skin golden yellow, blushed and striped with bright crimson; flesh yellowish, soft, very juicy, subacid; cooks to a froth, also very good for baking. Tree moderately vigorous, spreading; fairly productive. Raised by a Mrs. Peasgood at Stamford, Lincolnshire, England from a seed planted in a pot about 1858. SANDERS, SIMMONS 1978; F88G, M22, 081, Q30{SC}

Pound Sweet: (Pumpkin Sweet) Large to very large, globular fruit; skin clear yellow, marbled with greenish-yellow; flesh tinged with yellow, medium in texture, firmness and juiciness, decidedly sweet with a peculiar flavor; good for culinary use, especially esteemed for baking or stewing with quinces. Tree vigorous, upright-spreading. Originated in Manchester, Connecticut, prior to 1834. BEACH; A91, A91{SC}, B27M{SC}, C27T{SC}, C58, C76M, D69, F88G, G65M, H65, H89M, L12, L27M, M11M{PR}, M99G, etc.

Reverend W. Wilks: Fruit very large; round-conical to conical; skin pale yellowish-green, thinly striped with red; flesh creamy-white, soft, juicy, only slightly acid, cooks to a pale yellow froth. Tree small, compact; prolific, but tends to be biennial, bears fruit on short spurs; disease resistant. Originated in England. Introduced in 1908. SANDERS, SIMMONS 1978; M22, 081, Q30{SC}, R83

Rhode Island Greening: Medium to large, roundish or slightly conical fruit; skin yellowish pale-green; flesh yellowish, firm, crisp, tender, juicy, rich, sprightly subacid, peculiarly flavored; quality very good for dessert, excellent for culinary purposes. Tree vigorous, spreading; moderately productive. Probably originated in Newport, Rhode Island in the 17th century. BEACH; A53{PR}, A91{SC}, C27T{SC}, E84, F88G, G79M{DW}, H65, LI, L12, M11M{PR}, M59M, N38M{SC}

Rome Beauty: Medium to large, roundish fruit; skin yellow or greenish, mottled with bright red; flesh nearly white, very firm, crisp, juicy, slightly aromatic, mildly subacid, fairly good for dessert, excellent for baking; keeps and ships well. Tree medium-sized, moderately vigorous; productive. Originated in Lawrence County, Ohio prior to 1848. BEACH; A91{SC}, C54, D81{P0}, D81M{P0}, E84, G65M, G72{DW}, I23M{PD}, LI, M11M{PR}, M69M

Tolman Sweet: Medium-sized, nearly globular fruit; skin pale clear-yellow; flesh white, firm, moderately juicy, decidedly sweet; dessert quality good to very good, highly esteemed for pickling, boiling and baking. Tree moderately vigorous, very spreading; long-lived; very hardy. BEACH; A53{PR}, A91, A91{SC}, B27M{SC}, E84{OR}, G65M, G79M{DW}, H65, LI, L12, L27M, M11M{PR}, N38M{SC}

Warner's King: Fruit large to very large; flat-round to slightly conical; skin yellow, slightly blushed with pinkish-brown; flesh greenish-white, firm, coarse, crisp, juicy, very acid; excellent for culinary use, cooking to a very fine froth. Tree very vigorous and productive. Known since the end of the 1700's in Great Britain. SANDERS, SIMMONS 1978; 081, Q30{SC}, R83

#### WINTER HARVESTING

Bismark: Large to very large, round-conic fruit; skin pale yellow, prominently blushed and striped with dark-crimson; flesh white, crisp, juicy, subacid, cooks to a greenish-yellow froth. Tree moderately vigorous, spreading; hardy; productive. Probably originated at the old German settlement in Hobart, Tasmania, about 1870. SANDERS, SIMMONS 1978; M22, Q30{SC}, R83

Crawley Beauty:<sup>4</sup> Medium to large, flat-round fruit; skin bright yellow-green blushed with brownish-red, with broken stripes of darker red; flesh greenish-white, firm, not very juicy, tart; flavor fairly good for dessert, improves when cooked; season December to March. Tree vigorous, spreading; resistant to most diseases; blooms late, about the latest flowering of all recorded apple cultivars. Originated in Crawley, England about 1870. SANDERS, SIMMONS 1978; F43M, F88G, M22, 081

Crimson Gold: Small to medium-sized fruit; skin red, covered with a dusky bloom. When quartered or sliced and then boiled, the flesh remains solid and takes on a golden yellow color, stained red on the edges by the skin; the result is a product resembling canned peaches; flavor excellent. Developed by Albert F. Etter of Ettersburg, California. Selected for its outstanding quality for canning. E84

Edward VII: (King Edward) Medium to large, roundish fruit; skin pale yellowish-green, faintly blushed with brownish-red; flesh creamy white, very firm but tender, rather coarse, juicy, acid, cooks to a somewhat red, translucent puree. Tree vigorous, upright; moderately productive; slow to come into bearing. Originated in Worcester, England. Introduced in 1908. SANDERS, SIMMONS 1978; A91{SC}, C27T{SC}, G65M, J61M, J93{SC}, L12, M11M{PR}, M22, 081, Q30{SC}

French Crab: (Easter Pippin, Apple John, Two Year Apple) Fruit medium-sized, round to conical; skin yellowish-green, often blushed with dull brownish-red; flesh greenish-white, very firm, crisp, acid, very astringent; good for culinary use; will keep up to 2 years. Tree vigorous, productive. Of French origin; brought to England in 1700. SIMMONS 1978; 081

Lane's Prince Albert: Medium to large, round-conical fruit; skin greenish-yellow, slightly blushed with orange or red; flesh greenish-white, fine-textured, firm, juicy, acid; excellent for culinary use, remaining fairly intact on cooking. Tree small, weeping, of weak growth; suitable for small gardens. Originated in England. Introduced about 1850. SANDERS, SIMMONS 1978; 081, Q30{SC}, R83

Monarch: Large, roundish fruit; skin pale yellow, blushed and striped with deep-red, attractive; flesh white, soft, acid, good for culinary use. Excellent for grilling. Ripens in November and December, will keep until April with careful storage. Tree vigorous, productive, tends toward biennial bearing; resistant to scab. SIMMONS 1978; M22, 081, Q30{SC}, R83

Newton Wonder: Fruit large to very large, flat-round; skin bright yellow, blushed brownish-red to very bright red; flesh yellowish, firm, crisp, juicy, acid, slightly astringent; excellent for culinary use, cooking to a yellow froth; ripens in November; keeps in natural storage until April. Tree vigorous, somewhat spreading; productive. Raised at Melbourne, Derbyshire, England, about 1887. SANDERS, SIMMONS 1978; I49G{SC}, 081, Q30{SC}, R83

#### CRAB APPLES

Apples which are two inches or less in diameter are generally considered crab apples. They vary in flavor, taste and use. Some are suitable for jelly, others for canning and freezing, and still

others as small dessert apples. Crossing crab apples and standard apples has produced useful hybrids called *apple crabs*, especially in the prairie provinces of Canada. They are large crab apples that taste like dessert apples. F74M{PD}

### COOKING

Almata:<sup>5</sup> Fruit large, 2 1/2 inches in diameter, round to conical; skin solid brilliant red; flesh bright red throughout, juicy, pleasantly subacid, suitable for sauce, jelly and pickling; season early winter. Tree very hardy; susceptible to scab; ornamental, with reddish leaves and blossom. Originated in Brookings, South Dakota by N.E. Hansen. Introduced in 1942. BROOKS 1972; A91, A91{SC}, B27M{SC}, C30M, I49G{SC}, J61M, L12, L27M, M11M{PR}, M11M{PD}, M22

Callaway: Medium-sized, red fruit, about 1 inch in diameter; very pleasing flavor, good for jelly; ripens in September. Vigorous, productive tree with pink flowers. Originated at Callaway Gardens in Pine Mountain, Georgia. B9M, B52, E45, F93, G8, G65M, H4, K37M, M69M

Cranberry:<sup>5</sup> Fruit small; long, conic pointed; skin dark red; flesh red, crisp, acid; excellent quality for jelly; ripens in early September. Tree vigorous, upright when young; productive; hardy; flowers red; useful as an ornamental. Redflesh x Dolgo. Originated in Wyndmere, North Dakota. BROOKS 1972; U7J{SC}

Dartmouth: Medium to large, oblate fruit; skin pale yellow, almost entirely overlaid with bright red; flesh yellowish, tinged with red near the skin, fine-grained, juicy, mildly subacid, flavor and quality good. Tree moderately vigorous, upright-spreading; comes into bearing mther early, yields full crops in alternate years. Originated in New Hampshire prior to 1883. BEACH; I61M{SC}, R83

Dolgo: Fruit large, 1 to 1 1/2 inches in diameter, long-conical; skin brilliant crimson; flesh very juicy, sprightly, somewhat acid, good for dessert when fully ripe, very good for culinary use. Jells easily, producing a rich, ruby-red jelly of beautiful color and excellent flavor. Tree vigorous, upright-spreading; prolific; hardy. Introduced from Russia by N.E. Hansen of South Dakota, in 1897. A91{SC}, B4, E45, K64, LI, L1{ES}, L70, M11M{PR}, M35M, M69M

Florence: Medium-sized, oblate fruit; skin yellowish-white, mostly overspread with brilliant pinkish-red; flesh tinged with yellow, coarse, crisp, rather tender, juicy, very brisk subacid, somewhat astringent; quality good for jelly or pickling; season late August and early September. Tree moderately vigorous; precocious; very prolific. Originated in Excelsior, Minnesota by Peter M. Gideon, prior to 1886. BEACH; N33

Geneva:<sup>5</sup> (Geneva Redflesh) (M. *pumila* 'Niedzwetzyana') Medium to large, attractive fruit; very tart, red flesh; eating quality fair. Excellent for jelly, cider and juice (blended with other juice for color). Tree hardy; resistant to apple scab; red-leaved. Originated in Ottawa, Ontario, Canada by Canada Department of Agriculture Research Station. Introduced in 1930. BROOKS 1972; C30M, F88G, J93{SC}, M22, N24M

Hyslop: Medium to large, roundish-ovate fruit; skin clear pale yellow, prominently blushed with dark red; flesh yellow, very firm, at first juicy but eventually becoming dry and mealy, subacid, astringent, good for culinary purposes; season late September and October. Tree vigorous, upright-spreading; a reliable cropper; bears fruit in clusters; very handy. Origin unknown; first raised sometime prior to 1869. BEACH; B27M{SC}, B45M, F88G, I61M{SC}, J68, M11M{PR}, M22

John Downie: Medium to large, oval fruit; 1 1/4 inches long, 1 inch in diameter; skin orange-yellow, blushed with scarlet, attractive; makes excellent jelly and preserves. Tree very productive; highly ornamental. Originated in Lichfield, England. Introduced into the United States in 1927. BROOKS 1972; I61M{SC}, M22, 081, Q30{SC}, R77, R83

Ralph Shay: (Shay) Fruit about 1 1/4 inches in diameter; brilliant red; makes excellent jelly; retains its color longer than others; never drops. Tree vigorous, sturdy; with unusually dark-green, disease resistant foliage. Introduced by Simpson Nursery Company, Vincennes, Indiana. Wolf River x Zumi Calocarpa. Named for Dr. Ralph Shay, formerly in charge of the fruit breeding program at Purdue University. C27T{SC}, J93, J61M, J93{SC}, K77, M92

Redflesh:<sup>5</sup> Large oblong fruit, 2 inches long; skin deep red; flesh red, makes a clear red jelly, also good for whole preserves. Tree spreading; blooms late; bears biennially; ornamental, with copper colored leaves and red flowers. Originated in Brookings, South Dakota by N.E. Hansen, South Dakota Agricultural Experiment Station. Introduced in 1928. BROOKS 1972; F91T{SC}, J61M

Redflesh Winter:<sup>5</sup> Fruit round; skin solid red; flesh red, very firm, moderately juicy, pleasantly subacid; excellent for sauce and jelly. Tree ornamental, with dark-colored leaves and abundant purple flowers. Originated in Brookings, South Dakota by N.E. Hansen, South Dakota Agricultural Experiment Station. Introduced in 1946. BROOKS 1972; A91, A91{SC}, L27M

Transcendent: Fruit medium to large; roundish-oval, flattened at the ends; skin clear bright yellow with bright red cheek, covered with delicate white bloom; flesh yellow, crisp, juicy, somewhat astringent, subacid, very good for culinary uses; season late August to mid-September. Tree large, very spreading; hardy; bears heavily and annually. Known prior to 1844. BEACH; A88M, B45M, B93M, C54, F88G, I53M, I61M{SC}, J68, K76, LI, N20

Whitney: Large, roundish fruit; skin light yellow, largely shaded and striped with red; flesh yellowish, crisp, juicy, mildly subacid or nearly sweet, with slight crabapple flavor; good for dessert when fully ripe, very good for culinary use; season late August and early September. Tree vigorous, upright; precocious; very productive. Originated in Franklin Grove, Illinois by A.R. Whitney, prior to 1869. BEACH; A74, A91{SC}, B27M{SC}, D65, D76, G4, G16, G16{DW}, H65, LI, L70, M39M

Young America: (Young) Fruit large, one of the largest of the edible crabs; skin bright red; flesh pleasantly acid, flavor distinctive; quality good for dessert, excellent for culinary use. Jelly made from the fruit is clear, beautiful red and of very good flavor; season mid-September. Tree very vigorous and hardy; productive; ornamental. Introduced by the New York Agricultural Experiment Station in 1925. G65M, I49G{SC}

### DESSERT

Centennial: Fruit oval, 1 1/2 to 2 inches in diameter; skin orange-yellow, fully striped with bright scarlet red; flesh yellow, tender, crisp, juicy; flavor mildly acid, pleasant; dessert quality very good, also good for canned sauce and jelly; ripens in early midseason. Tree vigorous; hardy; very productive; tends toward biennial bearing. BROOKS 1972; A74, B4, C34, D37, D69, I49G, I49G{DW}, J61M, J93{SC}, L12, L27M, L70, M35M

Chestnut: Applecrab. Fruit large; skin reddish-yellow, russet; flesh yellow, sweet, flavor pleasant, distinctive; dessert quality good, also very good for cooking; ripens in midseason. Tree vigorous; productive; hardy; resistant to cedar rust; a good pollinator. Originated in Excelsior, Minnesota. Introduced in 1946. BROOKS 1972; A34, A74, A91, B4, D65, D69, F53, G4, H85, I49G, I49G{DW}, L27M, L70, M35M, etc.

Humboldt: (Jumbo Transcendent) Fruit very large, twice as large as Transcendent; conical; skin cream and pink, glos^, transparent; flesh cream-colored, tinted pink near the skin, firm, juicy, quality very good; ripens in late fall, hangs on the tree long after ripening; resembles Transcendent. Tree ornamental, producing masses of large, fragrant, pink-tinted blossoms. Originated in Ettersburg, California ty Albert F. Etter. Introduced in 1944. BROOKS 1972; E84, M22



Kerr: Applegreen. Large, oval fruit, about twice the size of Dolgo; skin bright red; flesh yellow, flecked with dark red, firm, crisp, juicy; flavor sweet, sprightly acid; dessert quality good when mellow, makes good preserves and excellent jelly; season mid-September, keeps well until February. Tree vigorous, very hardy and productive. Originated in Morden, Manitoba. BROOKS 1972; A65, B47, D69, F67, G54, G66, H85, I49G{SC}, I49M, L27M, M22, M35M, N24M

Renown: Applegreen. Small to medium-sized fruit, 1 1/4 to 1 1/2 inches in diameter; skin yellow splashed with dull red; flesh white, flavor pleasing, excellent for dessert purposes; ripens in early September, stores well. Tree moderately hardy. Originated in Indian Head, Saskatchewan, Canada. Introduced in 1936. RONALD; B47, G54

Rescue: Applegreen. Large, round-ovate fruit, 1 1/2 inches or more in diameter; skin greenish-yellow, washed and striped red; flesh yellowish-white, firm, flavor sweet, subacid, pleasant; season late August; quality good. Tree medium tall, rounded; very hardy; adapted to northern areas. Originated in Scott, Saskatchewan, Canada. Introduced in 1933. BROOKS 1972; A16, A65, B47, G54, H42, H85, I49G{SC}, K64, M22, N24M

Rosthern 18: Medium to large fruit, up to 1 3/4 inches in diameter; skin greenish-yellow with red stripes; flesh white, pleasant to eat out of hand; ripens in mid-September; keeps well in cold storage. Tree vigorous, hardy, moderately productive. Originated in Rosthern, Saskatchewan, Canada. Introduced in 1936. BROOKS 1972; A91{SC}, B47, I61M{SC}

Shafer: Applegreen. Medium to large fruit, 1 1/2 to 2 1/4 inches in diameter; skin yellow, blushed with red; flesh yellow, tender, slightly coarse, sweet and pleasant for fresh eating; quality good; ripens in early September. Rescue x Trail. Originated in Poplar Point, Manitoba, Canada. RONALD; B47, H85, K64

Trail: Applegreen. Fruit large, about 1 1/2 inches in diameter; skin yellow, splashed and striped with orange-red; flesh yellow, dessert and processing qualities good. Tree hardy, productive. Northern Queen x Rideau. Originated in Ottawa, Ontario, Canada by Canada Department of Agriculture Research Station. Introduced in the 1920's. BROOKS 1972; A65, B47, H85, K64, M35M

Wickson: Small, oblong fruit, 1 to 2 inches in diameter; skin brilliant red; flesh sweet (up to 25% sugar), with abundant, high-flavored juice; suitable for dessert as well as for pickling, jam and jelly, excellent for cider. Tree vigorous; very prolific, produces fruit on 1 year old branches. Originated in Ettersburg, California by Albert F. Etter. Introduced in 1944. BROOKS 1972; A91, A91{SC}, C27T{SC}, C30M, E84, F88G, LI, L12, M11M{PR}, N24M

## DESSERT APPLES

### SUMMER HARVESTING

Adina:<sup>2</sup> Large, round-conic fruit; skin red to purple-red with an occasional overlying stripe; flesh creamy white, firm, juicy; flavor sweet with a distinctive hint of cinnamon; ripens in mid-June. Tree vigorous and precocious. Low chilling requirement, only 350 hours. Originated in Australia. A63, I68, I83M, L33, L33{DW}

Anna:<sup>2</sup> Large, conical fruit; skin red-cheeked; flesh subacid to sweet, flavor mild; season June and July, sometimes with a second crop in the fall. Tree vigorous; annually productive; requires a pollinator, such as Ein Shemer or Dorsett Golden. Low chilling requirement. Originated in Doar Na Shomron, Israel by Abba Stein. Introduced into the United States in 1965. BROOKS 1972; A82, C75M, E45, F93, G17, G49, H4, I53M, I83M, LI, L1{ES}, L47, L90, M69M, N33, etc.

Anoka: (Champion Supreme) Large, conical fruit; skin yellow, heavily striped and overlaid with red; flesh mild, subacid; dessert quality poor, suitable for culinary use; ripens early. Tree very hardy; productive; bears at a very young age, often the first or second year

after planting. Originated in Brookings, South Dakota by N.E. Hansen. Introduced in 1920. BROOKS 1972; C27T{SC}, D76, F91T{SC}, G65M, K36, L27M, L70

Apple Babe:<sup>3</sup> Medium-sized, conical fruit; skin red, russet-free, waxy, attractive; flesh crisp, sweet, juicy, very flavorful; ripens about 6 weeks before Garden Delicious; resembles Red Delicious. Tree a genetic dwarf, growing only 8 to 10 feet tall when mature; heavy bearing; pollinated by Garden Delicious. Chilling requirement 700 hours. Originated in Modesto, California by Floyd Zaiger. A88M, N20

Beacon: Fruit very large; skin solid red, covering almost the entire surface, tough; flesh juicy, mildly acid; quality good, superior to Maidenblush, Duchess and Wealthy; matures about August 1, 10 to 14 days before Weakly. Tree productive; resistant to fire blight and scab; quite susceptible to cedar rust. BROOKS 1972; A74, A74{Dm}, A91, A91{SC}, C27T{SC}, G4, H89M, I49G, I49G{SC}, L27M, L70, M11M{PR}

Benoni: Small to medium, roundish to conic fruit; skin orange-yellow, partly covered with lively red, striped with deep carmine; flesh yellow, firm, crisp, fine-grained, tender, juicy, pleasantly subacid; quality good to very good; season August and early September. Tree large, vigorous; yields fair to good crops biennially. Originated in Dedham, Massachusetts, where the original tree was still standing in 1848. BEACH; B27M{SC}, C27T{SC}, E84{OR}, G65M, K36, L12, M11M{PR}, N38M{SC}

Beverly Hills:<sup>2</sup> Small to medium-sized, roundish fruit; skin pale yellow with red stripes, splashed with red; flesh white, tender, juicy, somewhat tart; suitable for dessert or cooking; ripens early; resembles McIntosh. Tree medium-sized, vigorous. Low chilling requirement. Originated in Los Angeles, California. Introduced in 1945. BROOKS 1972; C54{ES}, D23M, G65M, I68, I83M, K88T, L47, N20

Carroll: Medium-large fruit; skin light-green, completely striped with red; dessert quality very good, also suitable for cooking; season late August to early September, keeps well into December. Tree semi-dwarf, growing 8 to 10 feet tall and spreading to 15; hardy; moderately productive. Originated in Morden, Manitoba, Canada. BROOKS 1972; A65, C27T{SC}, F88G, H85, I49G, I49G{SC}, K64, L12, L27M, M35M

Cole's Quince: Large, yellow, ribbed fruit; flesh when first ripe firm, juicy, pleasantly acid, excellent for cooking, when very mellow remarkably tender, of a mild, rich, high quince flavor and aroma; ripens in August. An old Maine apple; first described in "Cole's American Fruit Book" published in 1849. A91{SC}, C27T{SC}, F88G, L12, M11M{PR}, N38M{SC}

Dayton:<sup>4</sup> (Coop 23) A new disease resistant apple from the University of Illinois. Medium-sized, roundish fruit; skin cherry red; flesh crisp, juicy, flavor spicy and mildly tart; season late August to early September. Tree vigorous, bears annually. Appears to have good resistance to all major apple diseases. Much more rust-resistant than Prima. A5, A39, B74, C27T{SC}, C30M, J61M, J89M

Devonshire Quarrendon: Small to medium, flat-round fruit; skin yellowish-green, heavily blushed with dark-crimson; flesh greenish-white, crisp, firm, very juicy, with a distinctive vinous flavor; season August to September. Tree moderately vigorous, upright-spreading; susceptible to scab. Very old English apple, mentioned in the "Compleat Planter and Cyderist" published in 1690. SANDERS, SIMMONS 1978; F88G, L12, M11M{PR}, M22, 081

Discovery: Medium-small, flat-round fruit; skin pale greenish-yellow, prominently blushed with brilliant crimson-red; flesh creamy-white tinged with pink, firm, juicy, crisp, fine-textured; flavor good for a summer apple; season mid-August. Tree moderately vigorous, upright-spreading; very productive. Popular commercial cultivar in England. SANDERS, SIMMONS 1978; A91, A91{SC}, G66, F88G, H90M{SC}, I61M{SC}, M22, 081, R83

Dorsett Golden:<sup>2</sup> Medium to large, round-conic fruit; skin golden yellow, sometimes blushed with light-red on the side exposed to the sun; flesh firm, crisp, juicy, sweet; quality good; ripens early. Tree self-fruitful; excellent pollinizer for Anna. Extremely low chilling requirement, less than 100 hours. Originated in Nassau, New Providence Islands, Bahamas. Introduced in 1964. BROOKS 1972; A82, C75M, E45, E99M, F93, G17, G49, I49M, I53M, I83M, L1, L1{ES}, L47, L90, M69M, N33, etc.

Early Dawn:<sup>2</sup> Medium-sized fruit, about 1/2 pound; skin yellow, blushed with red, attractive; flesh crisp, juicy, aromatic, subacid; suitable for dessert or cooking; ripens in August. Tree vigorous; disease resistant; grows well in hot inland climates as well as under coastal conditions. Low chilling requirement, 250 hours or less. Originated in Ontario, California by L.D. Claypool. 183M

Early Harvest: Fruit medium to large; oblate to nearly round; skin clear pale waxen yellow, thin, tender; flesh white, crisp, tender, juicy, at first briskly subacid but eventually becoming milder; suitable for dessert or culinary use; season late July and August. Tree medium-sized, moderately vigorous and productive. Of unknown origin; listed by McMahon in 1806. BEACH; A82, A91, A91{SC}, C27T{SC}, C30M, E84{OR}, F88G, I9M, I49G{SC}, L12, L27M, M11M{PR}, N38M{SC}

Early Joe: Small to medium, oblate-conic fruit; skin pale greenish-yellow, striped and blushed with dull dark-red; flesh tinged with yellow, crisp, very tender, very juicy, mildly subacid; flavor and desert quality excellent; season August and September. Tree moderately vigorous, dwarfish. Originated with Northern Spy in the orchard of Heman Chapin, East Bloomfield, New York. BEACH; A91{SC}, B27M{SC}, C30M, L12, M11M{PR}, N38M{SC}

Early Strawberry: Medium-sized, roundish fruit; skin waxy, entirely red or yellow nearly covered with a rich dark red; flesh whitish-yellow often with streaks of red, crisp, tender, juicy, subacid, aromatic, sprightly; quality very good for dessert or culinary use; season August. Tree hardy; precocious; productive. Originated in New York prior to 1838. BEACH; C27T{SC}, E84{OR}, L12, M11M{PR}, N38M{SC}

Ein Shemer:<sup>2</sup> Fruit medium-sized, conical to roundish; skin greenish-yellow; flesh crisp, melting, tender, moderately juicy, subacid; quality good; season June and July. Tree medium-sized; very precocious; productive; good pollinizer for Anna. Very low chilling requirement. Originated in Doar Na Shomron, Israel. Introduced in 1963. BROOKS 1972; A63, C75M, E45, E99M, G49, H4, I53M, I68, I83M, L90, M83, N20, Q93

Elah:<sup>2</sup> Medium-sized fruit; skin bright canary yellow, 30% covered with a pink blush; flesh crisp, juicy, pleasantly aromatic; season mid-June to late July. Best when eaten slightly before fully ripe, as they tend to become mealy. Tree upright, semi-spreading; very precocious and prolific. Low chilling requirement. Originated in Rehovot, Israel by Chanan Oppenheimer. G17

Garden Delicious:<sup>3</sup> Small to medium-sized, conical fruit; skin yellow-green to golden-yellow, free of striping, lightly blushed with pink in warmer climates, bright red in colder areas; flesh sweet, crisp, flavorful; quality very good; ripens about 2 weeks after Golden Delicious. Tree a genetic dwarf; mature height 6 to 8 feet; slow growing; bears heavily and annually. Ideal for small gardens. Developed by Floyd Zaiger. A88M, C54, D95, I68, N20

Golden Sweet: Medium to large, roundish fruit; skin waxy, clear pale yellow when mature; flesh yellowish-white, firm, fine-grained, moderately tender, juicy, rich, very sweet, aromatic; quality good to very good; season mid-August to late September. Tree large, vigorous, roundish spreading; yields moderate to heavy crops biennially. An old Connecticut cultivar. BEACH; B27M{SC}, C27T{SC}, F88G, L12, M11M{PR}

Heyer 12: Medium-small fruit, 2 1/2 inches in diameter; skin greenish-yellow; flesh juicy, moderately coarse, acid; quality good for dessert or cooking; season mid-August to September. Tree

extremely hardy; productive; late blooming. Valuable as an early apple for northern climates. BROOKS 1972; A16, A65, A74, B47, F67, G54, G66, H85, I49G{SC}, K64, L27M, L70

Honey Sweet: (Honey Cider) Medium-sized, round-flat fruit; skin light green, blushed with light pink, light russeting; flesh crisp, juicy, sweet, translucent, aromatic; dessert quality good; season early August. Originally used as a blending apple to sweeten early apple cider. Tree upright-spreading; precocious; disease resistant. Rediscovered by Elwood Fisher at an abandoned homesite in the Shenandoah Valley of Virginia. A39, B27M{SC}, B53, C30M, E84{OR}, G65M, I49G{SC}, M99G

Horse: (Yellow Horse, Haas) Medium to large, oblate fruit; skin yellow, nearly covered with deep bright-red; flesh white, firm, somewhat tough, sprightly subacid, slightly astringent; quality poor to fair or sometimes nearly good; season October to early winter. Tree precocious; very thrifty; hardy; productive. Originated on the grounds of Gabriel Cerre, St. Louis, Missouri, prior to 1870. BEACH; A91{SC}, A91, B27M{SC}, C30M, E84{OR}, E99M, F88G, F93, G8, G65M, I41P, K76

Iowa Beauty: A high quality apple good for either dessert or culinary use Very large fruit. Yellow skin, blushed with red. Very juicy flesh with a sweet tang; the core becomes pink sugar when overripe. Hardy to about -50° F. Ripens early. Introduced by G.C. Patten. I49G, I49G{SC}, L27M

Irish Peach: Small to medium, flat-round fruit; skin pale yellow, streaked and mottled with light and dark red; flesh greenish-white tinged red, soft, slightly aromatic, fairly juicy, with a rich vinous flavor; quality very good; season early July. Tree moderately vigorous, spreading; an irregular bearer. Of Irish origin; introduced into England in 1820. SANDERS, SIMMONS 1978; A91, A91{SC}, B27M{SC}, C27T{SC}, E84{OR}, F88G, I49G, I49G{SC}, L12, L27M, M11M{PR}, M22

Jerseymac: Medium to large, conical fruit; skin yellow, blushed with red; flesh yellow-white, medium firm, slightly acid; quality good; ripens early; ships well; resembles McIntosh. Tree vigorous, upright-spreading; precocious; bears heavily and annually; blooms with Gravenstein which it pollinizes. A5, A91, A91{SC}, C27T{SC}, F53, G65M, I61M{SC}, J89M, L12, M11M{PR}, M39M, N33

July Tart: Fruit large for an early apple; skin light green shading to light yellow when fully ripe; flesh fine-grained, tender, extremely aromatic; dessert quality very good, excellent for frying and freezing; ripens before Gravenstein. Tree large, vigorous; apparently tolerant to scab and fire blight. Local apple from the mountains of Kentucky. B27M{SC}, C27T{SC}, E84{OR}, J93{SC}, K36, M22

Liveland Raspberry: (Lowland Raspberry) Fruit medium to large; skin clear waxen-white, striped, shaded and marbled with light crimson; flesh white, often stained with red, fine-grained, very tender, mildly subacid to sweet; dessert quality good, also makes a fine sauce; ripens in August, with Yellow Transparent. Tree medium-sized; tends toward biennial bearing. Originated in Russia prior to 1883. BEACH; A91, A91{SC}, B27M{SC}, E84, I49G, I49G{DW}, L27M

Lodi: Medium-sized, round-conical fruit; skin greenish-yellow, thick; flesh firm, crisp, flavor rich, sprightly; suitable for dessert and culinary use; ripens early, later than Yellow Transparent; resembles Yellow Transparent, keeps longer and does not become mealy and soften at center as quickly. Tree large; tends to bear biennially. BROOKS 1972; A5, A91{SC}, B73M{DW}, B74, D69, E45, F53, F88G, G16, G16{DW}, I49G, J83, J83{DW}, M11M{PR}, M39M, etc.

Lord's Seedling: Medium to large, roundish fruit; skin yellow, more or less russet; flesh very aromatic, of excellent flavor; season late August. Tree a heavy and regular bearer. Originated at Linden, New York by James S. Lord about 1892. A91, A91{SC}, C27T{SC}, E84{OR}, L12, M11M{PR}

Lubsk Queen: Medium to large, nearly round fruit; skin very smooth, polished and wax-like, brilliant white, more or less covered with solid light rosy-red, very attractive; flesh snow white, firm, juicy, subacid; quality good; season August and September; keeps well for an early apple. Tree moderately vigorous, upright-spreading; very hardy and productive. Imported from Russia by the USDA in 1870. BEACH; A91, A91{SC}, C27T{SC}, E84{OR}, F88G, I49G{SC}, L12, M11M{PR}, M22

Lyman's Large Summer: Fruit large to very large; skin greenish to pale yellow, smooth; flesh breaking, tender, crisp, juicy, with a pure clean flavor, blending sweet and subacid; suitable for dessert or cooking; season early August. Tree hardy; a tip bearer. Of American origin; first described in 1844. A91{SC}, C27T{SC}, C30M, F88G, LI, L12, M22

Maayan:<sup>2</sup> Round, medium-sized fruit; skin yellow, 50% covered with dark-red, attractive; flesh yellow, juicy, firm, aromatic, flavor sprightly. Ripens from early June to late July, keeps and ships well. Tree vigorous, compact; can be induced to bear in its third year; tends to overproduce. Pollinated with Elah and Michal. Low chilling requirement. Originated in Rehovot, Israel by Chanan Oppenheimer. Introduced in 1967. BROOKS 1972; G17

Mantet: Medium-sized, roundish fruit; skin heavily washed and striped bright red; flesh fine-grained, tender, juicy, aromatic, sweet, very pleasant; dessert quality excellent; season early to late August. Tree upright; very hardy; productive. Originated in Morden, Manitoba, Canada. Introduced in 1929. BROOKS 1972; A74, A91{SC}, B4, B27M{SC}, C27T{SC}, F88G, G66, I49G, I49G{DW}, J93{SC}, K36, L27M, L70

Melba: Attractive, *high* quality, early summer apple. Pale yellow fruit with light-red stripes and shading. Very white, crisp, firm, sweet flesh. Hardy, productive and precocious. Seedling of McIntosh. Originated in Ottawa, Ontario, Canada. Introduced about 1924. Awarded the Silver Wilder Medal by the American Pomological Society. ARMSTRONG [Re], BROOKS 1972; C27T{SC}, F88G, G65M, G79M{DW}, I49G, I49G{SC}, I61M{SC}, L27M

Michal:<sup>2</sup> Medium-sized, roundish fruit; skin light golden-yellow, streaked with light red and orange; flesh juicy, firm, subacid, with good aroma and texture; flavor resembles Jonathan. Ripens mid-June to late July; keeps at room temperature at least 2 weeks, becoming sweeter. Tree precocious, bearing in the third year; very productive. Low chilling requirement. Originated in Rehovot, Israel by Chanan Oppenheimer. BROOKS 1972; G17

Mollie's Delicious: Large to very large, slightly conical fruit; skin light yellow, highly blushed with red, very attractive; flesh crisp, juicy, sprightly, aromatic; quality very good; ripens 3 weeks before Golden Delicious. Tree vigorous, semi-spreading; productive. Originated in New Brunswick, New Jersey. Introduced in 1966. BROOKS 1972; A39, A85M, C75M, E99M, F53, F93, G65M, J93, J93{SC}, L90, M11M{PR}, M39M, N33, N33{DW}

Oriole: Fruit large to very large; roundish, oblate; skin yellow-orange, striped and splashed red; flesh tender, fine-grained, juicy, aromatic, subacid; quality excellent for cooking or dessert; ripens early; similar to Duchess of Oldenbuig in form and appearance. Tree medium tall, rounded; productive; very susceptible to mildew. BROOKS 1972; A91, A91{SC}, C27T{SC}, F88G, I49G, I49G{DW}, L27M, L70

Ozark Gold: Medium to large fruit; skin smooth, golden-yellow blushed with bright red; flesh fine-grained, crisp, juicy, sweet, aromatic; quality above average for its season and locale; ripens about 3 weeks earlier than Golden Delicious, which it resembles. Tree vigorous, spreading; very hardy; disease resistant. Released in 1971 by the Missouri Experiment Station. C27T{SC}, C30M, G65M, J93{SC}, K36, L12, M11M{PR}, M22

Pink Transparent:<sup>5</sup> A pink-fleshed sport of Yellow Transparent. Medium-sized, round to conical fruit; skin clear yellow, thin and

tender, bruises easily; flesh pink, very tender, tart, good for cooking or dessert; ripens early, has a very short shelf life. Tree vigorous, upright, productive. M22

Primate: Medium to large, roundish-conic fruit; skin pale yellow, often blushed but not striped; flesh whitish, crisp, very tender, juicy, subacid, aromatic, sprightly; quality very good to best; season August and September. Tree medium-large, moderately vigorous, upright-spreading; reliably productive. Originated in Onondaga County, New York, about 1840. BEACH; A91, A91{SC}, B27MISC}, C27T{SC}, E84{OR}, F88G, L12, M11M{PR}, N38M{SC}

Quinte: Fruit medium-sized, round to slightly conic; skin attractive yellow, heavily blushed with red; flesh cream-colored, very tender; very suitable for dessert purposes, being equal to Melba and superior to Crimson Beauty; ripens 7 to 10 days before Melba; ships very well. Tree annually bears good crops; as hardy as McIntosh. BROOKS 1972; A91, A91{SC}, C27T{SC}, F88G, I61M{SC}, K36, L27M, M11M{PR}

Red Hackworth: Fruit smaller, firmer, and more solid red than Hackworth; flesh nearly white; quality good when fully ripe; ripens in August. Well adapted to the climate and soils of the Tennessee Valley to the Alabama Coastal Plain and east Texas. A good understock in northern Alabama. BROOKS 1972; C30M, G65M

Red June: (Carolina Red June) Fruit small to medium-sized; skin pale yellow or greenish, nearly overspread with deep purplish-red; flesh white, fine-grained, tender, juicy, briskly subacid; quality good to very good; season late July. Tree moderately vigorous, spreading; a reliable and heavy bearer. An old apple said to have originated in North Carolina. BEACH; A82, A91{SC}, D76, E84, E99M, F88G, I41P, K76, LI, L12, M11M{PR}, N38M{SC}

Redfree:<sup>4</sup> (Co-op 13) Medium-sized, roundish fruit; skin bright glossy red, waxy, attractive; flesh light-colored, crisp, juicy, flavor excellent; ripens 6 weeks before Red Delicious, can be held in storage for up to 2 months. Tree bears annually. Immune to scab and cedar rust. Moderately resistant to fire blight and mildew. A5, A9, A39, C27T{SC}, C30M, C58, D69, F53, G8, G16, J89M, J93, M11M{PR}, M39M, N24M

Reverend Morgan:<sup>2</sup> Seedling of Granny Smith that originated in the Houston, Texas area. Skin green, blushed with pinkish red. Excellent flavor and texture. Ripens in August, keeps well. Tree self-fruitful, disease resistant; requires 400 to 500 hours of chilling. Recommended for trial in California and other warm winter areas. A91{SC}, C30M, G65M, I83M, J59, J93{SC}, N20

Starr: Fruit very large to large; oblate to roundish oblate; skin yellowish-green; flesh tinged with yellow, very tender, crisp, very juicy, sprightly subacid, aromatic; quality very good; season August and September. Tree moderately vigorous, upright-spreading, productive. Originated in Woodbury, New Jersey, sometime prior to 1865. BEACH; A91{SC}, F88G, L12, M11M{PR}

Summer Pearmain: Medium-sized, round-conic fruit; skin greenish-yellow, more or less covered with dull purplish-red, marbled, splashed and striped with brighter red; flesh yellowish, very fine-grained, tender, almost melting, juicy, aromatic, crisp; flavor mild, rich, excellent; season August and September. Tree large, productive. An old American cultivar; first described in 1817. BEACH; B27M{SC}, C27T{SC}, F88G, G65M, L12, L27M, M11M{PR}, N38M{SC}

Summer Rambo: Large to very large, oblate fruit; skin yellowish-green, striped and mottled with lively pinkish-red; flesh yellowish-green, firm, coarse, tender, very juicy, mildly subacid, somewhat aromatic; quality good; season August and September. Tree vigorous, upright-spreading; precocious. Originated in France in the 16th century. BEACH; A5, B27M{SC}, B53, C27T{SC}, E84, F24G{SC}, F88G, G65M, H65, H89M, L12, M11M{PR}, M99G

Summer Red: Medium-large, oblong fruit; skin highly colored with a bright, solid blush; flesh cream-colored, firm, crisp, juicy, flavor very good when fully ripe; ripens 3 to 4 weeks before McIntosh; matures evenly on the tree. Tree vigorous, spreading; blooms relatively early; bears early and fairly regularly. A91, A91{SC}, B27M{SC}, C27T{SC}, I49G{SC}, M11M{PR}, M22

Summer Rose: Small to medium, roundish fruit; skin very pale yellow, distinctly striped and splashed with bright red and carmine on the exposed cheek; flesh white, fine-grained, crisp, very tender, sprightly, juicy, subacid, agreeable but not rich; suitable for either dessert or culinary use; season July and August. Tree haidy, precocious, productive. Originated in New Jersey prior to 1806. BEACH; A91{SC}, B27M{SC}, E84{OR}, F88G, LI, L12, M11M{PR}, N38M{SC}

Sweet Bough: (August Sweet) Medium to large, roundish-conic fruit; skin pale greenish-yellow; flesh white, moderately firm and crisp, very tender, juicy, decidedly sweet, slightly aromatic; quality good to very good; season August and early September. Tree moderately vigorous, upright-spreading; productive. Of unknown origin; first described in 1817. BEACH; C27T{SC}, F88G, I49G{SC}, K36, LI {SC}, L12, M11M{PR}, N38M{SC}

Tetofsky: Small to medium, oblate or roundish fruit; skin uaxy, greenish-yellow, more or less striped and splashed with attractive bright red; flesh white, firm, crisp, tender, juicy, sprightly, slightly aromatic, subacid; quality fair to good; season late July to early September. Tree small to medium, very upright; very hardy; precocious. Of Russian origin; imported into the United States about 1835. BEACH; A91, A91{SC}, I49G, I49G{SC}, L27M

Tropical Beauty:<sup>2</sup> Medium to large, roundish fruit; skin rich carmine red; flesh white, fairly crisp, juicy, with a smooth mild flavor; dessert quality very good; ripens early; resembles Rome Beauty. Tree small to medium; self-fruitful; bears at an early age; low chilling requirement. Adapted to tropical and sub-tropical climates. Originated in Maidstone, South Africa about 1930. BROOKS 1972; G49, G65M, I68, I83M

Tydemans Red: (Tydemans Early Worcester) Medium to large, roundish fruit; skin solid bright red, attractive; flesh yellowish-white, soft, rather coarse, juicy, sweet; quality very good; ripens early, 3 weeks before McIntosh. Tree vigorous, very spreading; productive. Originated in Maidstone, Kent, England. Introduced in 1945. BROOKS 1972; A91{SC}, B53, C27T{SC}, F88G, L12, L27M, M11M{PR}, 081

Vista Bella: Medium-sized, roundish fruit; skin blushed with bright red; flesh creamy-white, very firm for an early summer apple, juicy, subacid, flavor and quality good; ripens in early August, with Yellow Transparent. Tree very vigorous; yields heavy crops annually. Originated in New Brunswick, New Jersey. Introduced in 1974. A5, A91, A91{SC}, B27M{SC}, C27T{SC}, I49G{SC}, L12, M11M{PR}, M22, 081

William's Pride:<sup>4</sup> (Coop 21) A new disease resistant apple named for Purdue apple breeder E.B. Williams. Medium to large, slightly conic fruit; skin red to dark red; flavor mildly acid, rich, slightly spicy; quality excellent; ripens late July to early August. Can be stored for about one month in common refrigeration. In warmer regions of Zone 6 and south, watercore can be a problem in early production years. A9, A39, C27T{SC}, C30M, C34, D37, B74, F53, G8, J61M, J93, N24M

Yellow Transparent: (White Transparent) Medium-sized, roundish fruit; skin thin, tender, waxy, clear yellow; flesh white, moderately firm, fine-grained, crisp, tender, juicy, sprightly subacid; quality good to very good; season late July and August. Tree large, upright, moderately vigorous. Imported from Russia by the USDA in 1870. BEACH; A91, A91{SC}, B53, B73M, C58, E84, F88G, G79M{DW}, H65, //S9M{ES}, J16, L27M, M11M{PR}, N38M{SC}

## FALL HARVESTING

Akane: (Prime Red, Tokyo Rose) Small to medium-sized, flat-round fruit; skin bright solid red; flesh white, firm, crisp, juicy, slightly coarse, flavor slightly acid; quality excellent; ripens in midseason; does not store well but holds well on the tree. Tree semi-dwarf, moderately vigorous; precocious. Originated in Tohoku, Japan. Introduced in 1970. STEBBINS; A39, A91, A91{SC}, C27T{SC}, C34, D28J, E4, F88G, I49M, J61M, M11M{PR}, N20, 081

Apricot:<sup>6</sup> Very unique new apple with distinctive, orange flesh. Medium-sized fruits; skin yellow-orange, striped with red; solid orange-colored flesh. A delicious apple with a distinctive apricot-like aftertaste. Ripens in mid-fall in the Pacific Northwest. I49M, N24M

Arlet: (Swiss Gourmet) Golden Delicious x Idared. Medium to large, round to conic fruits; skin rich yellow, highly blushed with bright red, occasional russet; flesh creamy-white, firm, fine-textured; flavor very good, sprightly subacid. Ripens 10 days before Jonathan. Moderately vigorous, precocious tree. Originated in Wadenswil, Switzerland. BROOKS 1997; A9, A53{PR}, B53M, B71M, B83, C27T{SC}, I61M{SC}, I75, M11M{PR}, M39M

Bill's Red Flesh:<sup>5</sup> Small to medium-sized fruit, resembles Red Delicious in shape; red skin; distinctive, deep red flesh, redder than Hidden Rose Very sweet flavor. Ripens in early fall, does not keep well. Makes a unique applesauce. Also an attractive addition to salads when sliced. Discovered by Bill Schultz of Benton County, Oregon. I49M

Blenheim: (Blenheim Orange) Medium to large, flat-round fruit; skin yellow, striped and blushed with orange-red; flesh creamy-white, firm but tender, crisp, subacid, with a characteristic nutty flavor, sometimes dry; quality very good for dessert or culinary uses. Tree vigorous, spreading; slow to come into bearing. Discovered about 1740 near Blenheim, England. SANDERS, SIMMONS 1978; E84{OR}, F88G, L12, M11M{PR}, M22, 081, R83

Blue Pearmain: Large, roundish fruit; skin blushed with red, splashed and striped with deep purplish-carmine overspread with an abundant blue bloom, very attractive; flesh yellowish, rather coarse, moderately juicy, mildly subacid, decidedly and agreeably aromatic; quality good; ripens in October. Tree large, moderately vigorous, spreading. An American apple of uncertain origin; first recorded in 1833. BEACH; A91, A91{SC}, B27M{SC}, E84{OR}, F88G, G65M, I49G{SC}, L12, L27M, M11M{PR}, M22, N38M{SC}, 081

Blushing Golden: Medium-sized, round-conic fruit; skin waxy, golden yellow, 50% covered with a light red blush, very attractive; flesh very firm, juicy, subacid, quality very good, rated A plus in customer taste tests of Applesource; ripens 2 weeks after Golden Delicious, which it resembles; ripens in October and November; keeps very well; Tree vigorous, spreading; productive; spur-bearing. Introduced in 1968. BROOKS 1972; A9, A53{PR}, C27T{SC}, D81{PO}, L33, L33{DW}

Bonum: (Magnum Bonum) Medium to large, oblate fruit; skin yellow, blushed and striped with crimson and dark red; flesh white, often stained next to the skin, firm but tender, juicy, aromatic, mildly subacid; dessert quality very good; season September to November. Tree moderately vigorous, upright-spreading. Originated in Davidson County, North Carolina prior to 1856. BEACH; B27M{SC}, C30M, L21P

Bottle Greening: Medium to large, round-conic fruit; skin grass-green, thinly blushed with dull pinkish-crimson; flesh nearly white, very tender, very juicy, peculiarly aromatic, pleasantly subacid; quality good to very good; season October to March. Tree moderately vigorous; hardy; productive. Originated on a farm on the dividing line of New York and Vermont, prior to 1866. BEACH; A91{SC}, F88G

Breaker: Medium-sized, round-oblate fruit; skin yellow-green, striped and blushed with red and scarlet; flesh white, fine-textured, melting, juicy, flavor mild, spicy; dessert quality very good, also good for sauce or pies; ripens in early September. Tree vigorous, upright-spreading; very hardy. Originated in Morden, Manitoba, Canada. Introduced in 1935. BROOKS 1972; A91, A91{SC}, F88G, M35M

Champlain: Medium to large, roundish-conical fruit; skin pale yellow, often with a light crimson blush; flesh white, fine-grained, very tender, juicy, sprightly, subacid; dessert quality good to very good, excellent for culinary use; season late August to October. Tree vigorous, upright-spreading; hardy; reliably productive. Of unknown American origin; first described in 1853. BEACH; A91{SC}, L12, M11M{PR}

Chehalis: Medium-sized, conical fruit; skin greenish-yellow, blushed with pink on the side exposed to the sun; flesh cream-colored, medium-fine, crisp, breaking, moderately juicy; flavor pleasantly mild, subacid; ripens 3 to 4 weeks before Golden Delicious, which it resembles. Resistant to scab. Tree upright-spreading, moderately vigorous and productive. BROOKS 1972; B27M{SC}, B74, C27T{SC}, C34, D28J, H89M, I49M, J61M, N20

Chenango Strawberry: Medium to large, oblong-conic fruit; translucent yellowish-white skin, highly blushed with attractive pinkish-red; flesh white, moderately firm, tender, juicy, mildly subacid, very aromatic; dessert quality excellent, also good for culinary use; ripens in September. Tree vigorous, upright-spreading. Originated in Chenango County, New York prior to 1854. BEACH; A91, A91{SC}, B27M{SC}, C27T{SC}, E84{OR}, G65M, H65, L12, L21P, L27M, M11M{PR}, M22, N38M{SC}

Cinnamon Spice: Medium-small fruit; skin predominantly wine-red, slightly blushed with yellow; flesh very rich and sweet, with a sharp aromatic cinnamon-like flavor which lingers for some time; ripens late October. Discovered in an old orchard in the Bolinas-Olema Valley of northern California. Introduced by Living Tree Center. A91, C30M, E23Z, LI

Collet: Fruit medium-sized; oblate to conic oblate; skin attractive, 80% medium red; flesh white, firm, crisp, texture moderately fine; dessert quality fair to good, excellent as sauce or pie. Tree medium to tall, very hardy, annually productive. Originated in Notre Dame de Lourdes, Manitoba, Canada. BROOKS 1972; A65, B47, G66, H85, K64, L12, M35M, N24M

Cortland: Fruit large; roundish-oblate, uniformly ribbed; skin attractive red, darkly and obscurely striped; flesh white, slow to discolor on exposure to air, fine-grained, crisp, tender, juicy, subacid; quality good; season November to February; resembles McIntosh. Tree vigorous, spreading; precocious; annually productive; very hardy; prolific. BROOKS 1972; A5, A53{PR}, A82, A91{SC}, A91, B83, C95M{PR}, D69, F42M{PR}, F53, G16, G79M{DW}, H65, J16, J93, L73{PD}, M39M, etc.

Cox's Orange Pippin: Fruit medium-sized; round-conical; skin clear yellow, blushed with orange-red, striped with brownish-crimson; flesh cream-colored, fine-textured, fairly firm and crisp, juicy, rich, flavor excellent; season October to December. Tree moderately vigorous, upright-spreading; bears fruit on short spurs. Considered the finest flavored apple in Great Britain, but not as highly esteemed elsewhere. SANDERS, SIMMONS 1978; A53{PR}, A91, A91{SC}, C58, E84{OR}, F88G, G79M{DW}, H65, I49M, LI, L1{ES}, L73{PD}, M11M{PR}, N20

Crimson Beauty: (Scarlet Pippin) Very attractive apple of the Fameuse group. Medium-sized, roundish fruit; skin red-striped; flesh white, firm, crisp, tender, melting, juicy, mildly subacid with a pleasant but not high flavor; season fall and early winter. Tree vigorous, upright; very productive. Originated about 1860 at Lynn, Ontario. BEACH; F88G, F91T{SC}, K36, L27M

Dakota: Large, round-oblate fruit; skin yellow, blushed with an attractive deep red; flesh creamy-yellow, crisp, juicy, firm, fine-

grained, sprightly subacid; excellent for dessert and culinary uses; ripens in mid-September; keeps in common storage for several weeks. Tree vigorous, spreading; productive; handy. Originated in Mandan, North Dakota. Introduced in 1965. BROOKS 1972; I49G, I49G{SC}, M35M

Detroit Red: Large, roundish-oblate fruit; skin dark crimson, largely striped and splashed with purplish-carmine eventually becoming almost black; flesh white, rather coarse, tender, juicy, mildly subacid, very aromatic; quality good to very good; season the end of September to December. Tree medium to large; moderately vigorous and productive. Supposedly brought into the Detroit area by early French settlers. BEACH; B27M{SC}, E84{OR}, G8, G65M

Dr. Mathews: Fruit large; skin dull red, striped with darker red; flesh creamy-white, crisp, juicy, fine-grained, with a mild but sprightly aromatic flavor; quality excellent; ripens in September. An obscure 19th century Indiana cultivar. Was for many years grown in the orchards of the Indiana State Agricultural Station and is still a local favorite wherever known. A53{PR}, A91{SC}, L12, M11M{PR}

Egremont Russet: Medium-sized, flat-round fruit; skin golden-yellow, blushed with brownish-orange, with attractive russeting; flesh creamy-colored tinged with yellow, crisp and firm, fairly juicy, sweet, aromatic, with a rich nutty flavor; season October to November. Tree upright, compact; hardy; bears heavily and annually. Considered one of the best dessert apples in Great Britain. Origin unknown; first recorded about 1880. SANDERS, SIMMONS 1978; A91, A91{SC}, B27M{SC}, C27T{SC}, F88G, I49G{SC}, J61M, J93{SC}, L12, L27M, M11M{PR}, M22, N24M, 081

Ellison's Orange: Fruit medium-sized, round, slightly conical; skin golden yellow, blushed brownish-red with stripes of brownish-crimson; flesh creamy-white, tender, crisp, juicy, with a very rich, distinctive, anise-like flavor; season September and October. Tree precocious; spur-bearing; bears moderate crops biennially. Originated in England. Introduced about 1911. SANDERS, SIMMONS 1978; B27M{SC}, F88G, I49G{SC}, J93{SC}, L12, M11M{PR}, M22, 081, R83

Els tar: Golden Delicious x Ingrid Marie. Medium to large, round-conic fruits; skin yellow, attractively striped with orange-red; flesh creamy white, firm, crisp, rather coarse; flavor very good, somewhat tart at harvest. Ripens 3 1/2 weeks before Golden Delicious. Very vigorous and precocious. Originated in Wageningen, the Netherlands. BROOKS 1997; C27T{SC}, C34, I61M{SC}, LI, L73{PD}, M11M{PR}, M39M, N20, 081

Empire: Medium-sized, roundish fruit; skin dark red, distinctly striped, waxy, very attractive; flesh cream-colored, crisp, juicy, subacid to semi-sweet, aromatic; dessert quality excellent; ripens 2 weeks after McIntosh; stores well. Tree large, vigorous, upright-spreading; annually productive. McIntosh x Red Delicious. BROOKS 1972; A5, A34, A39, A53{PR}, A91, B83, D81{PO}, F53, G79M{DW}, H65, L33, L73{PD}, M11M{PR}, M22, A/59M, etc.

Etter's Gold: Fruit medium to large; round, slightly ribbed; skin clear golden yellow, glossy; flesh light yellow, crisp, mildly subacid, sprightly; dessert quality excellent, also good for pies; ripens in October; keeps well; resembles Wagener. Tree very productive; bears annually; produces spurs readily. Wagener x Transcendent crab. Originated in Ettersburg, California by Albert F. Etter. Introduced in 1944. BROOKS 1972; C27T{SC}, E84

Fall Pippin: Large to very large, roundish fruit; skin clear yellow, sometimes faintly blushed; flesh whitish, moderately firm, tender, very juicy, agreeably subacid, somewhat aromatic, rich; quality very good for dessert or culinary uses; season late September to January. Tree large, vigorous; hardy. Of unknown origin; listed by McMahon in 1806. BEACH; A91{SC}, E84{OR}, H65, M99G, N38M{SC}

Fallowater: (Tulpehocken) Large to very large, globular fruit; skin yellow, prominently blushed with deep pinkish-red; flesh tinged with yellow or green, firm, coarse, crisp, juicy, subacid to mildly sweet; quality good or nearly so; season November. Tree large, vigorous, upright; productive. Originated in Bucks county, Pennsylvania, sometime prior to 1845. BEACH; A91{SC}, B27M{SC}, C27T{SC}, C30M, F88G, G65M, K36, L12, M11M{PR}, M99G, N38M{SC}

Fameuse: (Snow Apple) Small to medium, roundish fruit; skin light bright red, very attractive; flesh white, sometimes streaked or stained with red, very tender, juicy, subacid becoming mildly subacid or sweetish, aromatic; dessert quality very good to excellent; ripens in October. Tree vigorous, upright-spreading; hardy; reliably productive. Probably originated in Canada in the early 18th century. BEACH; A53{PR}, A91, A91{SC}, B53, C58, D69, E84, G16{DW}, G79M{DW}, H65, LI, L1{ES}, L27M, N24M

Fortune: Northern Spy x Empire. Large to very large, round to conic fruit; overall maroon red color; crisp, cream-colored flesh, firm, subacid, slightly aromatic; ripens with Empire; keeps 4 to 5 months in common storage. Tree vigorous and very precocious; bears annually. Originated in Geneva, New York. Introduced in 1995. BROOKS 1997; A5, A53{PR}, B83, C41M, C76M, F53, J93, M11M{PR}, M59M

Franklin: Medium to large, conical fruit; skin nearly covered with red, attractive; flesh white, tender, crisp, aromatic, flavor mild; dessert quality high; season late fall and early winter. Tree very susceptible to scab. McIntosh x Delicious. Originated in Wooster, Ohio by the Ohio Agricultural Experiment Station. Introduced in 1937. BROOKS 1972; A53{PR}, J93{SC}, K36, L12, M11M{PR}

Freedom:<sup>4</sup> Large, oblate fruit; skin yellow, blushed and striped with red, attractive; flesh cream-colored, medium-coarse, crisp, tender, juicy, sprightly subacid; quality good for desert, sauce and juice; ripens in early October. Tree vigorous, spreading; precocious; very productive; spur-bearing. Highly resistant to scab; resistant to cedar rust, fire blight and powdery mildew. Originated in Geneva, New York by Robert C. Lamb. Introduced in 1983. A5, A91, B53, B74, C34, C58, D37, D76, E97, F53, F88G, G8, G23, H65, L27M, M22, N24M, etc.

Freyberg: Small to medium-sized, round fruit; skin golden yellow, blushed with mahogany red; flesh yellow, fine-grained, firm, crisp, juicy, sweet, quality excellent; ripens shortly after Cox's Orange Pippin; stores well. Tree small, upright, vigorous; spur-bearing; productive. Connoisseur cultivar for home gardens. Originated in New Zealand by J.H. Kidd. BROOKS 1972; A53{PR}, B27M{SC}, C27T{SC}, E84{OR}, J93{SC}, LI, L12, M11M{PR}

Fuji: Medium to large, round-conical fruit; skin golden-brown, blushed with dull red; flesh creamy-white, very crisp, extremely juicy, very sweet; quality excellent; not very aromatic, susceptible to water core; ships and stores well. Popular specialty market apple. Tree slow to come into bearing; requires a long season. Ralls Janet x Delicious. Originated in Aomori, Japan by the Tohoku Horticultural Research Station. BROOKS 1972; A9, A53{PR}, D81M{PO}, E4, G65M, H49{DW}, H69{PR}, I23M{PD}, I83M, J93{SC}, K73M, LI, L73{PD}, M63M{PR}

Gala: Medium-sized, oblong-conical fruit; skin bright yellow, heavily striped with bright orange-red, glossy; flesh yellow, fine-textured, firm, crisp, very sweet and juicy; dessert quality very good; ripens with Cox's Orange Pippin; keeps well. Tree vigorous; precocious; annually bears heavy crops; produces spurs freely. Originated in Greytown, Wairarapa, New Zealand. BROOKS 1972; A39, A53{PR}, A88M, A91, A91{SC}, C89{PR}, D2{PR}, D81{PO}, D81M{PO}, E4, E97, F88G, I68, L73{PD}, M22, M63M{PR}, etc.

Golden Delicious: (Yellow Delicious) Medium-sized fruit, long and tapering; skin pale yellow, occasionally blushed with pink; flesh yellowish-white, crisp, juicy, sweet and aromatic; ripens midseason to late, does not store well. Originated in Cley County, West Vir-

ginia about 1890. SIMMONS 1978; A34, A82, D81{PO}, D81M{PO}, G72, I9M, I19M{DF}, I23M{PD}, L73{ED}, L97G{DF}, M13M{PD}, M63M{DF}, M63M{PR}

Goodland: Medium to large, roundish-oblate fruit; skin creamy yellow, splashed and streaked with an attractive bright red; flesh crisp, juicy, tender, sweetly subacid, aromatic; quality excellent for dessert or sauce; season mid-September to mid-January. Tree medium tall; very hardy; annually productive. Originated in Morden, Manitoba, Canada. Introduced in 1955. BROOKS 1972; A16, A65, A91, A91{SC}, B47, F88G, G66, H42, H85, I49G, I49G{SC}, K64, L27M, L70, M35M, N24M, etc.

Gordon: Medium to large, nearly globe-shaped fruit; skin green, blushed and striped with red; flesh near white, crisp, juicy, firm; quality good for dessert or cooking; ripens in midseason. Tree vigorous, upright; productive; bears regularly; self-fruitful. Prolonged season of flowering and fruiting. Low chilling requirement, about 400 hours. STEBBINS; A63, A88M, C54, D23M, G49, H4, I68, I83M, K46, N20

Grimes Golden: Medium to large, roundish-conical fruit; clear deep yellow skin with pale yellow or russet dots; flesh yellow, very firm, tender, crisp, moderately juicy, subacid, rich, aromatic, sprightly; quality excellent; season October and November; does not keep well. Tree moderately vigorous, upright-spreading; productive. Originated in West Virginia prior to 1804. BEACH; A5, A53{PR}, A91, A91{SC}, D2{PR}, [D76, E84, G79M{DW}], H65, J93, J93{SC}, L33, M22, M39M, M99G, etc.

Haralson: Medium to large, roundish-conic fruit; skin yellow, striped or nearly covered with an attractive red; flesh white, firm, moderately tender, fine-grained, juicy, mild, pleasant, subacid; suitable for dessert or cooking; stores well. Tree vigorous, upright; hardy; productive; resistant to fire blight. Grown commercially in Minnesota. BROOKS 1972; A91, A91{SC}, D65, D65{DW}, D76{DW}, G16, G16{DW}, H90, I49G, I49G{DW}, K64, L12, L27M, L70, M11M{PR}, etc.

Hawaii: Fruit medium-sized; oblong angular; skin waxy, light golden-yellow; flesh yellow, firm, juicy, pleasantly aromatic, with a strong pineapple-like flavor; ripens in early October; keeps well; resembles Golden Delicious. Tree vigorous, upright; bears fruit on small spurs; biennial, requiring heavy thinning in high-yielding years. Originated in Sebastopol, California. BROOKS 1972; A39, A53{PR}, A91, A91{SC}, B27M{SC}, C27T{SC}, C30M, E23Z, G65M, J93{SC}, L12, M11M{PR}, M22

Herring's Pippin: Large, round-conical fruit; skin pale greenish-yellow, almost completely covered with red blush; flesh creamy-white, soft, juicy, slightly coarse, aromatic, with a spicy flavor; suitable for both dessert and cooking; season early October. Tree moderately vigorous, upright-spreading; adapted to cold, heavy soils. Originated in England about 1908. SANDERS, SIMMONS 1978; C30M, F88G, M22, 081, Q30{SC}

Hibernal: Fruit large; irregular, oblate to roundish-conical; skin greenish-yellow, blushed with red; flesh yellowish, crisp, tender, juicy, acid, somewhat astringent; dessert quality fair, fine for cooking, said to be good for drying; season September to November. Tree vigorous, very spreading; very productive; extremely hardy. Of Russian origin; introduced into the United States prior to 1880. BEACH; A91, A91{SC}, F91T{SC}, I49G{SC}, L27M

Holiday: Medium-sized, flat-round fruit; skin yellow, overspread with deep bright-red; flesh white, crisp, tender, juicy, aromatic; flavor rich, slightly tart; quality very good; ripens in October, keeps well in cold storage; resembles Macoun. Tree moderately vigorous, upright; somewhat difficult to prune. Macoun x Jonathan. A53{PR}, A91{SC}, B27M{SC}, C27T{SC}, K36, L12, M11M{PR}

Holstein: Fruit medium-large; oblong-conical to round-conical; skin golden-yellow, blushed and striped with red; flesh creamy yellow, firm, juicy, sweet, aromatic, somewhat similar to Cox's

Orange Pippin; quality excellent. Tree vigorous, spreading; produces spurs readily; requires pollination. Raised in Schleswig-Holstein, Germany about 1918. SANDERS, SIMMONS 1978; A91, A91{SC}, B27M{SC}, C27T{SC}, E84{OR}, F88G, I49G{SC}, J93{SC}, LI, L12, M11M{PR}, M22, 081

Honeycrisp: Considered the best very hardy cultivar in the world. Medium-sized, roundish fruit; skin lemon yellow, 50 to 70% blushed with scarlet; flesh cream-colored, extremely crisp, juicy, coarse, juicy, mildly aromatic, subacid. Dessert quality excellent. Ripens 5 days after McIntosh. Moderately vigorous, upright-spreading tree. Originated in Excelsior, Minnesota. A5, A53{PR}, B53, B83, D65, D65{DW}, F16, F53, G16, G66, I49G, I49G{DW}, I49M, J61M, J93, L27M, L33, M11M{PR}, M39M, etc.

Honeygold: Medium to large, round-conic fruit; skin yellow, blushed with bronze; flesh yellow, crisp, juicy, sweet; dessert quality excellent, equal to Golden Delicious but keeps better; ripens October 1. Tree medium-sized, moderately vigorous; hardy. Golden Delicious x Haralson. Recommended where Golden Delicious is marginal. BROOKS 1972; A91, A91{SC}, B27M{SC}, C27T{SC}, C58, D69, F53, G16, G66{DW}, G89M, H90{DW}, I49G, I49G{DW}, L27M, L70{DW}, N24M, etc.

Hubbardston Nonesuch: Medium to large, roundish-ovate fruit; skin yellow or greenish, blushed and mottled with bright red; flesh whitish slightly tinged with yellow, tender, juicy, aromatic, rich, at first sprightly but becoming mildly subacid mingled with sweet; quality excellent; season October to January. Tree vigorous; precocious; bears heavy crops annually. Originated in Hubbardston, Massachusetts prior to 1832. BEACH; A53 {PR}, A91, A91 {SC}, B27M{SC}, C27T{SC}, E84{OR}, F88G, I49G{SC}, LI, L12, M11M{PR}, N38M{SC}

James Grieve: Medium to large, round-conical fruit; greenish-yellow skin, blushed and striped with brownish-red; flesh creamy-white, firm and crisp, fine-textured, very juicy, flavor excellent; ripens in September; does not keep well. Excellent for making *cysser*, a type of honey wine. Tree vigorous, upright; readily forms short fruiting spurs; annually produces heavy crops. Originated in Scotland; first recorded in 1893. ACTON, SANDERS, SIMMONS 1978; A91{SC}, B53, C27T{SC}, F88G, L1{SC}, L12, M11M{PR}, M22, 081, R83

Jefferis: Fruit small to medium, roundish oblate; skin pale yellow, blushed and splashed with red; flesh yellowish-white, firm, crisp, tender, very juicy, mildly subacid; quality very good; season September to January. Tree medium-sized, moderately vigorous; hardy; productive. Originated with Isaac Jefferis, Newlin township, Pennsylvania prior to 1848. BEACH; A39, A91, A91{SC}, C27T{SC}, E84{OR}, F88G, G65M, L12, M11M{PR}, M22, N24M, N38M{SC}

Jenner Sweet: Medium-sized fruit; skin yellow, blushed and striped with red; flavor fine, mildly sweet, typically Fameuse; ripens in mid-autumn; resembles Fameuse. Tree extremely hardy. Open-pollinated seedling of Fameuse; discovered in 1924. Introduced in 1964 by Fred L. Ashworth, Heuvelton, New York. BROOKS 1972; L27M

Jonalicious: (Daniels) Large, round fruit; skin thick and tough, yellow blushed a bright, nearly solid red; flesh tinged with yellow, juicy, firm but tender, aroma distinct; flavor rich, slightly less tart than Jonathan, rated A plus in customer taste tests of Applesource; ripens just after Jonathan which it resembles, keeps better. Tree vigorous, upright, hardy and productive. Originated in Abilene, Texas by Anna Morris Daniels. BROOKS 1972; A9, A39, A53{PR}, C27T{SC}, E63I{PR}, L33, M11M{PR}

Jonamac: Medium-sized, roundish fruit; skin greenish-yellow, prominently blushed with dark red; flesh firm, crisp, juicy, somewhat tart, aromatic; quality very good; ripens a few days before McIntosh, which it resembles; does not keep well. Tree medium-sized, moderately vigorous; productive. Jonathan x McIntosh. A5,

A34, A53{PR}, A91, A91{SC}, C76M, F53, J93{SC}, L12, M11M{PR}, M39M, M59M, M99G, N24M

Jonathan: (Philip Rick) Small to medium, roundish-conic fruit; skin pale bright yellow overlaid with lively red, striped with carmine; flesh whitish, firm but tender, crisp, juicy, very aromatic, sprightly subacid; quality excellent for dessert and culinary uses; season November to January. Tree small to medium, moderately vigorous. Originated on the farm of Philip Rick, Woodstock, New York prior to 1826. BEACH; A53{PR}, A91, A91{SC}, C30M, D76, D76{DW}, D81M{PO}, G79M{DW}, J83, J83{DW}, LI, L47, L73{PD}, N38M{SC}

Kandi! Sinap: A novelty cultivar from Turkey. Fruit medium-sized; very tall, narrow, cylindrical; creamy-yellow, porcelain-like skin, washed with a brilliant red blush; flesh crisp, juicy, fine-grained, of excellent flavor; ripens in early October. Tree small, narrow pyramidal; a heavy and regular bearer. A53{PR}, B27M{SC}, C27T{SC}, C30M, E84{OR}, F88G, J93{SC}, K36, LI, L12, M11M{PR}, M22

Karmijn de Sonnaville: Cox's Orange Pippin x Jonathan. Large, oblong-conic fruit; skin yellowish-green, blushed with carmine, russet; flesh yellow, firm, fine-grained; flavor superior, very rich, high in sugar and acid. Ripens with Red Delicious, stores well. Excellent for dessert and juicing. Moderately vigorous, spreading tree, fairly productive. Originated in Wageningen, the Netherlands. C30M, C34, F88G, H90M{SC}, J61M, L12, 081, Q30{SC}

Kerry Pippin: Small, roundish fruit; skin glossy yellow, sometimes striped on the side exposed to the sun; flesh very firm, crisp, crunchy, with a fine, rich spicy flavor; quality excellent. An old Irish apple, first noted in 1802 in a survey of the Royal Dublin Society of County Kilkenny. A91{SC}, J93{SC}, LI, L12, M11M{PR}

Kidd's Orange Red: Medium to large, conical fruit; skin dull yellowish-green, blushed with orange-scarlet, with red stripes and russet patches; flesh light cream, firm but tender, crisp, juicy, sweet, aromatic; quality very good; ripens in October; stores well. Tree vigorous, upright; very productive; resistant to scab; best suited to warm climates. Originated in New Zealand in 1924. SANDERS, SIMMONS 1978; A91, A91{SC}, B27M{SC}, C27T{SC}, E23Z, F88G, G65M, LI, L12, M11M{PR}, M22, 081

King: (Tompkins King) Fruit large to very large; roundish to somewhat oblate; skin yellow, mottled and striped with deep red and bright carmine; flesh yellowish, rather coarse, crisp, tender, aromatic, juicy, subacid; quality excellent for dessert or cooking; season mid-October. Tree vigorous, spreading; hardy; productive. Originated in Washington, New Jersey prior to 1804. BEACH; A91{SC}, B74, E63I{PR}, E84, F88G, H65, J61M, J93{SC}, LI, L12, L73{PD}, M11M{PR}, M22, N38M{SC}

Laxton's Fortune: (Fortune) Fruit medium-sized; round, slightly conical; skin pale yellowish-green, blushed and striped bright red; flesh creamy-white, firm but tender, rather coarse-textured, sweet, flavor rich; quality good; ripens in September. Tree small, compact; precocious; productive; inclined to biennial bearing. Originated in England in 1904. SANDERS, SIMMONS 1978; A91{SC}, J93{SC}, L12, M22, 081

Liberty:<sup>4</sup> Medium-sized, oblate fruit; skin yellow, highly blushed with bright red, attractive; flesh yellowish, slightly coarse, crisp, juicy, sprightly; dessert quality good; ripens just after McIntosh. Tree vigorous, spreading; very productive. Highly resistant to scab, resistant to mildew, cedar rust and fire blight. A39, A53{PR}, A91, A91{SC}, C58, D2{PR}, D76{DW}, E84, F43M, F53, G16, G23, G65M, H65, J61M, J93, LI, L1{ES}, L33, M39M, etc.

Macoun: Small to medium, flat-round fruit; skin pale yellow, almost completely blushed bright red, with very dark red stripes; flesh white, crisp, firm, sweet, aromatic, flavor rich; dessert quality high; ripens 1 month after McIntosh. Tree vigorous, upright; productive. One of the best of the McIntosh type apples. A5, A53{PR},

A91, A91{SC}, C27T{SC}, F42M{PR}, F53, G79M{DW}, H65, LI, L1{ES}, L12, M11M{PR}, M59M

Makepeace: Flattened spherical fruit; skin green with an attractive pink blush on the exposed side when mature; flesh nearly white, crisp, juicy, sweet; dessert quality very good, also very good for cooking if picked slightly immature; keeps well at room temperature for 3 to 4 weeks. Tree bears heavily and at an early age; requires about 450 hours of chilling. Well suited to the warm winters of southern California. Originated in Rancho Santa Fe, California. D57{OR}

Mandan: Fruit medium to large; round conic to oblong conic; skin greenish-yellow overspread with orange-red, with dark red splotches; flesh yellowish, firm, crisp, very juicy, mildly subacid; dessert quality excellent, good for culinary uses; ripens early to mid-September. Tree vigorous, spreading; annually productive; hardy; resistant to fire blight. Originated in Mandan, North Dakota. BROOKS 1972; I49G, I49G{SC}, L27M, M35M

McIntosh: Medium-sized, nearly round fruit; skin yellow with a bright red blush; flesh white, sweet, tender, moderately soft and juicy; ripens in midseason. Tree vigorous, productive, handy. Originated in Ontario, Canada. STEBBINS; A82, A91{SC}, C58, D76, E4, E45, E97, G72{DW}, LI, L1{ES}, L73{PD}, M13M{PD}, M99G

Melrose: Fruit medium to large; flat-round to conical; skin yellowish-green, blushed and streaked with dark brownish-red, very attractive; flesh creamy-white, firm, crisp, juicy, slightly acid, rich; dessert and culinary quality excellent; ripens in October and November. Tree moderately vigorous, upright-spreading; precocious; very productive. BROOKS 1972; A5, A53{PR}, A91, A91{SC}, C30M, C34, F88G, J61M, M11M{PR}, M39M

Monroe: Medium to large, roundish-conic fruit; skin nearly solid red, excellent in appearance; flesh yellow, firm, crisp, juicy, subacid; dessert quality good. Excellent for pies, sauce and baking. Tree vigorous, upright-spreading; bears heavy crops annually; susceptible to powdery mildew. Originated in Geneva, Nov York by U.P. Hedrick. BROOKS 1972; C27T{SC}, J93{SC}

Mother: Medium to large, roundish-oval fruit; skin golden yellow, nearly covered with bright deep-red; flesh creamy-yellow, tender, juicy, very mildly subacid, aromatic, with a rich distinctive flavor; quality excellent; season late September to January. Tree upright-spreading, moderately vigorous and productive. Originated in Bolton, Massachusetts prior to 1844. BEACH; A39, A91{SC}, B27M{SC}, C27T{SC}, E84{OR}, F88G, J93{SC}, LI, L12, L21P, M11M{PR}, M22, N38M{SC}, 081

Muster: Small, flat-round fruit; striking orange-red or pink skin with prominent brown or grey spots; flesh pure-white, coarse but crisp, very sweet; quality excellent; ripens in early September. An old American cultivar of unknown origin; first described in 1869. L12, M11M{PR}

Norda: Medium-sized fruit; skin green to yellow, overlaid with red; quality and flavor good; suitable for dessert or cooking, also dries well with very little discoloration of the clear white flesh; ripens in late September; keeps well. Tree very hardy. Developed at the Beaverlodge Research Station, Alberta, Canada. B47, F67

Nova Easygrow:<sup>4</sup> Large, oblate fruit; skin greenish-yellow, 80% covered with red stripes, moderately attractive; flesh white, crisp, juicy, medium-fine in texture; flavor sweet and sprightly; quality good. Tree moderately vigorous and productive; blooms one day after McIntosh. Strongly resistant to scab; resistant to powdery mildew, cedar rust, and fire blight. A39, A91, A91{SC}, C27T{SC}, I49G{SC}, I61M{SC}, J93{SC}, K36, L27M, M22, N24M

Ohio Nonpareil: Medium to large, roundish-oblate fruit; skin yellow, overspread with bright red, mottled and striped with carmine; flesh tinged with yellow, crisp, tender, juicy, agreeably

subacid, aromatic; quality good to very good; season October and November. Tree medium-sized, spreading, moderately vigorous; hardy. Originated near Massillon, Ohio; first described in 1848. BEACH; A91{SC}, L12, M11M{PR}

Opalescent: Large to very large, roundish-conic fruit; skin glossy, takes a brilliant polish, bright pale yellow overspread with dark red, very attractive; flesh distinctly tinged with yellow, firm, somewhat coarse, juicy, mildly subacid, aromatic; quality good to very good; season November to February. Tree vigorous, roundish. Originated in Barry County, Michigan; introduced about 1899. BEACH; B27M{SC}, E84{OR}, H65, I49G{SC}, L12, M11M{PR}, N38M{SC}

Orengo: Medium to large, roundish fruit; skin nearly solid bright red, attractive; flesh white, tender, juicy, crisp, sweet, mild but piquant; dessert quality high; ripens in mid-September. Tree moderately vigorous, upright-spreading; unproductive; resistant to scab. Introduced by the Oregon Nursery Company of Orengo, Oregon in 1920. BROOKS 1972; C27T{SC}, E84{OR}, F88G, I49G{SC}, LI, L12, M11M{PR}, M22

Orleans Reinette: Medium to large, flat-round fruit; skin dull golden-yellow blushed with dull orange, covered with patches of grey-brown russet; flesh yellow, very crisp, very juicy, sweet, with a distinct rich nutty flavor; ripens in September and October. Tree vigorous, upright-spreading; hardy; prolific; spur-bearing. Probably of French origin; first described in 1776. SANDERS, SIMMONS 1978; C30M, F88G, F91T{SC}, LI, L12, M11M{PR}, M22, 081, R83

Ortley: Fruit medium to large; oblong-conic, flattened at the base; skin waxy, whitish-yellow to rich yellow; flesh whitish tinged with yellow, crisp, tender, juicy, sprightly subacid; quality very good; season October to February. Tree medium to large, upright, moderately vigorous. Originated in New Jersey, prior to 1817. BEACH; A53{PR}, A91{SC}, B27M{SC}, LI, L12, M11M{PR}, N38M{SC}

Palouse: Fruit large; oblong-conic, ribbed or scalloped; bright yellow skin, blushed with crimson, splashed and dotted with darker red; flesh yellowish, crisp, tender, juicy, subacid, very aromatic; quality very good; season October. Tree very productive. Originated in Whitman County, Washington, from seed brought from Illinois in 1879. BEACH; A91{SC}, C27T{SC}, J93{SC}, L12, N38M{SC}

Patterson: Small to medium, slightly oblate fruit; skin greenish-yellow, blushed with red; flesh very mildly subacid, flavor and quality excellent; ripens in midseason; keeps well. Tree extremely hardy. Originated in Saskatoon, Saskatchewan, Canada. Introduced in 1960 for home gardens. BROOKS 1972; B47, F67, G54, I61M{SC}, M35M

Pettingill:<sup>2</sup> Large, round fruit; skin green overlaid with deep-red; flesh nearly white, firm, crisp, moderately acid; suitable for dessert, good for baking, cooking and sauces; ripens early September to mid-October; keeps and ships well. Tree large, upright, vigorous; very productive; a regular bearer. Low chilling requirement. Originated in Seal Beach, California. BROOKS 1972; A63, C54, I83M, N20

Pink Old Lady:<sup>5</sup> Medium-sized, round-conical fruit; skin yellow overlaid with carmine; flesh pink, fading towards the core, very juicy, medium sweet, aromatic, flavor very good; ripens early to mid-October, does not keep well. Tree small, moderately vigorous, spreading; very productive, requires thinning. Pink Pearl x King of the Pippins. Originated in Rockton, Ontario, Canada by Frederic Janson. F88G, LI, M22

Pink Pearl:<sup>5</sup> Medium-sized, roundish-oblong fruit; skin transparent, glowing pink from the flesh beneath, extremely aromatic when broken; flesh bright pink, crisp, juicy, rich and sweet; dessert quality very good, also makes a colorful sauce or pie filling; ripens in September. Originated in Ettersburg, California by Albert F. Etter. Introduced in 1944. BROOKS 1972; A53{PR}, A91, A91{SC}, B27M{SC}, C54, E84, /49P, J93{SC}, LI, L1{ES},



L12, M11M{PR}, N24M

Pink Pearmain:<sup>5</sup> (Pink Sparkle) Fruit larger than Pink Pearl; distinctly shaped; skin translucent cream, striped and splashed with brilliant red when mature; flesh rose pink, somewhat deeper than Pink Pearl, more intense in flavor, with the distinctive aromatic berry-like flavor that characterizes pink-fleshed apples; ripens in late September, about a month after Pink Pearl. Probably a creation of Albert F. Etter. Found growing in an old orchard. Pink Pearmain is a registered trademark of Greenmantle Nuisery. FISHMAN; E84, L12, M11M{PR}

Pitmaston Pineapple: Small, broadly conical fruit; skin golden-yellow, almost covered with a fine fawn russet; flesh yellowish, crisp, very juicy, sweet, subacid, rich, with somewhat of a pineapple-like flavor; ripens in September and October. Tree small, upright, very suitable for small gardens; productive. Originated in England about 1785. SIMMONS 1978; A53{PR}, B27M{SC}, C27T{SC}, C30M, E84{OR}, F88G, J93{SC}, LI, L12, M11M{PR}, 081, R83

Pomme Royal: (Garden Royale, Dyer) Medium to large, roundish fruit; skin clear pale yellow, more or less flecked with thin russet; flesh yellowish-white, fine-grained, very crisp, tender, aromatic, sprightly, mildly subacid, highly flavored; quality excellent; season September and October. Tree yields good crops biennially. Origin uncertain; known in cultivation during the Revolutionary War. BEACH; C27T{SC}, I49G{SC}, L12, M11M{PR}, N38M{SC}

Porter: Medium to large, conical fruit; skin clear bright yellow, with a faint red blush; flesh yellow, crisp, tender, juicy, subacid, agreeably aromatic, sprightly; quality good to very good for dessert or culinary uses; season September to November. Tree medium to large, vigorous; hardy; precocious; productive. Originated about 1800 with Rev. Samuel Porter, Sherburne, Massachusetts. BEACH; A91 {SC}, C27T{SC}, E84{OR}, F88G, L12, M11M{PR}, N38M{SC}

Prima:<sup>4</sup> Medium to large, round fruit; skin bright yellow, 60% covered with dark red blush; flesh white, juicy, mild, subacid; quality good; ripens 10 days ahead of McIntosh. Tree moderately vigorous, spreading; bears annually when properly thinned. Both fruit and foliage are immune to scab and resistant to fire blight, cedar rust, and mildew. B74, C27T{SC}, C58, H90M{SC}, J89M, J93{SC}, L33, M11M{PR}, M22

Priscilla:<sup>4</sup> Medium-sized, slightly conical fruit; skin yellow, 65% covered with bright red blush; flesh white to slightly greenish, crisp, coarse, mildly subacid; quality good; ripens with Jonathan. Tree moderately vigorous, spreading. Immune to scab. Resistant to fire blight, powdery mildew, and cedar rust. Good pollinator for Prima. A39, C27T{SC}, C30M, C58, L12, M11M{PR}

Purple Passion:<sup>5</sup> Large, purplish-red fruit; crimson red flesh and juice; tart flavor. Excellent for pies, sauce, juice and cider. Makes a tasty and colorful dried product. Very ornamental with attractive red blossoms in the spring. Tough, dependable tree\* extremely hardy. Has produced a full crop after a winter of -50° C. temperatures. N24M

Red Delicious: Fruit medium-sized, long and tapering; skin striped, or solid red with yellowing; flesh white, juicy, sweet; ripens in midseason. Tree large, upright and spreading; very susceptible to scab. Most widely grown apple in the world. Originated in Iowa. STEBBINS; A82, D81{PO}, D81M{PO}, E4, E45, F93, G72, I9M, I23M{PD}

Ribston Pippin: Medium-large, round-conical fruit; skin greenish-yellow, blushed and striped with brownish-orange and red; flesh yellow, very firm, crisp, fine-grained, richly sweet, very aromatic; quality excellent; season September and October. Tree vigorous, spreading; bears fruit on short spurs. Originated in England from seed brought from France in about 1688; parent of Cox's Orange Pippin. SANDERS, SIMMONS 1978; A91{SC}, C27T{SC},

E84{OR}, F88G, G65M, G79M{DW}, LI, L12, L21P, M11M{PR}, M22, N38M{SC}, 081, R83

Royal Gala: Medium-sized, conic to round fruit; skin solid orange-red, brighter overall red than Gala; flesh yellow-white, firm, juicy, fine-textured; flavor sweet, slightly tart; ripens with Gala, hangs well on the tree. Vigorous, compact tree; prolific, tends to overbear; pollinates Red Delicious and Granny Smith. A9, B53, B71M, B83, D28J, D37, E4, F15{PR}, F85D{PR}, I83M, K73M, L33, L33{DW}, M11M{PR}, M39M, etc.

Scarlet Surprise:<sup>5</sup> Very ornamental and unusual red-fleshed apple. Large, long-conic fruits; bright red skin; striking dark-red flesh, sweet and flavorful; quality good to very good. Large, attractive, deep pink blossoms, resembles a peach tree when in bloom. Brilliant, reddish foliage. E87, I49P, I66T

Sekai Ichi: Very large fruit, up to 2 pounds if properly thinned; skin pale pink to darker red; flesh crisp, breaking, juicy, very sweet, mild; quality excellent. One of the highest priced apples in Japan where for the family dessert, a single apple is generally served on a plate in the center of the table from which slices are dispensed. A91{SC}, C27T{SC}, C30M, I68, L12, M11M{PR}

Senshu: Early Fuji type. Small to medium-sized, round fruit; skin greenish-yellow, striped with bright red; flesh yellowish-white, juicy, firm, crisp, sweet; quality excellent. Ripens about 10 days before Red Delicious. Moderately vigorous, spreading tree, resistant to powdery mildew. Originated in Japan at the Akita Fruit Tree Experiment Station. BROOKS 1997; A9, A53{PR}, A91, A91{SC}, C27T{SC}, C30M, C76M, H90M{SC}, J93{SC}, K36, M39M

Sierra Beauty: Large, blocky fruit; skin greenish-yellow, striped and blushed with red, attractive; flesh juicy, very crisp, sprightly, tart; dessert quality very good; ripens September to October, keeps very well. An old California cultivar; still grown commercially in Boonville. A53{PR}, A88M, C54, E23Z, E63I{PR}, E84{OR}, J93{SC}, LI, L12, N20

Signe Tillisch: Large, flat-round fruit; skin light green or creamy yellow, blushed with pink or orange, waxy; flesh crisp, breaking, juicy, with a fine vinous flavor; quality excellent for dessert or cooking; ripens the first 2 weeks of September. Originated in Denmark; first described in 1889. Considered one of the best dessert apples in Sweden. C27T{SC}, L12, M11M{PR}

Sir Prize:<sup>4</sup> Large, greenish-yellow fruit; skin very thin and tender, bruises easily; flavor slightly acidic; quality good; resembles Golden Delicious. Tree strong, vigorous, hardy; immune to scab; resistant to mildew and cedar rust. Good home garden cultivar, but too tender for commercial markets. A53{PR}, C27T{SC}, C30M, J93{SC}

Skinner's Seedling: (Santa Clara King) Large to very large, oblate fruit; skin rich lemon-yellow, faintly striped with bright red; flesh yellowish-white, very tender, juicy, sprightly, mildly subacid, very aromatic; quality excellent for dessert or sauce; season September and October. Tree vigorous, productive. Originated with Judge H.C. Skinner of San Jose, California, prior to 1870. WICKSON; E84, G65M, LI

Smokehouse: Fruit above medium to large, roundish-oblate; skin yellow, mottled and striped with bright-red; flesh slightly tinged with yellow, crisp, firm, very juicy, mildly subacid, delicately aromatic, with an agreeable but not high flavor; quality good; season October to February or March. Tree vigorous; hardy; rather precocious; productive. Originated in Lancaster County, Pennsylvania prior to 1837. BEACH, WEAVER 1993 [Re]; A5, A53{PR}, A82, A91, A91{SC}, B27M{SC}, B53, B53{DW}, E84{OR}, F88G, H65, LI, L12, L27M, M11M{PR}, etc.

Somerset of Maine: Fruit large; skin bright yellow, covered with splashes and stripes of brilliant red; flesh often attractively stained with red, tender, juicy, agreeably subacid; should not be allowed to get over-ripe on the tree. Tree very vigorous, upright-spreading.

Originated in Mercer, Maine; first recorded in 1849. A91{SC}, L12, M11M{PR}, N38M{SC}

Sops of Wine: Medium to large, roundish fruit; skin greenish-yellow, almost entirely overspread with purplish-red; flesh yellowish often stained with pink, soft, juicy, aromatic, mild, pleasant, subacid; quality good; season August to October. Tree vigorous, precocious. A very ancient English apple; described by Ray in 1688. BEACH; A91, A91{SC}, B27M{SC}, B53, C27T{SC}, C30M, E84{OR}, F24G{SC}, F43M, H65, LI, L12, M11M{PR}, N38M{SC}

Spartan: Fruit medium-sized, flat-round to roundish-conical; skin solid mahogany red; flesh white, very firm, crisp, juicy, fairly sweet, quality and texture very good, fully equal to McIntosh; ripens 2 to 3 weeks later than McIntosh. Tree upright-spreading; bears heavy crops annually. McIntosh x Yellow Newtown Pippin. BROOKS 1972; A5, A53{PR}, A91{SC}, B83, C30M, C58, F53, G66, I23M{PD}, L12, L27M, L73{PD}» M39M, N24M

Spencer: Medium to large, oblong fruit; skin greenish-yellow, largely blushed with bright scarlet, attractive; flesh creamy-white, crisp, firm, juicy, subacid; quality extremely high; matures about 3 weeks later than McIntosh. Tree vigorous, upright, spreading; very hardy; slow to come into bearing but then high yielding. Originated in Summerland, British Columbia, Canada. BROOKS 1972; A91{SC}, C27T{SC}, L12, L27M, M11M{PR}

Spigold: Large to very large, oblong-conical fruit; skin golden yellow, highly blushed and striped with red, very attractive; flesh creamy-white, very firm and crisp, fine-grained, melting, sweet, sprightly; dessert quality exceptionally high; ripens through October. Tree very vigorous; productive; requires a pollinator. Red Spy x Golden Delicious. A53{PR}, B53, C30M, C76M, E84, F88G, H65, J93, J93{SC}, LI, L12, M11M{PR}, M99G

Splendour: Medium-large, roundish fruit; skin yellow, blushed with pinkish-red; flesh yellow, crisp, firm, juicy, very sweet, flavor mild but distinctive; ripens in early September; keeps extremely well for a fall apple. Tree vigorous, spreading; productive. Originated in New Zealand, where it is a commercial export apple. A53{PR}, A91{SC}, C27T{SC}, E23Z, E84, G65M, J93{SC}, LI

St. Edmund's Pippin: (St. Edmund's Russet) Fruit small to medium; flat-round to round conical; skin golden-yellow, heavily covered with fine grayish-golden russet; flesh creamy-white, fairly firm, tender, juicy; flavor very rich and quite sweet but with a nice balance of acidity; season late September to early October. Tree upright-spreading, handy. Raised about 1870 at Bury St. Edmund's, England. SANDERS, SIMMONS 1978; C27T{SC}, C30M, E84{OR}, F88G, I49G{SC}, LI, L12, L27M, M11M{PR}, M22, N24M, 081, R77

Stearns: Very large, roundish-conical fruit; skin yellow, striped with red; flesh crisp, melting, tender, with a rich pure apple flavor; quality excellent for dessert or cooking; ripens in early September. Originated in North Syracuse, New York prior to 1900. A91{SC}, B27M{SC}, C27T{SC}, J93{SC}, LI, L12, M11M{PR}

Sweet Sixteen: Medium to large, roundish-conical fruit; skin red-striped; flesh cream-colored, firm, crisp, juicy, subacid, aromatic, with a pleasant anise-like flavor; ripens just after McIntosh; keeps well. Tree cold hardy; precocious; blooms late; annually productive; resistant to scab and fire blight. Released by the Minnesota Agricultural Experiment Station. A53{PR}, A91, A91{SC}, C27T{SC}, D65, D65{DW}, F53, G4, G66, H90{DW}, I49G, I49M, J93, J93{SC}, L27M, L70, L70{DW}, N24M, etc.

Tangowine: Fruit medium-sized; round to slightly elongated; skin dark red over yellow; flesh smooth, medium tender, moderately juicy, pleasantly subacid; quality good; ripens about with McIntosh, keeps well in common storage. Some resistance to scab. Tree large, vigorous, spreading; hardy; produces spurs freely. Originated in Petitcodiac, New Brunswick, Canada. BROOKS 1972; C58

Thornberry:<sup>5</sup> Small, finely formed fruit; translucent yellow skin; flesh raspberry-pink, sprightly, refreshing, with a unique berry-like flavor, not as sweet as Pink Pearl; ripens 2 months later than Pink Pearl. Keeps well in storage, becoming sweeter and mellower in flavor. Ornamental lilac-pink blossoms. Discovered in an abandoned orchard. Probably originated by Albert F. Etter. Thornberry is a registered trademark of Greenmantle Nursery. FISHMAN; C30M, E84

Twenty Ounce: (Cayuga Redstreak) Very large, roundish to round-conic fruit; skin yellow, washed and splashed with bright red; flesh whitish, coarse, moderately tender, juicy, subacid; suitable for dessert or culinary use; season late September to early Winter. Tree moderately vigorous, upright; precocious; productive. Of uncertain American origin; first recorded about 1844. BEACH; A91, A91{SC}, B53, C27T{SC}, E84, F88G, H65, LI, L12, M11M{PR}, M22, M59M, M99G, N38M{SC}

Wagener: Medium to large, oblate fruit; skin glos<sup>^</sup>, clear pale yellow, striped and mottled with bright pinkish-red; flesh whitish slightly tinged with yellow, fine-grained, crisp, juicy, subacid, aromatic, sprightly; quality excellent; season October or November. Tree small to medium. Originated in Rnn Yan, New York from seed planted in 1791. BEACH; A53{PR}, B27M{SC}, E63I{PR}, E84, F88G, H65, I49G, J93{SC}, LI, L12, M11M{PR}, M22, N38M{SC}, 081

Washington Strawberry: Medium to large, globular fruit; skin greenish or yellow, prominently splashed and striped with bright carmine; flesh whitish tinged with yellow, firm, crisp, very juicy, pleasantly subacid, sprightly; quality good to very good; season September or October. Tree vigorous, spreading; hardy; precocious; reliably productive. Originated in Washington County, New York prior to 1849. BEACH; A91{SC}, B53, N38M{SC}

Wealthy: Medium to large, roundish-conic fruit; skin pale yellow or greenish, blushed and striped with red; flesh whitish sometimes stained with red, crisp, tender, very juicy, agreeably subacid, sprightly, somewhat aromatic; quality good to very good for dessert or culinary uses; season October to January. Tree small to medium, moderately vigorous; very hardy. Originated in Excelsior, Minnesota prior to 1869. BEACH; B53, C58, E84, F88G, G16, G65M, H65, H90{DW}, I97{PR}, LI, L27M, M11M{PR}, M39M, N20, N24M etc.

Westfield Seek-No-Further: Medium-sized, roundish-conical fruit; deep yellow skin, overspread with bright pinkish-red, striped with deep carmine; flesh slightly tinged with pale yellow, crisp, tender, juicy, mildly subacid, rich, peculiarly aromatic, sprightly; dessert quality excellent. Tree medium to large, vigorous, spreading; very hardy. Originated in Westfield, Massachusetts prior to 1845. BEACH; A91, A91{SC}, B27M{SC}, B53, C27T{SC}, D69, E84{OR}, F88G, G65M, H65, LI, L12, L27M, M11M{PR}

Winesap: Medium-sized, round to oblong fruit; skin yellow heavily striped with red; flesh yellow, firm, coarse, juicy; flavor sprightly, slightly acid; ripens midseason to late, keeps well. Good for dessert or canning. Tree vigorous, slow to come into bearing. First described in 1817. SIMMONS 1978, STEBBINS; A82{DW}, A85M, D2{PR}, E4, E45, E84, G66, G79M{DW}, LI, L90, M22

Wolf River: Fruit large to very large; broad and flat at the base, often somewhat irregular; skin pale bright yellow, blushed with bright deep-red; flesh slightly tinged with yellow, moderately coarse, tender, juicy, subacid; dessert quality fair to good; season September to December. Tree large, moderately vigorous, very spreading; very hardy. Originated near Wolf River, Wisconsin prior to 1875. ARMSTRONG [Re], BEACH; A82, A91, A91{SC}, B53, C58, E84{OR}, E97, F53, F88G, G16, G16{DW}, H65, LI, L27M, L70, M11M{PR}, etc.

WINTER HARVESTING

Adam's Pearmain: (Norfolk Pippin) Fruit medium-sized; conical to long-conical; skin pale golden-yellow, prominently blushed with dull crimson-red, attractive; flesh creamy-white, crisp, juicy, aromatic; quality excellent; season November to March. Tree moderately vigorous, wide-spreading; partially tip-bearing; tends toward biennial bearing. Of English origin. Introduced in 1826. SANDERS, SIMMONS 1978; C27T{SC}, E84{OR}, F88G, J93{SC}, L12, M11M{PR}, M22, 081

Arkansas Black: Medium-sized, nearly round fruit; skin covered with bright red, deepening to purplish-red on the exposed side; flesh yellow, very firm, crisp, moderately juicy, sprightly subacid, quality very good; season December to April or later. Tree moderately vigorous, upright-spreading; unproductive. Originated in Benton County, Arkansas, and bore its first fruit about 1870. BEACH; A39, A53{PR}, A82, A91, C75M, D2{PR}, E4, E84, F43M, F88G, F93, J93{SC}, LI, L47, M11M{PR}, etc.

Ashmead's Kernel: Medium-sized, flat-round fruit; skin pale greenish-yellow, prominently covered with cinnamon-brown russet; flesh yellowish-white, firm, crisp, juicy, highly aromatic, subacid; dessert quality excellent, also makes delicious cider; season December to February. Tree moderately vigorous, upright-spreading; bears irregularly. Raised about 1720 by a Dr. Ashmead of Gloucester, England. SANDERS, SIMMONS 1978; A53{PR}, C34, F88G, G65M, I49M, J93{SC}, LI, L12, L27M, M11M{PR}, M99G, N20, 081

Baldwin: Large, roundish-conic fruit; skin light yellow, blushed and mottled with bright red; flesh yellowish, very firm, crisp, juicy, agreeably subacid, sprightly; quality very good for dessert and culinary uses; season November to March or April. Tree large, very vigorous, upright-spreading; very productive. Originated near Lowell, Massachusetts, about 1740. BEACH; A53{PR}, A91, A91{SC}, B53, D74M{PD}, E84, G65M, G79M{DW}, H65, LI, L12, M11M{PR}, M99G

Belle de Boskoop: Medium to large, roundish-oval fruit; skin golden yellow, mottled, dotted and striped with bright red; flesh creamy yellow, aromatic, firm, coarse, rather dry; good for dessert, excellent for cooking; season December to April. Tree vigorous, upright-spreading; spur-bearing; productive. Originated in Boskoop, Holland about 1856. SANDERS, SIMMONS 1978; A53{PR}, C30M, E84{OR}, F88G, I49G{SC}, I61M{SC}, J61M, J93{SC}, LI, L12, M11M{PR}, M22, N20, 081

Ben Davis: Medium to large, roundish-conic fruit; skin waxy, clear yellow blushed with bright red, striped and splashed with bright dark-carmine; flesh whitish, moderately coarse, not very crisp, somewhat aromatic, juicy, mildly subacid; quality good; season January to June. Tree vigorous, upright; hardy; precocious; annually bears heavy crops. An American apple of unknown origin; first recorded in 1857. BEACH; A53{PR}, A91, A91{SC}, B27M{SC}, C27T{SC}, K36, L12, M11M{PR}, N38M{SC}

Black Ben Davis: (Gano) Medium to large, roundish-ovate fruit; skin almost completely overspread with brilliant red, becoming dark purplish-red on the exposed cheek; flesh whitish, somewhat coarse, moderately juicy, mildly subacid; quality good; season January to April or May. Tree vigorous, upright, spreading. Said to have originated about 1800 on the farm of M. Black in Washington County, Arkansas. BEACH; A91{SC}, C30M, F43M, F88G, G65M

Black Gilliflower: (Sheepnose) Medium to large, long-ovate fruit; skin striped or mostly covered with red, deepening to dark purplish-red or almost black; flesh whitish, firm, rather coarse, moderately juicy eventually becoming dry, mildly subacid, rich, peculiarly aromatic; good for dessert and specialty markets; season November to January or February. Tree large, moderately vigorous, upright-spreading. An American apple of uncertain origin; known in Connecticut as early as the latter part of the 18th century. BEACH;

A53{PR}, A91{SC}, B27M{SC}, B53, C27T{SC}, E84{OR}, G79M{DW}, H65, LI, L12, M11M{PR}, M22, N38M{SC}

Blacktwig: (Paragon) Medium-sized, roundish fruit; skin yellowish, largely covered with dull deep-red; flesh greenish, slightly coarse, juicy, mildly subacid, somewhat aromatic; quality good to very good; season January to May. Tree moderately vigorous, roundish. Originated near Fayetteville, Tennessee, from a seed planted about 1830. Once very popular in the South. BEACH; A53{PR}, B53, C30M, E23Z, G65M, L12, M11M{PR}, N38M{SC}

Braeburn: Medium to large, oval fruit; skin glosy, covered with short stripes of dark crimson, 75% overlaid with dark scarlet blush; flesh pale cream, firm, crisp, very juicy, mildly sweet; quality excellent; ripens very late, keeps well in storage. Tree moderately vigorous, spreading; precocious; productive, with a slight tendency toward biennial bearing. Originated in Nelson, New Zealand. Introduced in 1952. BROOKS 1972; A5, A53{PR}, A91, B27M{SC}, B83, D81M{PO}, F15{PR}, F53, G8, I23M{PD}, I83M, J61M, J93, J93{SC}, K73M, L33, M39M, etc.

Bullock: (American Golden Russet) Small to medium, roundish-conic fruit; skin attractive, pale yellow, more or less overspread and splashed with thin russet; flesh slightly tinged with yellow, crisp, very tender, juicy, with an agreeable rich, spicy, mildly subacid flavor; quality excellent for dessert or cider; season October to January. Tree vigorous, upright. Originated in Burlington County, New Jersey prior to 1817. BEACH; I49G, I49G{SC}, L27M, M22

Calville Blanc d'Hiver:<sup>1</sup> (White Winter Calville) Fruit medium to large; flat-round, with uneven ribs terminating in unequal ridges at the base; skin pale green with white dots, turning golden yellow in storage; flesh tender, sweet, juicy, aromatic, with a delicate spicy flavor; very high in vitamin C. Tree weak-growing; bears irregularly; requires a warm, sunny location. The classic dessert apple of France; first recorded in 1627; still served for dessert in the finest Paris restaurants. A53{PR}, A91, A91{SC}, E84{OR}, F88G, G65M, H65, I49M, J93{SC}, LI, L1{ES}, M11M{PR}, M22, N24M

Canada Red: (Red Canada) Medium to large, roundish fruit; skin largely overspread with a deep red blush, indistinctly striped with darker red; flesh whitish, crisp, juicy, aromatic, rich, agreeably subacid but becoming too mild toward the end of the season; quality very good; season November to March. Tree moderately vigorous, upright. Probably originated in New England prior to 1822. BEACH; E84{OR}, L12, M11M{PR}, N38M{SC}

Canada Reinette: Medium to large, roundish-conic fruit; skin yellow, sometimes blushed, marked with dots or patches of russet; flesh tinged with yellow, firm, moderately tender, coarse, not crisp, juicy, subacid; quality very good; season early winter to March or April. Tree moderately vigorous, spreading. Origin unknown; recorded in France as early as 1771. BEACH; A91{SC}, F88G, G79M{DW}, I49G{SC}

Christmas Pink:<sup>5</sup> Medium to large, round fruit. Translucent skin. Firm pink flesh, becoming watermelon-red in storage with pockets of deeper colored "water core" that enhance the sweetness. Ripens in November, but needs a few weeks in storage to mellow, becoming pleasantly tart-sweet by Thanksgiving and quite sweet at Christmas. Excellent sliced in fruit salads or for cooking. Discovered in the abandoned orchard of Albert F. Etter. Christmas Pink is a registered trademark of Greenmantle Nursery. FISHMAN; E84{OR}

Claygate Pearmain: Medium-large, oblong-conical fruit; skin dull yellowish-green, slightly covered with grayed-orange blush and light-gray russet; flesh whitish tinged slightly green, crisp, juicy, aromatic, with a rich almost nutty flavor; season December to March. Small, compact tree; very suitable for a small garden; vigorous, upright-spreading; very productive. Originated in Claygate, Surrey, England. Introduced about 1823. SANDERS, SIMMONS 1978; A91{SC}, C27T{SC}, F88G, G65M, L12, M11M{PR}, 081

Connell Red: (Connell Fireside) Large, slightly conic fruit; skin dark-red, smooth, glossy; flesh creamy white, juicy, firm, tender, crisp, mildly acid; quality high; ships and stores well until April and May. Tree very hardy; very productive. Bud mutation of Fireside. Originated in Dunn County, Wisconsin. BROOKS 1972; 474, A74{Wfj}, A91{SC}, C27T{SC}, F53, G4, G16, I49G, I97{PR}, L27M, L70, L70{DW}

Cornish Gilliflower: Fruit medium-large; oblong to oblong-conical; skin deep yellow-green, blushed and streaked dull-red; flesh pale yellow, very firm, very juicy, with a clove-like perfume, flavor sweet and rich; quality excellent; season December to May. Tree moderately vigorous, very spreading; a tip-bearer. Discovered in a cottage garden near Truro, England about 1800. SANDERS, SIMMONS 1978; A91, A91{SC}, C27T{SC}, E84{OR}, F88G, J93{SC}, L12, M11M{PR}, M22, 081

Court Pendu Plat: (Wise Apple) Fruit medium-sized; round, very flattened at base and apex; skin greenish-yellow, covered with orange-red blush and slight russet; flesh creamy-white, very firm, fairly juicy, aromatic; flavor rich, with a good balance of acid and sugar; season December to April. Tree small, weak-growing, upright-spreading; productive; blooms late. An ancient apple; widely planted in Tudor times. SANDERS, SIMMONS 1978; A91{SC}, C27T{SC}, C30M, E84{OR}, J93{SC}, LI, L12, M11M{PR}, M22, 081, R83

Criterion: Medium to large, long conical fruit, resembles Red Delicious; skin light greenish-yellow, often blushed with rose, very attractive; flesh firm, mild in flavor, quality very good; ripens in October, stores very well. Tree vigorous and productive. A chance seedling found near Parker, Washington in 1968. A53{PR}, A91{SC}, C27T{SC}, E631{PR}, G66, H65, H89M, I61M{SC}, /75, M11M{PR}

D'Arcy Spice: Medium-sized, oblong fruit; skin pale greenish-yellow, covered with fine gray russet; flesh white tinged with green, firm, juicy, richly aromatic, with a sweet yet acid, spicy flavor; quality very good; in season from November to April. Requires a hot, dry summer to develop a spicy flavor. Tree of weak and slow growth, moderately productive, tends toward biennial bearing. Originated in England. Introduced about 1850. SANDERS, SIMMONS 1978; M22, 081

Enterprise:<sup>4</sup> (Co-op 30) High quality apple with multiple disease resistance. Medium to large, roundish-ovate fruit, resembles McIntosh; skin greenish-yellow, highly blushed with bright red; flesh creamy-white, crisp, breaking, moderately acid. Immune to scab; highly resistant to fire blight and rust; moderately tolerant to powdery mildew. Introduced in 1993. A5, 49, A39, A53{PR}, B53, B74, B83, C34, C76M, D37, F53, /75, J61M, J93, L33, etc.

Esopus Spitzenberg: Medium to large, roundish-ovate fruit; skin predominantly covered by bright red, attractive, slightly russet; flesh tinged with yellow, crisp, juicy, very aromatic; flavor excellent, a perfect balance of sweetness and acidity; season November to February. Tree moderately vigorous, spreading; moderately productive. Originated at Esopus, New York in the late 18th century. Thomas Jefferson's favorite apple. BEACH; A53{PR}, D37, E84, F88G, G79M{DW}, H65, J93, J93{SC}, LI, L1{ES}, L73{£D}, M11M{PR}, M99G, N38M{SC}

Fireside: Large, conical fruit; skin medium-red, lightly striped with darker red; flesh yellowish, medium coarse, moderately tender and juicy, mildly subacid; dessert quality very good; season of use November to April; resembles Red Delicious. Tree vigorous; hardy; resistant to cedar rust. BROOKS 1972; 474, A91, A91{SC}, C27T{SC}, C58, E97, F53, G4, I49G, I49G{DW}, L12, L27M, L70, M11M{PR}

Fountain Pippin:<sup>2</sup> (Hollywood Pippin) Flattened globe-shaped fruit, green russet with a pinkish blush; flesh slightly yellow, firm; flavor tart-sweet, very rich. Ripens extremely late, December through February in southern California; keeps well. Not totally

deciduous but fruits regularly. Originated as a seedling in Hollywood, California. D57{OR}

Freiherr von Berlepsch: (Baron de Berlepsch) Ananas Reinette x Ribston Pippin. Connoisseur German apple with an intense pineapple flavor. Crisp and juicy; sweet but with plenty of acidity. Reportedly high in Vitamin C. Also used for cooking. First raised circa 1880 by Diedrich Uhlhorn at Grevenbroich, Rhineland. Still valued and grown commercially near the Rhine and in Belgium. MORGAN,.; C76M

Gilpin: (Carthouse) Small to medium, roundish-oblong fruit; skin very smooth and attractive, richly streaked with deep red and yellow; flesh yellow, firm, juicy and rich, becoming tender and sprightly in the spring. Highly regarded for cider in the 1800's. Tree vigorous, spreading, very hardy and productive. A91{SC}, C27T{SC}, L12, M11M{PR}, N38M{SC}

Golden Nugget: (Golden Nugget Spur) Small, broadly-conical fruit; skin predominantly yellow, streaked and splashed with bright orange, sometimes netted and spotted with russet; flesh fine-grained, crisp, very sweet and rich, quality excellent; keeps well. Tree moderately vigorous. Golden Russet x Cox's Orange Pippin. Originated in Kentville, Nova Scotia, Canada. BROOKS 1972; A82, A91, A91{SC}, C30M, C58, F88G, L12, M11M{PR}

Golden Russet: Medium-sized, roundish fruit; usually almost entirely covered with yellow or golden russet; flesh yellowish, moderately crisp, tender, juicy, rich, agreeably subacid, quality excellent for dessert, culinary use and cider; season December to April or later. Tree vigorous, spreading; hardy; productive. Very old cultivar of unknown origin. BEACH; A39, A53{PR}, A91, A91{SC}, C58, E84{OR}, F53, F88G, G79M{DW}, H65, I49G, J93{SC}, LI, L27M, M11M{PR}, N20, etc.

GoldRush: (Co-op 38) Multiple disease resistant apple with outstanding flavor. Medium-sized fruit, resembles Golden Delicious; flesh pale yellow, very firm, juicy, breaking; flavor very rich, well-balanced. Makes a very yellow sauce and crisp slices for baking. Keeps exceptionally well. Immune to scab; moderately resistant to fire blight; moderately tolerant to powdery mildew; susceptible to scab. A5,49, A53{PR}, B53, B74, C30M, C76M, D69, F53, /75, J93, K36, L33, M11M{PR}

Granny Smith: Medium-sized, roundish fruit; skin grass-green, with conspicuous whitish or pinkish dots; flesh white tinged green, firm, crisp, juicy, tart; season January to April; keeps well, becoming sweeter in storage. Suitable for dessert, cooking and sauces; also excellent for juicing and drying. Tree vigorous, upright-spreading; spur-bearing; requires a long season. Originated in New South Wales, Australia prior to 1868. SANDERS, SIMMONS 1978; A53{PR}, C75M, C89{PR}, D2{PR}, E4, G17M{DF}, J83, J83{DW}, L1{ES}, M13M{£D}, M39M, M63M{DF}, M63M{PR}, M99G

Grenadine:<sup>5</sup> One of the darkest-colored of all the red-fleshed apples. Dull grayish-transparent skin. Deep purplish-red flesh. Needs at least several weeks in storage to mellow into an enjoyable dessert apple. Suitable for all culinary purposes especially cider blends and cranberry-like sauces. Requires a very long growing season to ripen properly. Developed by Albert Etter. Grenadine is a registered trademark of Greenmantle Nursery. FISHMAN; E84{OR}

Hadlock Reinette: Fruit medium-sized; skin blushed bronze-orange, resembling Cox's Orange Pippin; flesh firm, fine-grained, moderately subacid, quality good for dessert or cider; keeps late in cold storage; resembles Golden Russet. Tree very hardy. Originated in Hammond, New York. Introduced in 1964 by Fred L. Ashworth, Heuvelton, New York. BROOKS 1972; C27T{SC}, L27M

Hidden Rose:<sup>5</sup> (Airlie Red Flesh) Unique red-fleshed apple with outstanding flavor. Medium-sized, conical fruit; attractive yellow skin with whitish dots; firm, crisp, juicy, striking rose-red flesh; excellent, rich, sweet-tart flavor. Ripens in early October, keeps

very well. Attractive red flowers. Discovered by Bill Schultz near Airlie, Benton County, Oregon. E87,149M, I49P, I66T, J93{OR}, L12, M11M{PR}

Hudson's Golden Gem: Large to very large, conical fruit; skin covered with dull-yellow russet, very attractive; stem very long; flesh juicy, crisp, subacid, excellent for dessert; hangs on the tree a long time; ripens in late October. Tree vigorous, spreading; productive; beais annually. Originated in Oregon by A.D. Hudson. Introduced in 1931. BROOKS 1972; A53{PR}, A91, A91{SC}, B27M{SC}, E84{OR}, I49M, J61M, J93{SC}, LI, L12, M11M{PR}, M22, M99G

Hunt Russet: Medium-sized, roundish-oblate fruit; skin golden russet, with patches of smooth bright red on the cheek; flesh whitish tinged with yellow, tender, juicy, subacid, sprightly becoming mild; quality excellent; season January to April or later. Tree moderately vigorous, upright-spreading; moderately productive. Probably originated in New England in the latter part of the 17th century. BEACH; B27M{SC}, C27T{SC}, L12, M11M{PR}, N38M{SC}

Hyde King: Large to very large, globular fruit; skin glos<sup>^</sup>, pale green or yellow, thinly blushed with red; flesh whitish, very firm and crisp, rather coarse, juicy, mildly subacid, somewhat aromatic; quality good for dessert and culinary uses; season December to April or May. Tree vigorous; annually productive. Originated prior to 1892. BEACH; E84, L12, M11M{PR}

Idared: Medium to large, roundish fruit; skin nearly solid red over yellow, attractive; flesh white, crisp, fine-grained, juicy, mild, aromatic; excellent dessert and cooking quality; keeps exceptionally well, with flavor improving in storage. Tree vigorous, upright; very productive; somewhat susceptible to fireblight. Jonathan x Wagener. BROOKS 1972; A5, A53{PR}, A91, A91{SC}, B83, C34, C95M{PR}, F53, F88G, J93{SC}, M39M, M63M{PR}, M99G

Jonagold: Large, roundish-oblong fruit; skin yellow, highly blushed and striped with red, attractive; flesh cream-colored, firm, slightly coarse, crisp, juicy, subacid; quality excellent for dessert or cooking, rated A plus in customer taste tests of Applesource; ripens with Golden Delicious; keeps well in storage up to 6 months. Tree vigorous, spreading; productive; spur-bearing. BROOKS 1972; A5, A53{PR}, B83, C34, D37, F53, G44M{PR}, H65, H89M{ES}, J61M, J93, J93{SC}, L73{PD}, M63M{PR}, M99G, etc.

Keepsake: Medium-sized, often irregular fruit; skin predominantly red; flesh light yellow, very crisp, juicy, with a semi-tart, strongly aromatic flavor. Very hard when picked in mid-October, but mellow with age and attains its peak eating quality between December and February. Stores through April. Tree resists fire blight and cedar rust. A53{PR}, A74, A82, A91, A91{SC}, C27T{SC}, E84{OR}, F53, I49G, I49G{DW}, J89M, L27M

King David: Small to medium, round fruit; skin medium pale green, overspread with deep dark-red, very attractive; flesh yellow, firm, crisp, juicy, sprightly, briskly subacid; quality very good for dessert, pies and cider; ripens in early November, keeps very well. Tree vigorous; hardy; precocious; productive. Probably Jonathan x Arkansas Black. Found in a fence row in Washington County, Arkansas in 1893. A39, A53{PR}, A91, A91{SC}, B27M{SC}, E84{OR}, F43M, G8, G65M, I49G, LI, L12, M11M{PR}, N33

King of the Pippins: Medium-sized, oblong-conical fruit; skin yellow blushed with brownish-orange, smooth; flesh pale yellow, firm, dry, highly aromatic; flavor very rich, distinctive, vinous, somewhat almond-like; quality excellent; in season November to March. Tree moderately vigorous, upright, very productive. Susceptible to canker. Originated in England. Introduced in 1899. SANDERS, SIMMONS 1978; C30M, F88G, M22, 081

Knobbed Russet: Unusual looking English apple. Green and yellow, sometimes streaked with scarlet on the side exposed to the sun; surface uneven, overlaid with rough grey and black russet, with welts and knobs worthy of its name. Crisp, rich, sugary, highly flavored flesh of excellent quality. First brought to notice in 1819 in

Sussex. C27T{SC}, E84{OR}, F88G, L12, M11M{PR}, M22, N24M

Lady: (Christmas Apple, Pomme d'Api) Small to very small, oblate fruit; skin glossy, clear pale yellow, with a sharply outlined deep red blush, very attractive; flesh white, crisp, juicy, pleasantly aromatic, mildly subacid becoming nearly sweet; quality good to very good; season December to *Ma*. Widely used for decorations, especially for Christmas wreaths. Originated in France prior to 1628. BEACH; A53{PR}, A91, A91{SC}, B27M{SC}, B53, E13G{PR}, E84, F88G, G79M{DW}, H65, LI, L1{ES}, L12, M22, N40{PR}, etc.

Lady Sweet: (Ladies Sweeting) Medium to large, roundish-conic fruit; skin greenish-yellow, overspread with bright red splashed with carmine; flesh whitish, crisp, tender, juicy, decidedly sweet, with a distinct and pleasant aroma; quality excellent for dessert or culinary uses; season November to April or May. Tree moderately vigorous, upright; precocious; annually yields heavy crops. Originated near Newburg, Nov York prior to 1845. BEACH; A53{PR}, G65M, L12, M11M{PR}

Limberrwig: (Old Limberrwig) Medium-sized, roundish fruit; skin greenish-yellow, largely blushed with deep red, attractive; flesh yellowish, hard, moderately fine-grained, not very crisp, juicy, aromatic, subacid; quality good; season January to March or April. Tree very productive. An old southern apple. BEACH; B27M{SC}, C30M, E84{OR}, G8, G65M, L12, M11M{PR}, M22

Malinda: Fruit medium to large; sharply conical, somewhat angular and ribbed; skin rich yellow, blushed with dull red; flesh yellowish-white, firm, juicy, very mildly subacid with a sweet after-taste; quality fair; season late winter. Tree very hardy; comes into bearing late. Originated in Orange County, Vermont; introduced into Minnesota about 1860. BEACH; A91{SC}, C27T{SC}, I49G, I49G{SC}, N38M{SC}

Mammoth Black Twig: (Arkansaw, Arkansas) Medium to large, roundish fruit; skin yellow, largely overspread with dull deep-red, obscurely striped with darker red; flesh tinged with yellow, very firm, crisp, moderately juicy, subacid; quality good; season December to *M*<sup>^</sup>. Tree large, vigorous, upright-spreading. Originated near Rhea Mills, Arkansas, from seed planted about 1833. BEACH; A39, B27M{SC}, G8, LI

Margil: Small to medium-sized fruit; flat-round to conical; skin greenish-yellow to yellow, highly blushed and streaked with deep-red; flesh creamy-white, firm, rather dry, sweet, rich, aromatic; ripens in January, will keep hard and crisp well into *M*<sup>S</sup>. Tree very small and weak-growing, well suited to small gardens. An old English cultivar, known prior to 1750. SANDERS, SIMMONS 1978; A53{PR}, A91, A91{SC}, C27T{SC}, F88G, J93{SC}, L12, M11M{PR}, M22, 081

Mutsu: (Crispin) Medium to large, oblong fruit; skin golden yellow, blushed with orange on the exposed cheek; flesh creamy-white, firm, coarse but crisp, juicy, mildly subacid; dessert quality excellent, rated A plus in customer taste tests of Applesource, also good for culinary use; season late October to early April. Tree large, spreading, very vigorous; annually produces heavy crops. BROOKS 1972; A53{PR}, A91, B83, C76M, E4, E84, F88G, J93, I68{ES}, L1{ES}, L73{PD}, M39M, M59M, M99G

Northern Spy: Large, roundish-conical fruit; skin thin, tender, pale yellow highly blushed with pinkish-red; flesh yellowish, very tender, crisp, very juicy, sprightly, aromatic, subacid; quality excellent for dessert or culinary uses; season November to March or April. Tree large, vigorous, upright; very hardy; blooms very late. Originated in East Bloomfield, New York about 1800. BEACH; A5, A53{PR}, A91{SC}, C76M, E84, F42M{PR}, F53, F88G, H65, J16, J93{SC}, M39M, M99G, N38M{SC}

Northwestern Greening: Medium to large, roundish fruit; skin somewhat waxy, clear pale yellow or greenish; flesh tinged with yellow, moderately crisp and firm, juicy, slightly aromatic, mildly

subacid; quality good for dessert or cooking; keeps fairly well. Tree vigorous, upright; hardy; yields good crops biennially. Originated in Waupaca County, Wisconsin. Introduced in 1872. BEACH; A5, A74, B4, B27M{SC}, B53, B83, C27T{SC}, C58, F53, F88G, G4, G16, G16{DW}, I49G{DW}, L70, M11M{PR}, etc.

Orin: Medium-large, oblong to conic fruit; skin yellow-green, highly russet, slightly blushed with red-orange; flesh firm, juicy, highly aromatic, sweet; very fruity, pineapple-like flavor; quality excellent. Ripens 1 week before Fuji, keeps very well. Requires a long season to mature. Upright, moderately vigorous tree. Originated in Fukushima Prefecture, Japan. BROOKS 1997; A53IPR, B27M{SC}, C27T{SC}, C30M, F91T{SC}, H90M{SC}, I61M{SC}, J93, J93{SC}

Paradise Sweet: (Winter Sweet Paradise) Large, roundish-oblate fruit; skin dull-green, blushed with brownish-red; flesh fine-grained, juicy, sweet but sprightly; season early to mid-winter. Tree vigorous, upright; productive, but slow to come into bearing. Probably originated in Pennsylvania, prior to 1845. BEACH; B53, C30M, I49G{SC}

Peck's Pleasant: Medium to large, oblate fruit; skin bright waxen yellow, blushed with orange-red; flesh yellowish, crisp, juicy, pleasantly subacid, aromatic; quality very good; season October to March. Tree moderately vigorous, upright-spreading; moderately productive. Originated in Rhode Island prior to 1832. BEACH; A91{SC}, C27T{SC}, L12, M11M{PR}, N38M{SC}, Q30{SC}

Pink Lady: (Cripps Pink) Medium to large, oblong fruit, prominently ribbed; skin yellowish, highly blushed with pinkish-red, very attractive; flesh white, resists browning, very dense; distinctive, subacid flavor; quality good to very good. Ripens 10 days after Granny Smith, keeps very well. Very vigorous tree. Originated in Western Australia by John Cripps. A5, A53{PR}, A88M, B53M, C76M, I61M{SC}, LI, N20

Pink Parfait:<sup>5</sup> Pink-fleshed apple of extraordinary quality. Large, roundish fruit; skin greenish, striped with red. Brilliant pink flesh, marbled with swirls of white; exceptional crystalline texture. Rich, complex aromatic flavor, somewhat reminiscent of cherries. Ripens very late. Apparently only adapted to certain favorable locations in California and Oregon. Discovered in the abandoned orchard of Albert Etter. Pink Parfait is a registered trademark of Greenmantle Nursery. FISHMAN; E84{OR}

Prairie Spy: Large, roundish fruit; skin yellow, blushed with attractive red; flesh creamy-white, crisp, juicy, subacid; dessert and culinary quality high; keeps until spring, with flavor developing and improving while in storage; resembles Northern Spy. Tree vigorous; very hardy; annually productive, but slow to bear; somewhat resistant to scab and cedar rust. BROOKS 1972; A91, A91{SC}, C27T{SC}, D76, E97, F53, F88G, G4, G16, G16{DW}, I49G, I49G{DW}, L27M, L70

Ralls Janet: (Ralls, Genet) Medium to large, roundish-oblate fruit; skin yellow or greenish, blushed and mottled with pinkish-red; flesh whitish, firm, crisp, juicy, subacid to sweet, aromatic, pleasant; dessert quality very good; keeps well; season December to May. Tree moderately vigorous, upright-spreading; productive; blooms late. Originated in Virginia prior to 1831. BEACH; A91{SC}, B27M{SC}, C27T{SC}, E84, G65M, J93{SC}, N38M{SC}

Raven: Small to medium-sized fruit; skin of ripe fruit in full sun dark burgundy, almost black; flesh about 50% watercore, yielding a good volume of bright red juice which has excellent flavor and balance and does not turn brown. Also makes very good dried fruit, cider, and a fine wine. Local selection from Waldron Island, Washington. C27T{SC}, F88G

Reinette Ananas: (Ananas Reinette) Medium-sized, tallish round fruit; skin lemon-yellow blushed with brownish-red; flesh yellowish-white, firm, fairly soft, sweet, juicy, aromatic, with a sub-acid slightly pineapple-like flavor; ripens very late, keeps well. Tree very

small and upright, suitable for small gardens, fairly productive. First recorded in 1821. SIMMONS 1978; F88G, M22

Reinette Simirenko: Fruit medium to large, sometimes obscurely ribbed; skin waxy, yellowish-green, usually blushed with pale pink on the side exposed to the sun; flesh tender, very juicy, vinous, subacid, with a very pleasant spicy after-taste; ripens in December and keeps well into spring. Tree moderately vigorous, pyramidal; precocious; high yielding. Originated in the Ukraine in the 19th century; first described in France in 1895. A91{SC}, B27M{SC}, C27T{SC}, C30M, D69, J93{SC}, M22

Ross Nonpareil: (French Pippin) Fruit small to medium; flat-round to short conical; skin pale yellow, blushed and streaked with deep-orange and red, almost covered with russet; flesh creamy-white, crisp, sweet, aromatic, with a pronounced anise-like flavor; season December to February. Tree moderately vigorous, upright; productive. Originated in Ireland; introduced into England in 1819. SANDERS, SIMMONS 1978; A91{SC}, E84{OR}, M11M{PR}, O81, Q30{SC}

Roxbury Russet: Medium-large, oblate fruit; skin largely covered with greenish to yellowish-brown russet; flesh tinged with yellow, firm, somewhat coarse, juicy, sprightly subacid; dessert quality good to very good, excellent for juice and cider; season December to May. Tree large, vigorous, roundish-spreading; productive, but tends toward biennial bearing. Originated in Roxbury, Massachusetts, early in the 17th century. BEACH; A39, A53{PR}, B27M{SC}, E84{OR}, F88G, G65M, G79M{DW}, J93{SC}, LI, L12, M11M{PR}, M22, N24M

Royal Limbertwig: Large, round to somewhat conical fruit; skin red, with greenish-yellow stripes and white dots; flesh firm and crisp, aromatic, juicy; ripens late, keeps well. A good all purpose apple. Apple butter made from this cultivar will have an intense aroma when taken from the container. G65M

Rubaiyat:<sup>5</sup> Relatively small fruit; ruby-red inside and out. Intense aromatic flavor, both very sweet and very tart. Texture excellent, simultaneously crisp, melting and juicy. Ripens in late October. Keeps well. One of the finest flavored of the apple cultivars developed by Albert Etter. Probably a hybrid of Surprise and a crab apple. Rubaiyat is a registered trademark of Greenmantle Nursery. FISHMAN; E84{OR}

Salome: Medium-sized, roundish-oblate fruit; skin pale yellow blushed with pinkish-red, obscurely striped with carmine; flesh tinged with yellow, firm, crisp, juicy, sprightly, subacid; quality good to very good; season November to March. Tree large, vigorous, upright; very hardy; precocious. Originated in Ottawa, Illinois about 1853. BEACH; J93{SC}, L12, M11M{PR}, N38M{SC}

Sandow: Medium to large, round-oblate fruit; skin yellow over-spread with dull scarlet; flesh yellowish, juicy, tender, crisp, slightly subacid, aromatic; quality very high; season mid-winter to later. Tree very upright; slightly more hardy than Northern Spy; susceptible to fireblight. Open-pollinated seedling of Northern Spy. Originated in Ottawa, Ontario, Canada. BROOKS 1972; C27T{SC}, C30M, C58, L27M

Stark: Medium to large, roundish fruit; skin yellow, blushed and mottled with red; flesh yellowish, very firm, juicy, sprightly, mildly subacid; dessert quality good, very good for baking and drying; season January to June. Originated in Ohio prior to 1867. Tree large, vigorous, upright-spreading; hardy; reliably productive. BEACH; C27T{SC}, D69, E84, N38M{SC}, O81

Stayman Winesap: Medium to large, roundish-conic fruit; skin greenish-yellow, highly blushed with dull-red; flesh slightly greenish, very firm, juicy, aromatic, sprightly, pleasantly subacid; quality very good; season December to M<sup>^</sup>. Tree moderately vigorous, spreading; precocious; annually bears heavy crops. Originated in Leavenworth, Kansas from seed of Winesap planted in 1866. BEACH; A53{PR}, A82, A91{SC}, C76M, E45, G65M, G72, LI, L1{ES}, M13M{PD}, M69M

Stone: (Stone Pippin) Medium to large, roundish fruit; skin pale yellow blushed with dark red, overspread with bluish bloom; flesh nearly white tinged with yellow, somewhat coarse, juicy, mildly subacid becoming nearly sweet; quality good to very good. Tree very hardy and productive. Brought from Bethel, Vermont into Potsdam, Nov York about 1836 by a Mr. Stone. BEACH; C27T{SC}, I49G, I49G{SC}, L27M, N24M, N38M{SC}

Sturmer Pippin: Medium-sized, round-conical fruit; skin greenish-yellow blushed with brown; flesh yellow, very firm, crisp, juicy, rich sub-acid; quality excellent; ripens in November, at its best the following M<sup>^</sup>. Requires a warm summer to ripen properly. Tree moderately vigorous, compact, productive. Originated in Suffolk, England, about 1827. SANDERS, SIMMONS 1978; F88G, F91T{SC}, M22, 081, Q30{SC}, R83

Surprise:<sup>5</sup> Small, clear green fruit; juicy, sprightly, creamy red flesh; ripens late, during October in central Viiginia. Was used in the breeding program of Albert F. Etter, and is one of the parents of his well-known cultivar Pink Pearl. First recorded in England in 1831. Brought to the United States by German immigrants in the 1840's. Probably originated in Russian Turkestan. FISHMAN; C27T{SC}, E23Z, L1{SC}, L12, M11M{PR}

Swaar: Medium to large, roundish-oblate fruit; skin yellow covered with dots and flecks of russet, often blushed with bronze; flesh yellowish, very firm, crisp, juicy, mildly subacid, aromatic, flavor rich; dessert quality excellent; season November to March or April. Moderately vigorous, spreading tree. Originated in Nov York prior to 1804. BEACH; A53{PR}, A91, A91{SC}, B27M{SC}, \*C27T{SC}, E23Z, E84, F88G, I49G{SC}, LI, L12, M11M{PR}, M22, M99G

Tydemans Late Orange: Fruit medium-sized, roundish to slightly conical; skin greenish-yellow, blushed with dull brownish-purple, covered with patches of brownish-grey russet; flesh creamy yellow, firm, crisp, sweet, subacid, aromatic, rich; quality excellent; season December to April. Tree vigorous, upright-spreading; productive. Originated at the East Mailing Research Station. SANDERS, SIMMONS 1978; B27M{SC}, C27T{SC}, C30M, E84{OR}, H90M{SC}, L12, M11M{PR}, M22, 081, R83

Vandevere: (Newtown Spitzenberg, Honey Grindstone) Medium-sized, roundish-oblate fruit; skin deep yellow, blushed and mottled with dull red, striped with carmine; flesh yellowish, crisp, tender, juicy, mildly subacid mingled with sweet, rich, aromatic; quality very good for dessert and cider; keeps until February or March. Tree vigorous, spreading. Originated in Newtown, Long Island, New York prior to 1817. BEACH; A91{SC}, C27T{SC}, E84, G65M, N38M{SC}

Virginia Gold: Medium-sized fruit; skin smooth, waxy, clear bright yellow blushed with pink; flesh creamy-white, crisp, juicy, mildly subacid; dessert quality very good, also excellent for sauce and pies; ripens very late, does not reach maximum quality and flavor unless held in cold storage until late January. Tree productive; tends toward biennial bearing. Newtown Pippin x Golden Delicious. A5, B27MISC, C27T{SC}, C30M, E84{OR}, G65M, L12, L21P, M11M{PR}

Von Zuccalmaglio's Reinette: Medium-sized, roundish fruit; skin golden-yellow, blushed with brownish-red, faintly striped with red, some russet, rough, sticky; flesh deep cream, crisp, juicy, fine-grained; flavor intensely subacid, reminiscent of pineapple, quince and wild strawberry. Very vigorous tree. Ananas Reinette hybrid. Originated in Rhineland, Germany, in 1878. MORGAN, J.; C27T{SC}, F88G, J93{SC}, L12, M11M{PR}

Waltana: Medium to large fruit; skin greenish-yellow, striped with red; flesh crisp, firm, juicy, subacid; quality excellent for dessert and all culinary purposes, including cider; ripens late October into November, stores until spring; hangs well on the tree. Tree vigorous; annually productive; requires a long growing season. Originated in Ettersburg, California ty Albert F. Etter. A91{SC}, C54, E84, LI, L12, M11M{PR}

White Pfirmain: (White Winter Pearmain) Medium to large, roundish-ovate fruit; skin slightly waxy, pale yellow lightly blushed with brownish-red; flesh slightly tinged with yellow, crisp, tender, juicy, mildly subacid, sprightly, very pleasantly aromatic; quality very good; season December to March. Tree vigorous, spreading. Originated in the Midwest prior to 1849. BEACH; A53{PR}, A91, A91{SC}, B93M, E23Z, E84, F88G, LI, L1{ES}, L12, M11M{PR}, N20

Willow Twig: (Willow) Medium to large, roundish-conic fruit; skin pale yellowish-green, mottled and blushed with red; flesh yellowish or greenish, very firm, coarse, crisp, juicy, sprightly, slightly aromatic; quality fair to good; season of use January to May. Tree large, vigorous, upright spreading; precocious; annually productive. An American apple of uncertain origin; first recorded in 1848. BEACH; C30M, G65M

Winter Banana: Medium to large, roundish-conic fruit; skin waxy, bright pale yellow blushed with dark pinkish-red, very attractive; flesh whitish tinged with pale yellow, tender, juicy, mildly subacid, distinctly aromatic; dessert quality good, too mild for culinary use; season mid-November to April. Tree medium-sized, vigorous, spreading; precocious; very productive. Originated in Adamsboro, Indiana about 1876. BEACH; A53{PR}, A91, A91{SC}, B53, D81M{P0}, E23Z, E84, F88G, H65, I68, LI, L12, M11M{PR}, M99G, N38M{SC}, etc.

Yates: Small fruit with bright-red, dotted skin; flesh creamy-white tinged with red, very firm, juicy, spicy, aromatic, tart; ripens late, keeps well in regular storage. Popular in the South for dessert, cider making and table decorations. Tree vigorous; very productive; semi-spur-bearing; a good pollinator. Originated in Georgia in 1813. A39, A91{SC}, C30M, E38M{DF}, E45, E84{OR}, E99M, F93, G8, G65M, I41P, I53M, K76, L21P

Yellow Bellflower: (Bishop's Pippin) Medium to large, roundish-oblong fruit; skin pale lemon-yellow, often blushed with brownish-red on the exposed side; flesh tinged with pale yellow, crisp, tender, juicy, aromatic; excellent for pie and sauce, dessert quality very good after being held in storage for a few months. Tree very vigorous, upright spreading; hardy; fairly productive. Originated in Burlington County, New Jersey prior to 1806. BEACH; A53{PR}, A91{SC}, B27M{SC}, C58, E84, F88G, G65M, LI, L1{ES}, L12, M11M{PR}, M22, M99G, N38M{SC}

Yellow Newtown Pippin: (Newton Pippin, Albemarle Pippin) Medium to large, roundish-oblate fruit; skin bright yellow, often blushed with pink; flesh yellowish, firm, crisp, tender, juicy, aromatic, subacid to tart; quality good for dessert and culinary uses; season February to May; keeps well. Tree large, vigorous, upright-spreading. Originated in Newtown, Long Island, New York early in the 18th century. George Washington's favorite apple. BEACH; A53{PR}, A91{SC}, D3M{PR}, D37, E4, E631{PR}, E84, G44M{PR}, G65M, H65, J93, K73M, LI, L1{ES}, M39M, etc.

YorkImperial: (York) Medium-sized, roundish-oblate fruit; skin yellow blushed with pinkish-red, indistinctly striped with carmine; flesh yellowish, crisp, moderately juicy, sprightly becoming mildly subacid or nearly sweet; quality good to very good; season January to April or May. Excellent for drying. Tree vigorous, upright-spreading; annually productive. Originated in York, Pennsylvania early in die 19th century. BEACH; A53{PR}, A91, A91{SC}, B27M{SC}, B53, C30M, E84{OR}, G47D{DF}, G65M, H65, I41P, M39M, M99G, N20, N38M{SC}, etc.

#### CODES FOR SPECIAL TYPES

1. High Vitamin C
2. Low-Chill
3. Genetic Dwarf
4. Multi-Disease Resistant
5. Pink/Red-Fleshed
6. Orange-Fleshed

## APRICOT {GR}

## ARMENIACA VULGARIS

## ORANGE-FLESHED

Alfred: Medium-sized fruit, 1 3/8 inches in diameter, roundish; skin bright orange, sometimes with a pinkish-red blush; flesh orange, moderately juicy, medium firm, fine-grained; flavor excellent, sweet and rich; freestone; ripens early. Tree moderately vigorous; hardy; a consistent producer; blooms early but has some resistance to late frost injury; self-fruitful. F91T{SC}, H90M{SC}, L12, 081, R77

Amateur:<sup>3</sup> Small, yellow fruit; very sweet. Has an edible kernel. Tree blooms over a long period with some fruits ripening as late as August. Adapted to Zones 5-8. An old cultivar that probably originated in Central Asia. F43M

Autumn Royal: Medium to large, somewhat flattened fruit; skin golden-orange, with a slight orange blush; flesh yellow, firm, juicy, slightly acid; ripens in late summer, being the only really late apricot known; may pitburn in hottest summers. Tree large; vigorous; produces regularly; consistently reverts to spring bearing after about 5 years. Bud mutation of Ro>al with the same quality. STEBBINS; A63, C54, 183M, LI

Bryan: (Dr. Bryan) Medium-sized, roundish fruit with very sweet flesh; freestone; ripens the end of M<sup>^</sup>. Medium-sized tree, a regular and productive bearer; susceptible to bacterial spot. Recommended for Central Texas and similar climates. Relatively low chilling requirements. Originated in Dublin, Texas. 168, M83

Chinese: (Mormon, Chinese Golden, Large Early Montgamet) Fruit small to medium; skin golden-orange, with a red blush, smooth in texture; flesh sweet, juicy, firm, quality fair; ripens unevenly. Tree medium-sized, spreading; hardy; precocious and heavy bearing; blooms late. Good selection for high elevation or late-frost areas. C54, H89M, H89M{DW}, 168, 199M, K88T, L47, M39M, mo

Curtis: Medium-sized, round fruit; skin rich golden with a bright blush, attractive; flesh medium firm, flavor excellent when fully ripe; ripens about July 27 at South Haven, Michigan; inclined to drop when mature. Tree tall, open, slow growing. Originated in Charlotte, Michigan. BROOKS 1972; B53, F91T{SC}, L12, M11M{PR}

Deatrick: Fruit large, averages 1 3/4 inches in diameter when a heavy crop is borne, round; skin golden, slightly blushed. Tree vigorous and productive; upright; hardy, setting crops under eastern climatic conditions; tends to be bushy. Originated in Franklin County, Pennsylvania. BROOKS 1972; A5, B53, F91T{SC}, M99G

Early Golden: Small to medium, roundish oval fruit; skin smooth, pale orange blushed with carmine; flesh yellow-orange, moderately juicy and sweet, of good flavor; freestone; ripens in early August. Tree vigorous; productive; haidy. Origin unknown. WICKSON; A63, A82, C54, E99M, G72, G72{DW}, H65, I9M, K28, K28{DW}, L47, L90, M69M, M83

Farmingdale: Fruit medium-sized, 1 1/2 inches in diameter, roundish; skin orange-yellow with a red blush; flesh orange, moderately juicy, flavor very good; freestone; ripens early. Tree very vigorous; productive; haidy. Originated in Geneva, New York by Robert C. Lamb. Introduced in 1965. BROOKS 1972; F91T{SC}, L12, 081, Q30{SC}, R77

Flora Gold: Small to medium-sized fruit with yellow skin; flesh of very good quality; ripens midseason to late. Tree relatively small but a heavy, consistent cropper; resistant to temperature fluctuations

during bloom. Originated in Modesto, California by Floyd Zaiger. A88M, I83M, N20

Garden Annie:<sup>1</sup> Fruit medium to large; skin gold to yellow-gold; flesh orange, juicy, firm; semi-freestone. Tree a genetic dwarf, grows 7 to 8 feet tall; self-fruitful; bears a good crop in its 3rd year; lower chilling requirement than Royal. C54, 168, 76S{ES}, L47

Gold Kist:<sup>2</sup> Medium to large fruit; skin yellow with a red blush, has slight tendency to crack; colors 2 to 4 weeks before ripening; flesh orange, firm, flavor mild; quality very good; freestone; ripens early, or 4 to 5 weeks before Royal. Tree large, upright; vigorous; a regular and heavy bearer. Low chilling requirement; highly recommended for warm winter areas. BROOKS 1972, STEBBINS; A63, A88M, D23M, 168, 168{ES}, I83M, N20

Goldcot: Fruit medium to large, nearly round; skin moderately thick, tough, golden colored; flesh medium-orange, firm, sprightly flavored; shipping quality good; ripens late. For fresh use and home processing. Tree exceptionally strong; very hardy; recommended for areas with a cold, humid climate. BROOKS 1972; A5, B53, D76, D76{DW}, E97, E97{DW}, F53, G16, H49, L12, L33{DW}, M11M{PR}, M39M, N20

Golden Amber: Fruit large, uniform, symmetrical; skin light orange; flesh yellow, firm, melting, slightly acid; quality excellent; ripens mid-June to mid-July; resists pitburn well. Tree large, upright; hardy; productive; has extended period of bloom, resulting in less loss due to frost injury. A88M, C54, 168

Goldenglo:<sup>1</sup> Medium-sized fruit; skin golden, blushed with red; flavor mildly sweet; quality high. Tree a genetic dwarf, growing only 4 to 6 feet tall; bears the second year after planting; ornamental. Ideal tub or container plant for the home garden, terrace, balcony, conservatory or sun room. L33, 097

Harcot:<sup>3</sup> Medium to large, ovate fruit; skin orange with a slight red blush, attractive; flesh orange, firm, smooth, usually freestone; flavor and texture very good; ripens very early. Sweet, edible kernels. Tree cold hardy; vigorous and productive with good resistance to perennial canker, bacterial spot and brown rot. A5, A88M, A91, C54, C76M, E91M, F53, 149M, L12, M11M{PR}, N20

Harlayne: Medium-sized, oblong fruit; skin orange, 20% blushed with red; very firm, fine-textured orange flesh of good flavor; ripens 4 days after Harogem. Vigorous, spreading, consistently productive tree; disease resistant. Recommended for fresh market and processing. Named in honor of apricot breeder Richard E.C. Layne. A5, C45M, D69, F53, F91T{SC}, L12, M11M{PR}

Harogem: Fruit small to medium; skin glos<sup>^</sup>, orange with a bright-red blush, exceptionally attractive and highly colored; flesh orange, very firm, flavor and texture good; freestone; ripens mid to late season; keeps very well at room temperature and in cold storage. Tree cold hardy; consistently productive. Resistant to perennial canker and brown rot. A5, F53, F91T{SC}, 149M, M11M{PR}, M22, M99G

Hemskirke: Fairly large, conical fruit, somewhat flattened; skin pale yellow with red patches; flesh golden yellow, fine-grained, very sweet and rich; stone medium-sized; kernel bitter; ripens in early August. A hardy tree of stocky growth; fairly productive. SIMMONS 1978; F91T{SC}, K88T, R77

Henderson: Fruit large, roundish; skin yellow, with a crimson blush; flesh yellow, thick, slightly fibrous, sweet; semi-clingstone; ripens in late August. Quality good fresh; very good for sauce, canning and jelly. Tree strong; vigorous; very haidy. Originated in Geneva, New York by Georgs W. Henderson. Introduced in 1935. BROOKS 1972; D76

Hungarian Rose: Medium to large, sheep-nosed fruit; skin bright yellow, attractive; flesh orange; flavor sweet; excellent to eat fresh, can or dry; ripens mid-July in Zone 6; susceptible to sunburn. Tree self-fruitful, relatively productive. Well known, dependable cultivar. Originated in Hungary. L33, M83, N33



Katy:<sup>2</sup> Large, uniform fruit, slightly flattened on the sides; skin yellow-orange, blushed with red on the side exposed to the sun; flesh deep yellow, firm, freestone; ripens early. Tree strong; vigorous; upright; withstands varying temperatures during blooming season without dropping blossoms. Low chilling requirement. STEBBINS; A63, A88M, B71M, C54, D81M{PO}, G49, H4 J68, N20

Luizet: Medium to large, roundish fruit; skin bright yellow, with a carmine flush and darker dots; flesh deep yellow, firm, rich and sweet; ripens in late July. Vigorous, hardy tree; produces fairly good crops. First raised in France, about 1838. SIMMONS 1978; F91T{SC}, 071M

Moongold: Fruit medium-sized, oblate; skin orange, rather tough; flesh orange-yellow, medium juicy, sweet to slightly subacid, very pleasant, quality very good; fine for dessert and processing; freestone; ripens in late July, before Sungold. Tree vigorous; spreading; intended for the Minnesota climate; self-unfruitful, but pollinated by Sungold. BROOKS 1972; A74{DW}, B15M, D65, D76, E97, H65, H89M, H90, L70

Moorpark: Large, round, sometimes slightly flattened fruit; skin maize-yellow with brownish-red flush and darker spots; flesh yellow-orange, firm, juicy, sweet, rich; stone large, free; quality excellent; sometimes one side of the fruit ripens before the other. Long considered the standard of excellence among apricots. Originated in England. Introduced about 1760. SIMMONS 1978; A82, B53, B73M, B73M{DW}, D65{DW}, E99M, G72, G72{DW}, H65, H90, 19M, K28, N33

Morden 604: Fruit large; skin golden-yellow; flesh thick, deep orange, moderately firm, of very fine texture; flavor sweet, pleasing; excellent as dessert, preserves or jam; ripens mid-August. Tree upright, spreading, rounded; vigorous; haidy. Originated in Morden, Manitoba, Canada. BROOKS 1972; H85

Newcastle: (Early Newcastle) Small to medium-sized fruit; round, with spherical pit; skin lemon yellow; flesh coarse and soft in texture, flavor good; ripens early. Tree large and vigorous; a regular and heavy bearer; needs relatively little winter chill; very subject to brown rot and bacterial gummosis. Originated in Newcastle, California. Introduced in 1881. STEBBINS, WICKSON; I68, Q93

Patterson: Reliable commercial cultivar, widely planted in California's San Joaquin Valley. Very firm, medium-sized fruit; ripens about 1 week before Royal. Suitable for canning, drying or fresh use. Holds its shape and texture very well after canning. Moderately vigorous, spreading tree; productive. A9, B71M, D81M{PO}, E4, K73M, K88T, N20

Pêche de Nancy: (Ffeach Apricot) Very large, round fruit; skin pinkish-orange with a deep red blush; flesh deep yellow, soft, juicy, very rich, flavor good; ripens the end of August. Tree vigorous, fairly productive. Recommended for small gardens because it takes heavy pruning better than others. Thought to be the parent of Moorpark. SIMMONS 1978; T49M{SC}

Perfection: Fruit large, oval, blocky; skin pebbled, light yellow-orange, not blushed; flesh bright orange, firm, quality fair; ripens about 1 week after Wenatchee. Tree vigorous; hardy; blooms early; self-unfruitful. Preferred for commercial planting in Washington state. Parent of many modern cultivars. BROOKS 1972; B83, B93M, C41M, E99M, H89M, K88T, M39M, N46

Precious:<sup>3</sup> Orange fruit with soft, sweet and very juicy flesh. The kernel has a sweet almond-like flavor. Largely self-fruitful, its seedlings appear to be close to the parent in fruiting characteristics. Original tree is estimated to be over 100 years old. Still produces excellent crops despite very cold winters, late frosts, and spring temperature fluctuations that would kill most apricot trees. F91T{SC}, N24M

Puget Gold: (Copeland) Medium-sized, roundish ovate fruit; skin clear yellow blushed with red-orange; flesh deep yellow-orange, firm, sweet; quality good; ripens in early August. Tree moderate to

low in vigor, spreading; said to be a natural semi-dwarf. Sets and sizes fruit in cool, frosty spring weather where most other cultivars fail. Discovered in Anacortes, Washington by Jean Copeland. Introduced by Washington State University. B74, B83, C34, C54, E87, H89M, H89M{DW}, I49M, 174, J61M, LI, N20

Ram Roc: Large to very large fruit; flesh orange, exceedingly juicy, with a very rich flavor resembling that of Moorpark, of excellent quality. Rated one of the finest-flavored of all apricots. Tree relatively unproductive. Introduced into California from Iran in the 1960's by P.A. Mariani. MARIANI1994; T49M{SC}

Redsweet:<sup>4</sup> Medium-sized, oval fruit, almost completely covered with a deep red blush; freestone. Quality and flavor similar to Royal, but fruit has a tendency to split in some climates. Tree a very heavy producer. Flowers pink, somewhat small. Bud mutation of Royal, discovered in 1954. Introduced in 1961 by Armstrong Nurseries. BROOKS 1972; T49M{SC}

Reliable:<sup>3</sup> Fruit orange, blushed with red; texture dry and firm, maintaining firmness on the tree for about 10 days after attaining full color; dessert quality fair; ships well; not suitable for canning. Kernel sweet and edible. Tree upright-spreading, vigorous; hardy; bears regularly and heavily. BROOKS 1972; F91T{SC}

Riland: Large, flat-oval fruit; skin light yellowish with a bright, deep red blush over one-half or more; flesh slightly coarse, firm, melting; flavor rich, plum-like, somewhat acid; freestone; keeps well; ripens early, and tends to ripen from pit out. Young trees have vigorous growth and an upright form. BROOKS 1972, STEBBINS; B83, F91T{SC}

Rival: Very large, oval fruit; skin light orange, blushed on the exposed side; flesh deep orange, very firm, low in acid, flavor mild; good for canning but skin turns brown; ripens early to midseason. Tree very vigorous, leggy; productive; requires an early-blooming pollinizer; more resistant to cold than Wenatchee. STEBBINS; B53, B83, C41M, D81{PO}, F91T{SC}, H49, H89M, M39M, N46

Routier's Peach: An old California variety worthy of greater cultivation. Very distinctive shape, compressed on the sides and with a recurved suture, somewhat reminiscent of a mango. Rich, melting flavor. Reportedly does well in interior valleys. Originated in Sacramento, California by J. Routier. MARIANI 1994; U7G{SC}

Royal: (Blenheim) Medium to large, oval fruit; skin pale yellow, dotted purplish-red on the side exposed to the sun; flesh yellow-orange, firm, very juicy, delicately aromatic; stone round, free; kernel bitter; ripens early to mid-season. Tree very productive; low chilling requirement. Principal commercial cultivar in the United States. A9, A88M, D23M, D81M{PO}, E4, G49, G92{DF}, I83M, K73M, LI, L47, L97G{DF}, M39M

Skaha: Large to very large, oval fruit; skin well colored with a reddish cheek; flesh orange, meaty, flavor very good when fully ripe; ripens in midseason; resembles Perfection but of better quality. Originated at the Summerland Experiment Station, British Columbia, Canada. F91T{SC}, I61M{SC}, K88T

Sparks Mammoth: Rare, choice heirloom suitable only for collections. Very large, oblong fruit; light golden in color; extremely sweet and flavorful. Susceptible to cracking. A very shy bearer. Originated in Ventura County, California. Recently rediscovered by members of the California Rare Fruit Growers. MARIANI 1994; T49M{SC}

Sundrop: Fruit medium-sized, roundish to slightly oval; skin bright-orange with a slight red blush, attractive; flesh orange, medium firm, juicy, smooth, flavor sweet and mild; semi-freestone; ripens about 2 days before Alfred. Tree productive; a reliable bearer, bearing heavily in clusters. F91T{SC}, I61M{SC}

Sungold: Round to slightly elongated fruit; skin medium thin, tender, gold with an orange blush; flesh clear orange, tender, medium juicy; flavor very mild and sweet, quality very good; fine for dessert and processing; freestone; ripens in early August. Tree

vigorous; exceptionally hardy; self-unfruitful but pollinated by Moongold. BROOKS 1972; *A74{DW}*, A91, B15M, D65, D76, E97, H65, *H89M*, H90, L70

Sweet Pit:<sup>3</sup> Sweet-kernel type, also called *alpricots*. Fruit large, 2 1/4 to 2 1/2 inches; skin deep-orange; flesh sweet; preferred for jam, drying and roadside markets. Kernel 1/2 to 3/4 inch long, quite sweet, easy to shell, long lasting. Tree self-fertile; winter hardy to Zone 5; can be maintained at 15 feet tall. Still grown commercially in British Columbia at the northern limits of apricot culture. D76, E97, L74

Sweetheart:<sup>3</sup> Produces both fruit and sweet, almond-like kernels. Medium-sized, freestone fruit; juicy and firm, with a sweet, sprightly flavor; quality good for fresh eating, also very good for canning and drying; ripens mid-July in Zone 6. Tree hardy; productive; grows 15 to 20 feet tall; usually bears fruit in its third year. L33, L33{DW}

Tilton: Fruit large to very large, symmetrical; skin orange; flesh yellow-orange, fair flavor when eaten fresh; freestone; ripens evenly, and 7 to 10 days later than Royal; widely used for drying. Tree vigorous; prolific and regular bearer; high chilling requirement. A9, A63, A88M, *B71M*, B83, D81{PO}, D81M{PO}, I23M{PD}, I99M, *K37M*, L47, M39M, M83

V510915:<sup>3</sup> Medium to large, oval fruit, cracks if weather is wet; quality and flavor excellent; ripens a week later than Sundrop. Kernel plump and sweet. Tree a consistent producer; handy. One of the best of the *alpricots*. Sibling of V60031. E91M

V60031:<sup>3</sup> Dual purpose apricot. Produces both a fine quality fruit and an excellent nut. Medium-sized nut with a very good flavor, fills well. Tree hardy and productive. Seedling of Reliable. E91M

Victoria: (Wilson Delicious) Fruit large; skin golden-orange blushed with red; flesh firm, golden-orange; flavor good, rich and distinctive; ripens in early July in Zones 5 and 6. Good flesh, dry, canned or frozen. Tree productive; hardy; blooms late. Originated in Hannibal, Missouri by H.J. Jenner. Introduced in 1948. BROOKS 1972; L33, L33{DW}

Wenatchee: (Wenatchee Moorpark) Fruit large, oval, flattened; skin and flesh orange-yellow; suffers from uneven halves and uneven ripening; texture and quality fair; ripens mid-season. Tree a heavy, annual bearer; adapted to Northwest climate conditions. Originated in Wenatchee; Washington. A88M, B53, B83, C54, *H89M*, *H89M{DW}*, I99M, M39M, N20

Westcot: Medium to large, roundish fruit; skin yellow-orange with a reddish blush; flesh orange, fine-textured, juicy, freestone. Dessert quality very good, especially for a hardy apricot; also holds its shape after cooking. Tree vigorous and productive, has great bud hardiness. Originated in Morden, Manitoba, Canada. Introduced in 1982. A65, A91, H85, J89M, K64, N24M

#### WHITE-FLESHED

Afghanistan: Medium-sized, oval fruit; skin whitish with a red blush, very smooth; flesh white, rich, juicy, very sweet, too soft and tender for commercial use; flavor and quality excellent; one of the best dessert cultivars. Originated in Summerland, British Columbia, Canada from seeds brought from Teheran, Iran in 1957. T49M{SC}

Canada Light: Medium-sized, oval to oblong fruit; pale yellow skin; creamy-white flesh, light orange near the pit, soft, juicy, very sweet, richly flavored; excellent quality. Highly ornamental tree with spectacular sprays of perfumed, pinkish blossoms. Healthy, vigorous tree, somewhat of a shy bearer. Apparently has a high chilling requirement. MARIANI1994; T49M{SC}

Moniqui: Fruit very large, about twice the size of others; skin light cream blushed with bronze-red, velvety, very attractive; flesh juicy, tender, sweet, very low in acid, becomes mushy when fully ripe; quality good fresh or for preserves, very good for drying; ripens in June. Tree large, vigorous; reported to succeed in many different

climatic regions of Spain. Requires 800 to 900 hours of chilling. RUCK; A88M, C54, 071M

Suphkany: Small, glossy oval fruit; flesh soft, juicy, sweet. Somewhat susceptible to cracking. Not as flavorful as some other white-fleshed varieties. A fairly reliable producer in California. May require less chill than other Asian strains. Introduced into the United States from Central Asia. MARIANI 1994; T49M{SC}

Turkish White: Small, white-fleshed fruit; very sweet but nicely balanced by some acidity, flavor excellent. Susceptible to shot hole fungus, *Coryneum* blight and sunburn. Tree relatively unproductive. Introduced into the United States from Iran in the 1960's. MARIANI 1994; T49M{SC}

#### CODES FOR SPECIAL TYPES

1. Genetic Dwarf
2. Low-Chill
3. Sweet-Pit (*Alpricots*)
4. Red-Skinned

## ASIAN PEAR {GR}

PYRUS PYRIFOLIA

PYRUS USSURIENSIS

#### RED-SKINNED

Huhoot Li: Medium-sized, roundish fruit; skin highly blushed with red over a yellow ground color, smooth; flesh firm, crisp, juicy; ripens in early October. Tree cold-hardy, productive. N24M

Tarusa Gimson: (Tamared) An attractive Asian pear with a pronounced red or orange blush. Ripens later than other cultivars to spread the season. Crisp when first ripe, it eventually develops a smoother texture, more like a European pear. Vigorous tree with attractive, red-hued leaves when young. Excellent commercial potential and a fine garden fruit tree. LI

#### YELLOW/BROWN-SKINNED

A-Ri-Rang: (Don Bae, Koian Giant) Very large round fruit, average weight over 1 pound; skin dark brown, russet; flesh very juicy, crisp, sweet, sugar content 14.5%, flavor excellent; ripens late; can be stored in non-refrigerated air cooler into late March. Tree upright-spreading; precocious; productive. A39, A53{PR}, A91, B74, C27T{SC}, C30M, I49M, *I49P*, 174, J61M, J93, J93{SC}, M99G, N24M

Chojuro: Medium-sized fruit; skin greenish-brown to brown, russet; flesh white, mildly sweet, somewhat bland, core somewhat sour, aroma and flavor distinctive; texture firm, crisp, somewhat coarse and pulpy, some stone cells; quality good; ripens in mid-season. Tree medium-sized, spreading; vigorous; very productive; requires a pollinator for best production. Introduced about 1895. GRIGGS; A39, A91{SC}, C34, E84, E87, E99M, J61M, J93, LI, L12, L90, N24M

Daisui Li: Large to very large fruit, weight 12 to 16 ounces; skin medium green to light green, smooth; flesh white, firm, somewhat coarse, crisp, tender, juicy, subacid to sweet, aroma distinct; ripens the first 3 weeks of September; good shipping and keeping qualities. Tree medium to large, moderately vigorous; a regular and productive bearer; blooms early, usually in the third week of March. Kikusui x Tsu Li. Originated at Davis, California by Ben Iwakiri. E4

Doitsu: Small, variably shaped fruit; skin coarse, tough, predominantly light brown; flesh white, sweet, mild; texture firm, crisp, juicy, pulpy, coarse and slightly granular; quality fair; ripens in mid to late August. Tree small to medium, open, spreading; moderately productive. GRIGGS; F91T{SC}, I61M{SC}

Hamese: Medium-sized fruit with yellow skin; very sweet and crisp, flavor superior; ripens very early, around mid-August, just before Shinsui. Vigorous tree that produces large crops. The top rated Asian pear in tests at the Mount Vernon Research Station in Washington state. J61M

Hosui: (Much Water) Medium to large, round fruit; skin greenish-brown, russet, medium tough; flesh white to off-white, firm and crisp, fine-textured, very sweet and juicy, quality excellent; ripens in July and August, harvested through November. Tree medium-sized, spreading, very vigorous; productive, requires cross-pollination. Developed in Japan. Introduced in 1972. A5, A88M, B83, D34M{PR}, E4, E87, E99M, F43M, G37, I83M, LI, M11M{PR}, M39M, N20, N33, N40{PR}, etc.

Ichiban Nashi: Small to medium-sized fruit; skin light yellow, russet; flesh yellowish-white, soft, juicy, sweet, tender and crisp, quality good; ripens extremely early, late June to early July, harvested through August. Tree moderately vigorous; productive, bears on spurs; pollinated by Chojuro, Kosui, Hosui and Nijisseiki. B74, C34, E4, E23Z, J61M, N20

Ishiiwase: Medium to large fruit; skin greenish-brown to yellowish-brown, russet; flesh white with a faint yellow cast, juicy, faintly sweet; core sour; texture firm, relatively tough, crisp, juicy, relatively few stone cells, quality fair to good; ripens early; resembles Chojuro. Tree large, very vigorous; moderately productive; tends to drop fruit when temperatures are hot. GRIGGS; A88M, E99M, N20

Japanese Golden Russet: (Taihe) Medium-sized, attractive fruit; skin dark brown, russet; flesh juicy and sweet; ripens in late September. Among the favorites at the Oregon State University test orchards. GJ7{OR}, L12

Kikusui: Medium to large fruit; skin yellowish-green, thick and tough, slightly bitter; flesh white, sweet, mild, with a trace of tartness, aroma faint but distinct; texture firm, tender, crisp, juicy; quality good to very good; ripens in midseason. Tree vigorous, spreading; very productive. Originated in Tokyo, Japan. Introduced in 1927. GRIGGS; A63, A88M, A91{SC}, C54, E4, E87, G57{OR}, I68, J93{SC}, N20, N24M

Kosui: (Good Water) Small to medium-sized fruit; skin light green to golden-bronze, partially russet; flesh white, crisp and tender, very juicy, exceptionally sweet, flavor mellow, quality excellent; ripens in early August, harvested through September. Tree vigorous; moderately productive. Recognized in Japan as the highest quality commercial cultivar. B83, C34, D37, E4, G17, I49P, I66T, J93, J93{SC}, M11M{PR}

Meigetsu: Medium to large-sized fruit; smooth, russet skin. Sweet white flesh with a refined, perfumed and delicate flavor. Ripens in mid-September. Stores well. Vigorous, very productive, spreading tree. Apparently resistant to fireblight. Older Japanese cultivar. Name translates as "Bright Moon" or "Full Moon". A39, D28J, J93{SC}

Mishirasu: Relatively new cultivar from Japan. Very large, oval fruit with brown russet skin, resembles a European pear; very crisp and juicy, flavor excellent; ripens in mid to late September, just after Shinko. J61M

Niitaka: Fruit very large; skin brown to golden-bronze, with brown russeting, attractive; flesh white tinted with yellow, coarse, crisp and juicy, somewhat mild but sweetens with storage, quality good; ripens in early October, keeps for several months. Tree very upright, somewhat weak growing; highly productive; not a good pollinator. A5, A39, A91, A91{SC}, D34M{PR}, E4, E99M, GJ7{OR}, I61M{SC}, I68, J93, J93{SC}, LI, N24M

Nijisseiki: (Twentieth Century, Er Shi Shinge) Fruit round to oblong; skin greenish-yellow, thin, tender, smooth; flesh white, sweet, mild, refreshing, slightly tart; core slightly sour; texture firm, tender, crisp, very juicy, somewhat coarse and pulpy; ripens in

midseason. Tree moderately vigorous; productive. Most widely grown Asian pear worldwide. Introduced in 1898. GRIGGS; A5, A91, A91{SC}, E4, E84, E87, G37, G49, I6S{ES}, I83M, LI, M11M{PR}, M39M, M63M{PR}, N33, N40{PR}, etc.

Okusankichi: (Bansankichi, Nihon Nashi) Medium to large, turbinate fruit; skin tannish-green to tan, tough, relatively thick, russet, somewhat bitter; flesh dull white, mildly tart, refreshing, flavor improves in storage; texture firm, crisp, juicy, relatively few stone cells; quality fair to good; ripens late; stores very well. Tree relatively large, spreading; very vigorous and productive. GRIGGS; E4, I68, N24M

Olympic: Large, Korean pear, 3/4 pound or more in weight; skin brown-green, russet; flesh very juicy, somewhat coarse, of very good flavor, sugar content 13 to 15%; season mid-September to early October in the Sacramento Valley, excellent storage life. Tree cold hardy; blossoms with Nijisseiki, Hosui and Bartlett. A5, D37, E4

Seigyoku: Large, oblong fruit; skin light greenish-yellow, usually free of russet, attractive; flesh white, sweet, mild, slightly tart; texture firm, tender, crisp, juicy, somewhat coarse and pulpy, relatively few stone cells; quality very good; ripens early. Tree moderately vigorous; very productive. Seedling of Nijisseiki x Chojuro. GRIGGS; A88M, E4, GJ7{OR}, N20, N24M

Seuri: Fruit large to very large, round to oval; skin greenish-brown, with partial yellow-orange russeting; flesh pure-white, crisp and juicy, fine-grained, aromatic, with a distinctive flavor, quality good; ripens in mid-September, harvested through October. Well liked in taste tests. Tree very vigorous, extremely strong; heavy bearing; blooms early. D28J, E4, E99M, G57{OR}, I49M, I49P, I66T, I74, J61M, J93{SC}, LI, N24M

Shin Li: Medium to large, round-oblate fruit; skin light green to yellowish-green when ripe; flesh white, firm but tender, fine-grained, crisp, sweet and juicy, quality excellent; ripens with Daisui Li; good keeping and shipping characteristics. Tree medium to large, vigorous; productive; blooms early, with Daisui Li, with less thinning needed. Kikusui x Tsu Li. Originated at Davis, California by BenLwakiri. A39, E4, E87, I49P

Shinko: Medium to large, oval fruit; skin golden-bronze, russet, thick; flesh white, crisp and juicy, very sweet, flavor rich and distinct; ripens in September, stores until March or April; retains its rich flavor through storage. Rated by Sunset magazine as the best tasting in their test kitchens. Tree precocious; bears very heavy crops regularly; chilling requirement 500 hours. Popular in Korean markets. A39, A88M, B74, C54, D34M{PR}, E4, E87, I49M, I68, I83M, J61M, J93, J93{SC}, LI, M11M{PR}, N20, N40{PR}, etc.

Shinseihō: Fruit very large for an Asian pear; skin light yellow-green; flesh sweet, with a hint of tartness. Flavor improves after being stored for a couple of weeks. Ripens in mid to late September. Pollinate with Bartlett or any other Asian pear. A91, A91{SC}, GJ7{OR}, J93{SC}, N24M

Shinseiki: (New Century) Fruit medium to large, round to oblong; skin yellow, thick, smooth; flesh white, sweet, mild; texture firm, tender, crisp, juicy, stone cells more numerous than in Nijisseiki fruit; quality good to excellent; ripens early. Tree moderately vigorous, spreading; productive. Seedling of Nijisseiki x Chojuro. Introduced in 1945. GRIGGS; A5, A39, A91, A91{SC}, E4, E84, E87, G37, G49, I83M, J93{SC}, LI, M11M{PR}, M39M, M63M{PR}, N40{PR}, etc.

Shinsui: (New Water) Small to medium-sized fruit; rounded, somewhat flattened; skin green with brown to orange-brown russet; flesh white, crisp but tender, very sweet and juicy, moderate number of stone cells; quality excellent for its season. Tree an excellent pollinator. Recognized in Japan as the highest quality early maturing cultivar. Constitutes 30% of new plantings in Japan's major nashi growing district. A63, A91, E4, G49, H90M{SC}, I68, J61M, J93, J93{SC}, N20, N24M, 081

Singo: Very large fruit, average weight up to 1 pound; skin yellowish-tan, attractive; flesh white, tender, juicy; ripens in mid-season, from late September to the first week in October. Tree vigorous, has a tendency to grow very upright; productive; good pollinator for A-Ri-Rang. In order to produce large fruit thinning is required. A91,A91{SC}

Tsu Li: (Tse Li) Ovate to pyriform fruit; skin light green to yellowish-green, slightly bitter; flesh white with a faint tint of yellow, sweet, refreshingly mild, aroma distinct, tender, crisp, juicy, somewhat coarse and pulpy. Tree large, upright, vigorous; requires cross-pollination for best results. An old and famous cultivar in the Shantung Province of northeastern China. GRIGGS; A63, A88M, C54, E4, E87, H4, H53M, I49M, I49P, I66T, 168, I83M, L12, N20, N24M, etc.

Ya Li: (Duck Pear) Medium to large, pear-shaped fruit; skin light greenish-yellow, smooth; flesh white, mildly sweet, slight trace of tartness, aroma distinctly fragrant; texture tender, crisp, juicy, slightly pulpy and coarse, relatively few stone cells. Tree large, upright; vigorous; requires cross-pollination. An old cultivar, commonly cultivated in northeastern China. GRIGGS; A63, A88M, C54, E4, E87, E99M, G37,I49M, I49P, 168,183M, J93{SC}, LI, N20, N40{PR}, etc.

Yakumo: Small to medium-sized fruit; round to oval, with a very short neck; skin bright yellow, smooth, glossy, unblemished; flesh white, fine-grained, crisp, very juicy, sweet; flavor very good, with a subtle melon-like aftertaste; ripens very early, will keep for months in cold storage. E87, J93{SC}, L12, N20

Yoinashi: Large fruit; skin yellow to yellow-orange, russet, medium thick; flesh white tinged with yellow, juicy, sweet, fine-grained, tender and crisp, quality excellent; ripens in August and September, harvested through January. Tree moderately vigorous to vigorous, fairly productive; pollinated by Hosui, Ichiban Nashi and Ya Li. E4, J61M, N20

Yongi: Large fruit; skin brown to golden brown, with large lenticels; flesh white to off-white, firm, crisp, sweet, aromatic, of good flavor, quality good to very good; ripens in August, harvested through December. Tree medium to large, fairly vigorous, upright-spreading; pollinated by Nijisseiki, Shinseiki and Chojuro. H90M{SC}, J61M

or more longer. Equally good for fresh eating, canning and freezing. C20Af{S}, DIT{S}, 053{S}

Conover's Colossal: {S} An very old cultivar, still unsurpassed for quality and earliness, being ready before most other types. Strong grower, producing thick, fleshy stalks. Has the advantage that male seedlings, which are better producers than females, are stockier and denser and more easily selected when planting out. Originated with Abmham Van Siclen of Long Island, Nov York. Introduced about 1873. HEXAMER; B49, N84, 053M, PIG, R0, R32, R83, S55

Dulce Verde: Sibling of Purple Hssion. Very large spears with typical green color. Sweet and tender, contains approximately 20% more sugar than common types. Also less stringy, the lower part of the spear even being useable. Mild, nutty flavor when cooked. Excellent eaten raw in salads or as crudites. Very vigorous plants, susceptible to asparagus rust. Developed by Brian L. Benson. B91, B91{S}

Early Giant Argenteuil: (D'Argenteuil Hative) An old traditional French cultivar, obtained by selection from seedlings of the Giant Dutch Purple. Hie shoots are notably thicker than those of the parent plant, the head is slightly pointed, and the scales with which it is covered are very closely set, overlapping each other. VILMORIN; B8{S}, G68{S}, P59M{S}

Franklim: (Limbras 126) Large, thick, very solid stalks; perfectly uniform in shape and size; tends to be somewhat hollow. Suitable for both green and white asparagus, but more commonly used as white asparagus. Very precocious and productive. Highly resistant to botrytis and rust. FEHFIR; B49{OR}, N84{S}, R32{S}, S55{S}, S61M{S}

Jacques Marionnet Pourpre:<sup>2</sup> New purple asparagus from France. Destined to capture the interest of home gardeners and specialty growers seeking a unique product. Dark-purple, medium-thick stalks; closely set tips which remain tight after harvesting. Medium early maturity. Very uniform. N84, Q11M{S}

Jersey Centennial: First hybrid introduced by the New Jersey asparagus breeding program. Large, tender bright-green spears with good quality and excellent appearance. Vigorous and highly productive plants, well adapted to the Northeast. Good rust resistance; increased tolerance to fusarium. Developed by Professor J. Howard Ellison of Rutgers University. Introduced in 1978. C61, G87, J82

Jersey Giant:<sup>1</sup> All-male type, producing only male plants which are more vigorous and productive than female plants. Since there are no female plants to produce seed, it also eliminates volunteer seedlings in the asparagus bed. Heavy producer of large, attractive, high quality spears with purple bracts and tight purple tips. Yields have consistently surpassed the Washington strains by greater than 300% in tests across the country. Fusarium and rust tolerant. Developed by Professor J. Howard Ellison of Rutgers University. AZ{S}, B15M, B75, C61, D11M, D11M{S}, E33, F70, F87, G3, G44, G82, H42, J2M, L91M{S}, M29{S}, etc.

Jersey King:<sup>1</sup> Hybrid all-male type. Large, thick, very tender spears of fine eating quality; green with purple bracts. Excellent for home gardeners and commercial growers. Vigorous plants give consistently high yields; highly tolerant to fusarium and rust diseases. The most widely adapted of the new cultivars developed at Rutgers University in New Jersey. Introduced in 1995. J47{S}, D69, F13, G6, G16, G44, H49{S}, 150, J20, K50{S}

Jersey Knight:<sup>1</sup> All-male hybrid type. Large, thick, flavorful spears. Vigorous, high yielding plant; tolerant to fusarium crown and root rot, highly resistant to rust. Widely adapted to most climates; does particularly well in heavy clay soils. Hardy to USDA Zone 5. Developed at Rutgers University by Professor J. Howard Ellison. A1{S}, A24, B58, B73M, C53, E24, E97, F87, G3, G43, G71, H49,I49M, 191, J2M, J61M, K66, L33, L91M{S}, M77, etc.

## ASPARAGUS {PL}

### ASPARAGUS OFFICINALIS

Apollo: Newer hybrid that is highly productive and disease tolerant, more so than U.C. 157. Medium-large, green spears with purplish-green tips and bud scales. One of the highest yielding cultivars grown in California. Produces both male and female plants. Developed by Brian L. Benson. B91, B91{S}

Atlas: High-yielding, disease resistant hybrid. Produces green spears that have very tight heads under warm to hot growing conditions during harvest time. Has outproduced other California and New Jersey cultivars in University trials. Developed by Brian L. Benson. B91,B91{S}

Barr's Mammoth: Early, very productive, and grows to a large size. Withstands extreme heat or cold, with less winter kill or "pencil grass" reported. Also tolerant of rust and fusarium. Originated with Crawford Barr, a prominent market gardener from Pennsylvania. At one time highly sought after in the Philadelphia markets, bringing the highest prices. HEXAMER; K71

Brock's Imperial: Vigorous hybrid, produces up to 30% larger crops than standard strains. Plump, bright green stalks with tight tips; very tender and fiber-free. Rust resistant and heat tolerant. Matures a week earlier than most, and harvest lasts up to 2 months

Larae: Gourmet quality French type widely used for the production of white asparagus. Not often grown in the United States because of the need for hand harvesting. Heavy producer of uniform, thick, high quality spears of exceptional flavor and tenderness. Adaptable to different soil types, from sandy to light cky. C92{S}, L89{S}, S95M{S}

Martha Washington: Large, crisp, uniform shoots produced in great abundance; tips firm, tightly folded and tender; harvest period extends for up to two months. Excellent for fresh use, canning and freezing. Rust resistant and tolerant to fusarium. A82, F20M, J83, M69M

Mary Washington: Long, straight shoots, very thick and heavy; color rich dark green, slightly tinged purple at the tightly folded tips. Uniform, heavy yields. Holds a tight bud longer than most. Somewhat rust resistant. Standard fresh market and home garden cultivar. B73M, B75, C44{S}, C61, E3, E24{S}, E97, G16, G16{S}, G43, G44, K71, M46, M46{S}

Palmetto: Nineteenth Century heirloom originating in the Southern states. Large, very uniform shoots, nearly free of culls. In its region of origin it is somewhat earlier than Conover's Colossal. Relatively tolerant of rust. Also does well in the North. HEXAMER; U8D

Precoce d'Argenteuil: (Early Argenteuil) An old traditional cultivar, highly esteemed by European gourmets for its large, white stalks and attractive rose-colored scales. Produces a crop early in the season. Well suited to forcing under plastic or glass. E63D{S}, F44{S}, K49M{S}, N84, N84{S}, Q11M{S}, S17{S}

Purple Risson: Very large, burgundy spears with creamy white interiors. Tender and sweet, contains about 20% more sugar than other types. Also less stringy, the whole spear being useable. Mild, nutty flavor when cooked. Excellent eaten raw in salads or as crudites. Very vigorous plants, susceptible to asparagus rust. Developed by Brian L. Benson from Violetto di Albenga, an Italian heirloom grown for more than 300 years. B91, B91{S}, C84, E97, F87, G43, G44, H49, H65, J9M{S}, J63M, L33

Roberts: (Mary Washington Roberts Strain) Very large, rich green spears; tender with a low fiber content; holds quality a long time, never becoming stringy or woody. Heavy yielding, vigorous, resistant to rust. Popular with home gardeners and commercial canners. B58, D76, E97, M37M

Ruhm von Braunschweig: (Glory of Braunschweig) Widely used in Austria and Germany for the production of white shoots. Well-developed, pointed, white spears; tightly closed. Somewhat inclined to turn violet. Medium late to late harvests. High yielding, of long life. Very old heirloom. FEHER; N81{S}

Sweet Purple:<sup>2</sup> Extra large, attractive, deep-burgundy spears; slightly more uniform than Purple Passion. Sweet, mild, nutty flavor; 20% higher sugar content. More tender and less stringy than green asparagus, the whole spear being usable. Excellent raw or cooked. Turns green when cooked. High yielding plants; susceptible to rust and lodging. Developed by Stan Cutter from the same stock as Purple Passion. C84, D74B{S}, D76, I18M, 191, K71, M46, M77

U.C. 72: Large, dark green spears with fairly compact, purple-tinged heads. Highly productive and tolerant to fusarium wilt and rust. Mary Washington type developed by the University of California, Davis. Highly recommended for home gardeners in California. A1{S}, B75M{S}, C54, DIT{S}, G13M{S}, G93M{S}, H85M{S}, K5M{S}, M29{S}, N16{S}

U.C. 157: Deep green, smooth, cylindrical spears with tight tips and scales; uniform in color and size. Vigorous plants come into production early; have a tendency to produce 3 to 5 spears at one time. Some resistance to fusarium root rot. Widely adapted to California and the major asparagus growing areas. A1{S}, A87M{S}, B75, C54, G7JM{S}, G23, G93M, G93M{S}, H61{S}, J99G, K66, M29{S}

Viking: (Vineland No. 35) An improved strain of Mary Washington. Vigorous growing plants with heavier stalks and a greater tendency to resist rust. Large spears and tight heads. Recommended for home garden or market. Developed in Vineland, Ontario, Canada. C85M, C85M{S}, D27{S}, E38{S}, H44, J83, L70

Waltham: (Waltham Washington) The result of 20 years of breeding by the Waltham, Massachusetts Field Station. Will produce approximately 25% more asparagus than ordinary cultivars. Large, tender spears, uniform in both size and color; heads tighter than most. Buds hold tightly longer, providing an extended harvest period. Bred for increased rust resistance. C61, D76, E97

#### CODES FOR SPECIAL TYPES

1. All Male
2. Purple

## AVOCADO{GR}

### PERSEA AMERICANA

#### GUATEMALAN

The Guatemalan avocados are primarily winter and spring ripening. Skin varies from thin to very thick and is granular or gritty. The flesh is rich in flavor and relatively high in oil content. Grown in both Florida and California.

Anaheim: Large oval to elliptical fruit, weight 18 to 32 ounces; skin green, glossy, rough, thick; flesh of fair to good flavor, up to 22% oil, but inferior to Fuerte, Hass, and Nabal; seed medium to large. Tree slender, erect, tall; resistant to adverse weather, but cold-sensitive; bears regularly and prolifically, up to 220 pounds annually. Season June to August. MORTON 1987a, ROUNDS; G49

Edranol: Medium-sized, pyriform fruit, weight 10 to 12 ounces; skin green, thick, russets badly in interior areas; flavor excellent, quality high, oil content 22.5%; seed small; ripens from February to July at Vista. Tree vigorous, bears heavily, adapted to coastal areas of California. Originated in Vista, California. Introduced in 1932. BROOKS 1972, ROUNDS; Q93, S97M

Gwen:<sup>1</sup> Small to medium-sized, ovoid fruit, weight 7 to 12 ounces; skin medium dark-green, medium thick; flavor excellent, nutty, similar to Hass but richer; oil content 18%. Seed small to very small. Season very long, February to October. Tree small to medium, upright; produces consistently heavy crops; more cold-hardy than Hass. Introduced by the University of California, Riverside. A63, B58M, D23M, G49, H78, 183M

Hazzard: Medium-sized, pyriform fruit; weight 12 to 16 ounces; skin green, thin, rather rough, peels readily; flavor good to excellent, oil content 27.5%; seed small to medium; ripens from April to July. Slow growing tree, a dependable producer. Popular in Queensland, Australia where it ripens in July and August. Originated in Vista, California by A.G. Hazzard. Introduced in 1932. MORTON 1987a, ROUNDS; Q93

Linda: Round to oblong fruit; weight 16 to 48 ounces; skin purple, smooth, medium thick; flavor excellent, oil content 12%; seed small; season May to October. Shipping quality good. Introduced in 1914 by E.E. Knight at Yorba Linda, California from Antigua, Guatemala. ROUNDS; J22

Nabal: Medium to large, nearly round fruit; weight 16 to 24 ounces; skin dark-green, nearly smooth, thick, granular; flesh yellow, green near skin, of high quality; oil content 10 to 15%; seed small, tight. Season June to September in California; January and February in Florida. Tree strongly alternate-bearing. BROOKS 1972, MORTON 1987a; A63, B58M, G49, 183M

Pinkerton: Fruit of early crop roundish; late crop fruit pear-shaped with a neck; of medium size, 8 to 14 ounces; skin green, medium-leathery, pliable; flesh thick, up to 10% more than in Hass or Fuerte; smooth-textured, of good flavor, high in oil; of good quality but inferior to Hass and Fuerte; tends to darken in the latter part of the season; seed small. First crop, October or November; second crop, December or January. MORTON 1987a; *A63, B58M, B58M(SC), D23M, G49, I83M, Q93*

Queen:<sup>2</sup> Very large, pyriform fruit, weight 20 to 30 ounces; skin rough, medium-thick, color dull-purple; flavor fine; oil content 13.5%; seed small. Season July to August. Shipping quality good. Introduced to California in 1914 by E.E. Knight of Yorba Linda, from near Antigua, Guatemala. ROUNDS; *A63*

Reed: Medium to large, round fruit, 8 to 18 ounces; skin green, slightly rough, medium thick, pliable, peels easily; flesh cream-colored, smooth, buttery, firm, with a rich, faintly nutty flavor; oil content 18 to 20%; doesn't darken when cut; quality excellent; seed small to medium, tight. Season July to October in California. May remain on the tree for a relatively long time after reaching maturity. BROOKS 1972, MORTON 1987a; *A63, B58M, B58M(SC), D3M(PR), D23M, G49, I83M, Q93, S59*

Shepherd: Small to medium, pyriform fruit; weight 7 1/2 ounces; thick, green skin, peels easily; flavor excellent, quality high; oil content medium; keeping quality good. Spreading, high yielding tree, apparently resistant to frost. Seedling of Edranol that originated in Carpinteria, California. BROOKS 1972; *Q93*

Whitsell:<sup>1</sup> Medium-sized, pyriform fruit, weight 10 to 12 ounces; skin very dark-green, thick and rough; flavor very good, rich and spicy, oil content 18%; quality very high. Season February to August, hangs well on the tree. Tree compact, semi-dwarf, mature height 12 feet; precocious and high yielding; of average hardiness. Introduced by the University of California, Riverside. *A63, B58M, G49, I83M*

Wurtz:<sup>1</sup> (Little Cado) Fruit pear-shaped, small to medium, 8 to 12 ounces; skin green, medium thick; quality good, oil content 18%; seed large. Season May to September in California. Tree small and slow-growing, mature height 8 to 12 feet; distinctive weeping growth habit; bears moderately but regularly. Suited for planters, containers, patios, and greenhouse use. Originated in Encinitas, California by Roy Wurtz. Introduced in 1948. BROOKS 1972, MORTON 1987a; *A63, D23M, D23M(ES), G49, I74, Q93, S59*

#### GUATEMALAN X MEXICAN

Bacon: Ovoid fruit, weight 7 to 12 ounces; skin green, thin, smooth; flesh an unusually pale yellow-green; oil content high; flavor good; keeping quality good. Matures November to March in southern California. Tree upright, slender; consistent, a heavy producer; frost tolerance excellent. BROOKS 1972; *A63, B58M, £55M(SC), B93M, D3M(PR), D23M, G49, H78, I83M, Q93, S59*

Fuerte: Pear-shaped fruit; small to medium or a little larger, 8 to 16 ounces; skin green, slightly rough, thin, not adherent to flesh; flesh green near skin, oil content 12 to 17%; flavor excellent, buttery; seed medium to large. Vigorous, spreading tree with decidedly alternate year bearing habit. Ripens November to June in California. Often used for *cocktail avocados*. Natural hybrid originated at Atlixco, Mexico, elevation 6150 feet. Introduced into California in 1911. MORTON 1987a, ROUNDS VAN AKEN; *A63, B58M, B58M(SC), B93M, D23M, G49, H78, I74, I83M, J22, Q93*

Greengold: Medium-sized, oval to pyriform fruit, weight about 12 ounces; skin green; rich and nutty flavor; small seed. Ripens from February to M<sup>^</sup>, and has good handling quality. Upright, very productive tree; type A flowering; somewhat alternate bearing. Sharwil cross developed by R.A. Hamilton of the University of Hawaii. BROOKS 1997; *E8M, J22*

Hass:<sup>2</sup> Fruit pear-shaped to ovoid; size medium, 10 ounces; flesh creamy, flavor excellent, no fiber, oil content 18 to 25%; skin leathery, rough, dark-purple to black when ripe, thick; seed small, tight in cavity; keeping qualities excellent; good shipper; ripens in summer. Tree heavy bearing; starts bearing the second year. Leading commercial cultivar in California. BROOKS 1972, MORTON 1987a; *A41G, A63<sub>f</sub>, B58M, B58M(SC)<sub>f</sub>, B93M, D23M, G49, H78, I83M, J22, Q93*

Jim: (Jim Bacon) Small to medium-sized, pyriform to long-necked fruit; weight 8 to 10 ounces; skin green, medium thick; oil content 14%, quality and flavor very good; seed medium-sized, tight; ripens September to January, ships well. Tree vigorous, semi-upright; a precocious and regular bearer. Slightly more frost resistant seedling of Bacon. Originated in Buena Park, California by Jim Bacon. *A63, G49, I74*

Lula: Fruit pear-shaped, sometimes with a neck, medium-large; skin almost smooth; flesh pale to greenish-yellow, oil content 12 to 16%; seed large, tight. Season medium-late (mid-November and December). Tree tall; bears early and heavily; cold-resistant, successful in central and southern Florida where it was formerly the leading commercial cultivar. MORTON 1987a; *G58D(PR), N53M*

Rincon: Fruit pear-shaped, small to medium, 6 to 10 ounces; skin green fairly thin, smooth, leathery, peels well; flesh buttery, contains 15 to 26.5% oil; fibers in flesh near base turn black when fruit is cut; seed of medium size. Season January to April in California. Tree medium to small; weak growing; a consistent and heavy bearer. BROOKS 1972, MORTON 1987a; *Q93, S59, S97M*

Sharwil: Medium-sized fruit, weight 7 to 13 ounces; resembles Fuerte in shape but a little more oval; skin green, rather rough, fairly thin; flesh rich in flavor, of excellent quality; 15 to 26% oil content; seed small. Tree bears regularly but not heavily. Represents 18 to 20% of all avocados grown in New South Wales and Queensland, Australia. BROOKS 1972, MORTON 1987a; *E8M, J22, Q93, S59*

Winter Mexican: Oblong to pyriform fruit, weight 12 to 18 ounces; skin thick, leathery, dark green; seed medium, tight in cavity; season December and January. Tree very vigorous, bears heavily and regularly; very hardy; resistant to scab; susceptible to anthracnose. Originated in Palm Beach, Florida. BROOKS 1972; *G2M, I77G, N53M*

#### GUATEMALAN X WEST INDIAN

Most of these hybrids were developed in Florida, where they represent more than half of the more than 20 major and minor commercial cultivars grown there at this time. MORTON 1987a.

Booth 8: Fruit oblong-obovate, of medium size, 14 to 18 ounces; skin dull green, rough, fairly thick, brittle; flesh contains 6 to 12% oil; seed medium-large, tight. Season late (November to mid-December). Tree a very prolific bearer; class "B" for pollination purposes. Originated in Homestead, Florida by William Booth. Introduced in 1935. BROOKS 1972, MORTON 1987a; *S97M*

Choquette: Large, oval fruit, weight 30 to 40 ounces; skin glos% smooth, dark-green, slightly leathery; flesh thick, yellow, of very good quality, oil content 13%; seed medium, tight. Season January to March. Tree bears heavily in alternate years. Resistant to common avocado diseases. Recommended for home plantings in Florida. BROOKS 1972, MORTON 1987a, VAN AKEN [Re]; *G2M, N53M*

Hall: Large, pear-shaped fruit; skin bright-green, attractive, smooth, fairly thick; flesh deep-yellow, oil content 12 to 16%; seed medium-large, tight. Resembles Monroe in being excellent for the limited fancy-fruit market. Season November and December. Tree an alternate but heavy bearer; cold-haidy; subject to scab. Originated in Miami, Florida by Willis Hall. BROOKS 1972, MORTON 1987a; *N53M*

Kahaluu: Fruit obovate to pyriform; weight 12 to 18 ounces; skin smooth, green; flesh rich, oil content high, quality excellent; seed

small, tight in cavity; ripens November to January; resembles Fuerte. Tree large, upright, vigorous; bears annually, but only moderately. Originated in Kahaluu, North Kona, Hawaii. BROOKS 1972; J22

Monroe: Large fruit, weight 26 to 36 ounces; skin dark-green, glossy, attractive; flesh yellow, slightly green near skin, fiberless, oil content 10 to 30%; flavor nutty; season December and January. Tree a heavy bearer; class "B" for pollination purposes. Originated in Homestead, Florida by J.J.L. Phillips. Introduced in 1937. BROOKS 1972; N53M

#### MEXICAN

Mexican avocados have thin, tender skin that clings to the flesh. The flesh has a high oil content, up to 30%. Leaves have a pronounced anise-like scent and are favored for cooking. The tree is more cold-resistant than those of the other races or hybrids, thriving near Puebla, Mexico, at 500 feet above sea level. MORTON 1987a.

Brogdon:<sup>2</sup> Fruit somewhat pear-shaped, weight 7 to 20 ounces; skin purple, very thin; susceptible to handling; flesh yellow, buttery; ripens late July-August. Tree small to medium; vigor moderate; productivity low; very hardy; susceptible to anthracnose. Recommended for Central Florida. Originated in Winter Haven, Florida by Tom W. Brogdon. Introduced in 1951. BROOKS 1972; E29, G2M, I77G, N53M, N84

Mexicola:<sup>2</sup> Fruit very small, spherical to pyriform, weight 3 to 5 ounces; skin black, thin, smooth; flesh of excellent flavor; seed large. Season August to October. Bears early and regularly; very heat and cold-resistant. Much used as a parent in California breeding programs. Originated about 1910 at Pasadena, California; first propagated in 1912. MORTON 1987a, ROUNDS; A63, B58M, G17, I28, I74, I83M

Puebla:<sup>2</sup> Small to medium, obovoid fruit, weight 8 to 10 ounces; skin smooth, glossy, deep maroon-purple; flesh buttery in texture, of a rich nutty flavor, quality very good; seed medium to large, tight in the cavity; season December to February in southern California. Tree vigorous and hardy. Introduced in 1911 from Atlixco, Mexico. POPENOE, W. 1920; T49M{SC}

Stewart:<sup>2</sup> Medium-sized, pyriform fruit; skin slightly rough, a rich dark purple at maturity; flesh clear, bright, light yellow shading to green toward the skin, firm but melting, of excellent quality; ripens from early October to mid-December. Oil content about 8% by Oct 1 to about 16% in mid-November. Tree spreading, strong and vigorous, bears well. BROOKS 1972; B58M

Zutano: Fruit pyriform, medium-small, 8 to 12 ounces; skin very thin, light green, russets in inland areas, leathery; oil content medium, 15 to 22%; flavor fair to good; seed medium. Season October to February in southern California. Tree a consistent producer; harder than Fuerte and Hass; vigorous, upright grower. Originated in Fallbrook, California by W.L. Ruit. Introduced in 1941. BROOKS 1972; A63, B58M, B58M{SC}, B93M, D23M, G49, I83M

#### WEST INDIAN

West Indian avocados are generally summer and fall ripening. They have leathery, pliable, non-granular skin, and the flesh is low in oil. The leaves are not aromatic. Grown in Florida, the West Indies, Bahamas, Bermuda and the tropics of the Old World. Not grown in California.

Catalina: Large fruit, weight 18 to 26 ounces; smooth, glossy, light-green, thick skin; small seed, loose in cavity. Flowering Group A. A minor commercial variety in Florida. Originated in Cuba. BROOKS 1997; N53M

Pollock: Oblong to pear-shaped fruit; very large, up to 5 pounds; skin green, smooth, glossy; flesh firm, smooth and fine in texture, deep yellow changing to yellowish-green close to the skin, contains 3 to 5% oil; seed large, frequently loose in cavity. Season early, July to August or October. Shy-bearing. Fruit too large but of superior quality. Originated in Miami before 1896 on the property of H.S.

Pollock. MORION 1987a, POPENOE, W. 1920, ROUNDS; L33M{PR}, N53M

Russell: Large fruit, weight 24 to 36 ounces; pear-shaped at apex with long neck giving it a total length up to 13 inches; skin green, smooth, glossy, thin, leathery; flesh yellow, of excellent quality; seed small; cavity low in the broad end of the fruit, often a solid neck of flesh 5 to 6 inches long. Season August and September. E29, N53M, N84

Simmonds: Fruit large, oblong-oval to pyriform; skin smooth, light-green; flesh of good flavor, oil content 3 to 6%; seed of medium size, usually tight. Season mid-July to mid-September. Tree bears more regularly than Pollock but is less vigorous; sometimes sheds many of its fruits. MORTON 1987a; L33M{PR}, N53M

#### OTHERS

Fujikawa: Large, oval-pyriform fruit; green skin; green, smooth, melting flesh with high oil content, excellent flavor; small seed; ripens in spring. Vigorous, canopy shaped tree; highly productive. Local Hawaiian selection. J22

Yamagata: Large, oval-pyriform fruit with a curved neck; skin green, thick, gritty; flesh green, smooth, flavor nutty; seed medium sized; ripens over a long season, from March through July. Vigorous, upright tree with dark green foliage; bears heavily. Local Hawaiian selection. J22

#### CODES FOR SPECIAL TYPES

1. Dwarf
2. Purple-Skinned

## BABY VEGETABLES

See Beet, Bok Choy, Brussels Sprouts, Cabbage, Carrot, Cauliflower, Corn, Com Salad, Cucumber, Eggplant, Endive, Kidney Bean, Leek, Lettuce, Mustard, Okra, Onion, Pepper, Pumpkin, Spinach, Squash and T'imip in Part II: Major Crops.

## BAMBOO

See Bambusaceae in Part I: Botanical Listings.

## BANANA {PL}

MUSA X PARADISIACA

MUSA TROGLODYTARUM

#### DESSERT BANANAS

Included here are the sweet bananas which are primarily eaten out of hand and in various desserts, and also cultivars such as Iholena that are of dessert quality when fully ripe and are also very good cooked.

Brazilian: (Hawaiian Apple, Pome) Plants vigorous, sturdy, productive, semi-hardy; mature height 15 to 25 feet; able to stand wind slightly better than other tall cultivars. Medium bunches of small fruit, 4 to 6 inches long; skin medium-thick, yellow; flesh white or cream-colored with a pleasing, slightly acid apple-like flavor. Hardy in dry areas; tolerant to Panama wilt. Has a longer shelf-life compared to other cultivars. Introduced into Hawaii from Java about 1855. POPE; A28, A41G, D57, E55M, G2M, I53M, I77G, I83M, J81G, J81G{PR}, L43, N84

Cocos: (Highgate, Dwarf Gros Michel) A dwarf form of Bluefields whose mature height of 10 to 15 feet makes it more windproof and easier to site in a sheltered spot. Bunch size and fruit quality are

similar to Bluefields but the individual bananas are shorter, only 5 to 7 inches long. Ornamental plant with contrasting black and ivory coloration of the trunk. A41G, E55M, G2M, I77G, J81G

Colorado Blanco:<sup>3</sup> Vigorous plant, 20 to 25 feet tall; bunches 45 to 60 pounds in weight. Plump fruits, 5 to 7 inches long; flesh cream colored, firm, of a distinctive flavor. Resembles Jamaican Red and Green Red in growth habit, fruit characteristics and quality, but the color of the fruit skin is yellow. Productive as well as ornamental. Introduced into Hawaii from Puerto Rico in 1904. POPE; A28, A41G, I77G, J81G

Dwarf Brazilian:<sup>2</sup> (Santa Catarina Prata) Flavor, fruit and shelf life identical to Brazilian. Mature height 10 to 15 feet. Produces bunches of 25 to 50 pounds, 5 to 7 hands per bunch; 5 to 6 inch long fruit. Resistant to Panama wilt. Recommended as a replacement for Brazilian where height or heavy winds are a concern. A28, A41G, D57, E55M, E8M, I77G, J22, J81G, L43, N84

Dwarf Cavendish:<sup>2</sup> (Dwarf Chinese, Governor) Very sturdy plant, 6 to 8 feet tall with broad leaves on short, stout petioles; hardy and wind resistant; a reliable producer. Bunches weigh 40 to 90 pounds. Fruit of medium size, 6 to 8 inches long, of good quality, but thin-skinned and must be handled and shipped with care. Pulp cream-colored, rich and sweet. Found growing in southern China by early travelers to the Orient. MORTON 1987a, POPE; A79M, D57, E3, E29, E47M{DF}, E55M, G17, G99M{PR}, H4, I77G, I78, I83M, J81G, J81M

Dwarf Jamaican Red:<sup>12</sup> Dwarf form of the Jamaican Red whose mature height is only 7 to 8 feet, one-third the height of the standard cultivar. More easily protected from wind, more easily harvested, and quicker to bear. A41G, D57, E55M, G2M, H4, I77G, I83M, J22, J81G, L43, N84

Ebon M[usak: (Crocodile Fingers) One of the few bananas that ripens green. Must be watched very closely or the fruit will become overripe. Attractive, pointed fruits with excellent flavor, 4 to 6 inches long. Grows 10 to 12 feet tall. Recently introduced from Borneo. E55M, I77G, L43, N84

Enano Gigante:<sup>2</sup> (Mexican Dwarf) High-quality, sweet fruit of large size under ideal conditions. Semi-dwarf habit, shorter than Valery; heavy producer. Tender, often needing support when bearing; subject to cigar end rot in cold wet weather. Widely planted as a commercial banana in Mexico and Central America. A28, A41G, D57, H4, H78, I77G, I83M, J81G, M82

Giant Cavendish: Plant reaches 10 to 16 feet; the pseudostem is splashed with dark-brown, the bunch is long and cylindrical, and the fruits are larger than those of Dwarf Cavendish and not as delicate. Produces very large bunches of fruit of excellent quality. MORTON 1987a; E55M, I77G

Golden Aromatic: (Go San Heong) Medium-sized plant, grows 10 to 12 feet tall. Produces bunches that weigh 30 to 40 pounds, with 4 to 5 hands per bunch. Medium-sized fruit, 6 to 9 inches long; skin golden-yellow; flesh very sweet and aromatic, resembles Gros Michel. Has good shelf life. A41G, E55M, G2M, I77G

Golden Pillow: A moderately vigorous plant similar in appearance to Manzano but more slender in all its parts and more pink coloration in the leaf sheaths. Bunches take longer to appear and ripen. The fruit is short, fat, thin-skinned, very sweet and the flavor and texture are somewhat better than Manzano. Mature height is 12 to 16 feet; first harvest 18 to 24 months after planting. A28, A41G, G2M, I77G, J81G

Goldfinger: Large, heavy bunches with 8 to 12 hands; fruit thicker and more angular than the typical Cavendish type. Vigorous stalks, 8 to 13 feet tall. Resistant to all races of Panama disease, black Sigatoka, nematodes and crown rot. The only hybridized banana currently being grown commercially. Originated in La Lima, Honduras. BROOKS 1997; A41G, E55M, G49, I77G, I83M, L43, N84

Grande Nain:<sup>2</sup> Plant sturdy, semi-hardy; mature height 6 to 8 feet; vigorous; productive, bunches of fruit commonly weighing over 100 pounds. Currently one of the most important commercial clones in the world. Developed in Central America. A41G, E55M, H4, I77G, I83M, L43, N84

Green Red:<sup>13 4</sup> Strong, vigorous plant; mature height 20 to 25 feet; trunk 14 to 18 inches thick at the base; variegated green and red. Produces medium bunches weighing 30 to 50 pounds, 4 to 7 hands per bunch. Stout fruits, 5 to 7 inches long; skin thick, brilliant dark purplish red and gold on ripening; pulp firm, aromatic, cream-colored, of good flavor. Comes into bearing at 20 to 30 months, bears on a one year cycle thereafter. Bud mutation of Jamaican Red. POPE; A41G, E55M, I77G, J81G, L43

Gros Michel: (Bluefields) Very tall, vigorous plant; mature height 25 to 30 feet. Bears fruit in long bunches, weighing 60 to 100 pounds. Needs high temperatures and humidity to ripen its fruit. Large, slightly curved fruit, 7 to 9 inches long; flesh firm, consistency and flavor excellent. Was formerly the leading commercial cultivar in Central America, Latin America and the Caribbean, but has been phased out because of its great susceptibility to Panama disease. Originated in Martinique, West Indies. MORTON 1987a, POPE; E55M, G2M, I77G, J81G

Haa Haa:<sup>2 3</sup> (Ha\*a) Plant low-growing, resembles the Dwarf Cavendish in size with a 6 1/2 to 7 foot trunk; new leaves have burgundy overtones. Fruit medium sized, plump in the middle, tapering towards the ends; yellow-skinned; orange-fleshed. The fruit can be eaten raw or cooked, and when fried is similar in taste to apple fritters. An Iholena type banana. A28, A41G, E55M, G2M, H4, I77G, J81G, J81G{PR}

HuaMoa:<sup>3</sup> Tall Hawaiian cultivar which likes protected locations in filtered light with ample moisture; height 16 to 18 feet. Produces small to medium bunches of very plump, roundish fruits with golden-yellow skin and pinkish-yellow flesh. Flavor sweet and delicious. May be eaten fresh or cooked. Very good when sliced green and fried in hot oil like French-fried potatoes. Also good eaten ripe or baked with cinnamon and brown sugar as a dessert. A28, A41G, E55M, G2M, H4, I77G, I83M, L43, N84

Ice Cream: (Blue Java) Somewhat leaning trunks, 10 to 15 feet tall; leaf midrib light pink. Flower stalk may be several feet long, but the bunch has only 7 to 9 hands; bunch weight 40 to 60 pounds. Stout, straight fruit, 5 to 7 inches long and up to 2 1/2 inches in diameter, 4 or 5 angled; skin bluish with a silvery bloom when young, pale-yellow when ripe; flesh white, sweetish, eaten raw or cooked. MORTON 1987a, POPE; A28, A41G, D57, G2M, G17, G49, G99M{PR}, I77G, I83M, J81G, J81G{PR}, L43, N84

Jamaican Red:<sup>13</sup> (Cuban Red, Morado, Macaboo) Large plant, 20 to 25 feet tall; takes 18 months from planting to harvest; highly resistant to disease. The pseudostem, petiole, midrib, and fruit peel are all purplish-red, but the latter turns to orange-yellow when the fruit is fully ripe. Fruit of medium size, with thick peel, and light orange-colored pulp that is very aromatic and has a strong distinct flavor when fully ripe. MORTON 1987a; A41G, E13G{PR}, E55M, F15{PR}, G99M{PR}, 174, I77G, I83M, J81G, J81G{PR}, K8, N40{PR}

Kauai Red:<sup>13</sup> Large plant, 15 to 20 feet tall. Similar to Maroon but larger. Long, reddish-maroon fruits turn orange when ripe; flesh orange-colored, rich and sweet. Originated in Hawaii. D57

KlueNam Wa: (Pisaqg Awak, Nam Wa) The most popular eating banana in Thailand. Short, waxy, oblong fruits; pale yellow when ripe. Very firm texture which holds up well in cooking. Also preferred for dried bananas (*klue tark*) because it produces a paler product. Very vigorous and hardy; somewhat susceptible to Panama disease. The leaves, known as *bai tong*, are used for wrapping banana and glutinous rice dishes. A pink-fleshed form occurs, known as Klue Nam Wa Daeng. KONGPAN [Cul, Re], LOHA-UNCHIT [Re], SIMMONDS 1966; E55M



Kru:<sup>13</sup> (New Guinea Kru) Attractive, red-trunked plant; mature height 10 to 12 feet; moderate wind tolerance. Reddish fruits with orange pulp; highly esteemed flavor. Resembles Jamaican Red in appearance and fruit but is more precocious and the flavor is superior. Originally from New Guinea. A41G, E55M, I77G, I83M, L43, N84

Lacatan: (Pisang Masak Hijau, Bungulan, Hamakua, Monte Cristo) Plant rapid growing, tall and slender; height 15 to 25 feet; prone to wind injury, especially when bearing fruit. Produces large bunches weighing 50 to 100 pounds, 6 to 9 hands per bunch. High-quality fruit, 6 to 8 inches long; skin greenish-yellow when ripe. Flavor similar to Cavendish. Poor keeping quality, but good tolerance of Panama wilt. E55M, G2M, I77G, J81G

Lady Finger: (Ney Poovan) Plant 20 to 25 feet tall at maturity; has a slender trunk but a heavy root system that fortifies it against strong winds. The bunch consists of 10 to 14 hands, each with 15 to 20 fingers; weight 40 to 65 pounds. Short fruits, 4 to 5 inches long; skin thin, light-yellow; flesh firm, whitish, sweet and extremely rich and agreeable. Resistant to drought, Panama disease and black weevil but subject to sigatoka. MORTON 1987a, POPE; A41G, G17, G49, I83M, J81G, J81G{PR}

Mahoi:<sup>2</sup> (Double Cavendish, Doubling) Fruit similar in size and sweetness to Dwarf Cavendish. Dichotomous fruiting head. Second generation may produce 2 to 4 heads of fruit simultaneously and can total over 100 pounds; first generation will be "normal". Plant resembles a Dwarf Cavendish; 4 to 8 feet tall; fairly wind resistant, but should be planted in a protected place. A41G, E55M, G2M, I77G, L43, N84

Manzano: (Apple, Silk) Trunks reclining, 10 to 12 feet tall, only medium in vigor. Produces bunches of 25 to 45 pounds. Plump, slightly curved fruits, 4 to 6 inches long; skin rich, clear yellow; pulp firm, astringent when unripe but pleasantly subacid when fully ripe, apple-scented, drier than most other bananas, of excellent quality. The most popular dessert banana in the tropics. MORTON 1987a; A28, A41G, D57, E13G{PR}, E47M{DF}, F15IPR}, G44M{PR}, G49, H4, I77G, I83M, J81G, J81G{PR}, L33M{PR}, N40{PR}

Maroon:<sup>13</sup> Medium tall plants with slightly red midribs; height 10 to 12 feet. Similar to Kauai Red but smaller. Fruits maroon, turning yellowish-orange when ripe; flesh orange, soft, rich and filling. Originated in Hawaii. D57

Misi Luki: Bears large bunches of flavorful fruit, 4 to 5 inches long, 1 1/4 to 1 1/2 inches in diameter. First harvest can be expected 15 to 18 months after setting out. Originally from the highlands of Samoa. Has grown well in the warmer areas of New Zealand. E55M, Q49M

Monkey Fingers: Very unusual banana with long, slender, slightly curved fruits; 8 to 10 inches in length. Refreshing, slightly tart flavor. Vigorous plant, 18 to 20 feet tall; racemes 5 to 6 feet. Produces large bunches that weigh 60 to 75 pounds, and may need propping to keep from falling. A41G, E55M, L43, N84

Mysore: Plant large and vigorous, mature height 25 feet; immune to Panama disease and nearly so to sigatoka; very hardy and drought-tolerant. Bears large, compact bunches weighing 50 to 60 pounds, 8 to 10 hands per bunch, Medium-sized, plump, attractive fruit; about 6 inches long; skin thin, bright-yellow; flesh moist, pale yellow, slightly subacid in flavor. The most important banana type of India, constituting 70% of the total crop. MORTON 1987a; A28, A41G, D57, E55M, G17, G49, G99M{PR}, H4, I77G, I83M, J81G, L43, N84

Nino: (Sucrier, Honey, Pisang Mas, Klue Kai) Slender plant, less vigorous than most other cultivars; height 10 to 15 feet; fair wind tolerance. Ornamental, with long narrow leaves and an unusual shade of green and black coloration in the trunk and leaf sheaths. Produces small to moderate sized bunches of small, 4 to 5 inch long fruits that are thin-skinned and very sweet. Best grown in partial

shade or morning sun. LOHA-UNCHIT [Re]; A41G, E55M, E13G{PR}, I77G, J81G

Orito: Very similar to Nino, but produces much larger bunches and slightly larger fruit. Excellent sweet flavor. Sold as "baby" bananas in specialty stores in the United States. Tall plant, as high as 20 feet; produces bunches of 50 pounds or more; resistant to Panama disease. Very popular in Ecuador where it is sold in local markets. LESSARD; A41G, I77G

Philippine Lakatan: Medium-tall plant, mature height 15 to 20 feet. Produces moderately large bunches weighing 40 to 60 pounds, with 6 to 8 hands per bunch. Well-shaped, firm fruits, 5 to 7 inches long, of excellent flavor and quality. Susceptible to Panama wilt. Highly esteemed in the Philippines. E55M, J81G

Pisang Raja:<sup>2 3</sup> (King Banana) Large, solid green plant with bluish overtones, growing 8 to 10 feet tall; tolerates wind and cold very well. Bears medium to large bunches of medium-length fruit, oval on one end; thick-skinned; orange flesh, very sweet and firm; quality very good. In Indonesia, often used for *pisang goreng* and *nagasari*—fried bananas and rice cake with bananas, respectively. OWEN [Re]; A28, A41G, E55M, I74, I77G, J81G, L43, N84

Pitogo: Rare, very unusual banana. The small fruits are nearly round in shape instead of elongated, somewhat reminiscent of figs. Slightly drier in texture than regular dessert bananas, but the flavor is excellent. Solid green pseudostem, 10 to 12 feet in height. E55M, I77G, L43, N84

Praying Hands: Very unusual banana with hands that are fused together to resemble praying hands, hence the name Very sweet fruit, ripens on the plant without splitting. Individual fingers may be pulled from the hand and eaten individually or the hand can be cut across the top and the pulp scooped from the cells with a spoon. Grows to 14 feet tall; resistant to Panama disease. LESSARD; A41G, E55M, G2M, G17, I74, I77G, L43, N84

Rajapuri:<sup>2</sup> A vigorous dessert cultivar from India which withstands wind, cold, and adverse conditions. Produces small to medium bunches of sweet, fine flavored fruit of high quality. Mature height 8 to 10 feet. One of the favorite bananas of India. A28, A41G, D57, E55M, G2M, G17, I74, I77G, J81G, L43, N84

Red Iholena:<sup>3</sup> Very rapid growing plant; mature height 10 to 12 feet; attractively colored with red and ivory on the trunk and reddish-purple undersides of the leaves; moderate wind tolerance. Bunches of yellow-skinned, horn-shaped fruits are borne on brilliant red stalks. Fruit pink-fleshed; flavor very good. A favorite Hawaiian cultivar eaten fresh or cooked. A28, A41G, E55M, I77G, I83M, J81G, J81G{PR}

Thousand Enger: Very distinctive banana that continues to produce fruit on the flower stalk until the trunk dies or the flower bud is broken off. The result is a fruiting stem of up to 8 or 9 feet with hundreds of bananas. Tiry, sweet fruits with a pleasant flavor, about 1 inch long. Grows to 12 feet tall; resistant to Panama disease. LESSARD; A41G, E55M, G2M, G17, I74, I77G, L43, N84

Tuu Gia: Thin, green trunk, 14 to 16 feet tall. Long fruits, similar to Bluefields in shape but with a unique, slightly curled tendency. Sweet fruits that are good raw or cooked. Very productive. Originated in Vietnam. A41G, D57, E55M

Valery: (Robusta) Plant semi-dwarf in stature, mature height 10 to 15 feet; wind and cold resistant. Produces large bunches weighing 60 to 90 pounds, with 8 to 10 hands per bunch. High quality fruit, 7 to 10 inches long. Compared with other clones in cooking trials, it has low ratings because cooking hardens the flesh and gives it a waxy texture. Widely planted as a commercial banana in the tropics. MORTON 1987a; A41G, E55M, I77G, I83M, J22, J81G

White Iholena:<sup>3</sup> Stout, vigorous, hardy plant, with a predominant ivory hue on the trunk and pink coloration on the underside of new leaves. Maximum height 10 to 15 feet; moderate wind resistance. Bunches rather small. Fruit 5 1/2 to 6 inches long; pulp firm, light

salmon-pink, flavor subacid. Eaten cooked, or raw when fully mature. The skin turns bright yellow several days before the fruits are ready to harvest, therefore they should be left on the bunch until they are soft. POPE; A28, A41G, D57, E55M, I77G, J81G, J81G{PR}, L43, N84

Williams: Relatively sturdy plant, 9 to 12 feet high; has considerable red pigmentation; resists Panama disease. Bunch large, heavy, 60 to 90 pounds; 9 to 14 hands per bunch. Fruit larger and more attractive than parent, 7 to 9 inches long, of good quality and flavor; ripens about with Cavendish, which it resembles. Bud mutation of Cavendish. Originated in Coffs Harbor, New South Wales, Australia. Introduced into Hawaii in 1954. BROOKS 1972; A41G, E55M, I77G, J81G

Zanmoreno:<sup>2</sup> Very similar to the Dwarf Cavendish except its maximum height is only 5 to 6 feet. Plant is slower growing, slower to flower, and has a smaller bunch than Dwarf Cavendish, but fruit quality is excellent. Recommended where space is limited or for container culture, indoors or out. A41G, E55M, J81G

#### COOKING BANANAS

Included here are the true *plantains*, which are starchy and almost exclusively used as a cooked vegetable, either green, semi-ripe or ripe, and cultivars that can be eaten both cooked and raw but are more often cooked. *Tostones* are green plantain slices that have been partly fried, then flattened and fried until crusty and brown on both sides. Also called *banane pese* or *pressed plantain*. HAWKES [Re], ORTIZ 1973 [Re], SCHNEIDER 1986 [Cul, Re], WILSON, E.G. [Re]. E13G{PR}, G47F{PR}, G99M{PR}, N40{PR}

Aeae:<sup>4</sup> (Koae) Tall, vigorous plant, mature height 15 to 20 feet. Very ornamental, the trunk, leaves and fruit are variegated white, gray, and green. Bunches large, heavy. Fruit oblong, 6 to 7 inches long, 3 or 4 angled; pulp coarse, firm, yellow, of fairly good flavor. Primarily used as a cooking banana, though it may be eaten fresh. POPE; A41G, D57, E55M, F69, I77G, I83M, J81G, L43, N84

African Rhino Horn: Slender, somewhat fragile plant, 10 to 12 feet tall, needs protection from the wind. Only a few very large fruit (up to 2 feet long and 3 pounds each) are produced which may be cooked green as a vegetable or eaten ripe. Attractive red coloration on the trunk and in the leaf. A41G, E55M, G2M, I53M, I77G, I83M, J81G, L43, N84

Cardaba:<sup>3</sup> Large triangular fruit with a bright, waxy yellow skin. Flesh is pale salmon-orange and when fully ripe is sweet and flavorful with a refreshing tartness. Eaten both raw, and cooked as a starchy vegetable or as a sweet dessert. Fairly good source of vitamin A. Originated in the Philippines. A28, A41G, E55M, G49, I74, I77G, J81G, J81G{PR}, L43, N84

Dwarf Orinoco:<sup>2</sup> Similar to the standard Orinoco in vigor, hardiness and fruit quality but its mature height is only 6 to 7 feet. Bunches are large, reaching 40 to 50 pounds. Can be eaten fresh or cooked. A useful plant where space is limited and easier maintenance is desired. A41G, D57, I77G, J81G, L43, N84

Eleele:<sup>3</sup> A distinctive Hawaiian cultivar with almost black trunk sheathes, petioles, and midribs. The plants are 20 to 25 feet tall and produce large bunches averaging 60 to 80 pounds in weight. Plump, well-filled fruit; skin thick and tough, clear yellow at maturity; pulp firm, orange colored, of good flavor. A highly prized cooking banana. POPE; A41G, E55M, I77G, J81G, L43, N84

Fehi:<sup>3</sup> (Fe'i) (*M. troglodytarum*) Vigorous, upright plant, often reaching 36 feet tall; sensitive to cold. Fruit stalk upright growing even when carrying bunches that can weigh 50 pounds. Short, stocky fruit; skin thick, orange to copper-colored when ripe; pulp very firm, orange-yellow, turns a greenish-yellow when cooled. Very good when boiled, baked or roasted. Also known for causing the urine to turn a chartreuse color. POPE; I77G, J81G

French Horn: Plant 10 to 12 feet tall, rather slender; mostly green with its leaves outlined in red; fair wind resistance. Produces bananas up to 12 inches long which are primarily eaten boiled, fried,

baked or broiled but can be eaten raw when thoroughly ripe. A41G, E55M, I77G, J81G

Giant Plantain: (Macho) Rather slender plant; grows to a height of 12 to 14 feet; not very wind tolerant but grows well in protected areas. Produces large fruit usually eaten cooked rather than fresh. The standard plantain of commerce. E55M, H4, I77G

Kaulau: Sturdy, vigorous plant, mature height about 16 feet. Bunches large, 60 to 125 pounds in weight. Straight, plump fruits, 6 to 8 inches long; skin medium thick and tough, rich waxy yellow; flesh light yellow, fine-textured. A Hawaiian cooking banana of excellent quality. The Hawaiian name means "rain on the leaf". POPE; A28, A41G, J81G, J81G{PR}

MaiaMaoli: Tall, erect, attractive plant; mature height 18 to 22 feet. Produces heavy, well-packed bunches weighing 60 to 90 pounds. Long, round fruits, well-filled at both ends, often weighing 10 to 14 ounces; skin thick and tough, bright waxy yellow at full ripeness; pulp yellow, firm; core distinct; flavor good. Excellent broiled or baked; may also be eaten raw. The favorite cooking banana in the local Hawaiian markets. JOSSELIN, POPE; A41G, E55M, J81G

Manaiula:<sup>3</sup> Large, vigorous plant, 18 to 20 feet tall; attractive, with red coloration in the new growth and suckers and the underside of leaves and midribs washed in pink. Produces medium-sized bunches weighing 50 to 75 pounds. Slightly curved, 4 to 5 angled fruit, 6 to 8 inches long; skin thick and tough, waxy yellow when ripe; pulp orange, coarse, firm; core distinct. An excellent Hawaiian cooking banana. POPE; A41G, J81G

Orinoco: (Bluggoe, Burro, Better's Select) Medium-tall, sturdy plant, height 12 to 16 feet; very vigorous and particularly hardy. The bunch consists of only a few hands of very thick, three-angled fruits about 6 inches long. Flesh has a salmon tint, is edible raw when fully ripe but is much better cooked, either as a starchy vegetable or dessert sweetmeat, depending on the degree of ripeness when used. MORTON 1987a; A28, A41G, D57, E13G{PR}, E29, G99M{PR}, I77G, J81G, L43, N40{PR}, N84

Popoulo:<sup>3</sup> Slender plant, 14 feet tall at maturity; prefers a protected location in filtered light with ample moisture. Bunches medium-sized, compact. Short, thick, blunt-ended fruit; 7 inches long and 1 3/4 inches in diameter; skin yellow, medium to thin; pulp firm, light salmon-pink; flavor pleasing, subacid, apple-like. May be eaten fresh or cooked. Well liked Hawaiian cultivar whose name translates to "ball-shaped like a breadfruit". JOSSELIN, POPE; A28, A41G, E55M, J81G, J81G{PR}, L43, N84

Puerto Rican Dwarf:<sup>2</sup> Attractive plant with distinctive bronze-salmon coloring in the trunk and leaf sheathes; growing about 7 to 9 feet tall. Produces a small bunch with 3 to 12 fruit of very large size which are delicious cooked. Normally the plant does not require staking and it can produce bunches with individual fruits weighing up to a pound. D57, E55M, I77G, J81G

Saba: (Sabah) Short, stubby fruit with a full-bodied flavor; similar to Orinoco; large bunches weighing 50 to 75 pounds. Often used for *Banana-Q—di* peeled, skewered Saba banana roasted over live coals. Cold tolerant plant, grows 15 to 20 feet tall. Originated in the Philippines, where it is one of the most common bananas grown. Sometimes available at Filipino markets. GELLE [Cul, Re], O'BOYLE [Re]; E55M, I77G, L43, N84

#### CODES FOR SPECIAL TYPES

1. Red-Skinned
2. Dwarf
3. Orange-Fleshed
4. Variegated

## BASIL {S}

### OCIMUM SPP.

**African Blue:** (*O. kilimandscharicum* x *O. basilicum*) {PL} Attractive plant has dark-green leaves with purple veining; flowers and flower-spikes also purple. Height 2 to 3 feet. The whole plant has a sweet camphor-like scent. Hybrid of *O. kilimandscharicum* and *O. basilicum* 'Purpurascens' (purple-leaved basil). C43M, C89M, F35M, F93G, G96, H51M, H94M, I99P, 757{ES}, J66, J82, K66, L94M, M15T, M35, M82, R53M, etc.

**Ball Basil:**<sup>1</sup> (Compact Green Bush, Hn Vert Compact) Small, compact plant with a great number of stems and leaves, causing the plant to have the appearance of a round mass or ball. Top leaves are bronze; appealing clove-like scent. Very well suited for growing in pots and ornamental vases. VILMORIN; K22, M82{PL}

**Cinnamon:** Attractive, stocky plants with a warm, spicy, cinnamon-like aroma and flavor with a hint of cloves. Purplish, concave venation on the leaves and dark, rose-colored blooms. Vigorous plants; hardier than other basil. Makes a fine jelly and chutney and is good in fruit salads, sweet-and-sour dishes, rib and chicken marinades, or other dishes where a sweet, spicy flavor is desired. HAMPSTEAD [Re]; B75, C53, D11M, D92M, E5T, F70, F80, J20, J76, K22, K57{PL}, K66, M35{PL}, M53{PL}, N19M{PL}, N19M{DF}, etc.

**Cuban:** Small, light green leaves with good basil flavor and fragrance, somewhat spicier than common sweet basil. Grows to a height of 12 inches, forming a strong, upright, compact bush. Appears to withstand light frost. One of the best basil for growing indoors on a windowsill. M82{PL}

**Dark Opal:**<sup>4</sup> Attractive, dark-purple leaves with bronze overtones; height 12 to 18 inches; pale lavender-white flowers. Scent and taste are more subtle and delicate than sweet basil. Good for making basil vinegar to which it readily imparts its rich purple color - add a few sprigs of sweet basil to intensify the flavor. Developed at the University of Connecticut in the late 1950's. HAMPSTEAD [Cul, Re], HUTSON 1987 [Re]; C3, D92M, E13G{PR}, F80, I64M{PD}, J20, K22, L94M, M53{PL}, N19M{PL}, N40{PR}, R47

**Genovese:** (Genova Profumatissima, Perfume Basil) Shiny, bright-green, slightly wrinkled leaves with symmetrical veins often purple in color. Height 18 inches. Intensely strong, almost perfumed aroma and flavor. Very popular for culinary use, especially in tomato salads and *pesto* sauces; combines well with garlic. Very productive; branches vigorously, and can thus be harvested in abundance over a very long season. Widely grown under glass in Italy, this strain is suited for both fresh use and drying. HAMPSTEAD; C53, C95, D92M, E91G, G6, K49T, K49Z, K66, L42, M82{PL}, N19M{PL}, Q11M, Q34, S55

**Greek Bush:**<sup>1</sup> (Fine Leaved Miniature) Attractive bushy plant, height 6 to 9 inches; compact, umbrella-shaped form; leaves 1/4 to 1/2 inch long. Extremely strong sweet basil scent; good for all culinary usage. Typically grown in Greek homes and restaurants in pots and window boxes. Excellent for border edgings. DIT, DI 1M, D92M, E81M, F70, F86G, G57M, /57{PL}, J97M, K49Z, K66, N19M{PL}, Q11M, Q34, S55

**Green Bouquet:**<sup>1</sup> Round, bushy plants have miniature, full-flavored leaves 1/4 to 3/4 inch long; use fresh or dried like other basil. Compact plants are perfect for pots, edging, borders, or indoors year-round on a sunny windowsill. Height 10 to 12 inches. B75, B75{PL}, C44, D26D, E81M, E91G, F35M{PL}, H57M, I50G, J82, M35{PL}, S55

**Green Bush:**<sup>1</sup> (Dwarf, Hn Vert, Fine Green, French, Miniature) Attractive, compact plant; trim and ball-shaped, attaining as much as 2 feet in width. Bright green leaves, only 1/4 to 1/2 inch in length;

numerous small clusters of rosy-white flowers. Strong aromatic odor and flavor, similar to that of common sweet basil. Particularly well suited for growing as an ornamental in pots. HAMPSTEAD [Cul, Re], VILMORIN; A2, C67M{PL}, D92M, F32D{PL}, 139, J20, J82, K2, M53{PL}, M82{PL}, R47

**Green Ruffles:** Fragrant, ornamental leaves are rich green, serrated and crinkled. Height 24 inches. Slightly more subtle flavor, but much larger leaves than common sweet basil. Fine for all culinary uses. Attractive companion to Purple Ruffles. B75, C53, C67M{PL}, D11M, D92M, E81M, F70, L42, M82{PL}, N84

**Holly's Pointed:**<sup>3 4</sup> (*O. basilicum* x *O. americanum*) Green, heart-shaped leaves, strongly splashed with purple on both sides; 2 1/2 to 3 3/4 inches long and 1 3/4 to 2 1/2 inches wide, strongly serrated. Strong licorice scent with a hint of sweet cinnamon. Pink to light purple flowers. Selected by Tom DeBaggio. Named for Holly Shimizu of the U.S. Botanic Garden. DEBAGGIO; H94M{PL}, M82{PL}

**Lemon:**<sup>2</sup> Attractive, spreading, gray-green plants with rather small, thin, pointed leaves and a distinct lemon-like aroma and flavor. Height 12 to 18 inches. Resents transplanting; direct seed where it is to be grown. Good in potpourris, herbal teas, cold drinks and for seasoning poultry and fish. HAMPSTEAD [Cul, Re], HUTSON 1987 [Re]; B75, C53, C67M{PL}, C81M, D92M, E13G{PR}, E61, F80, 139, J20, K22, M35{PL}, N19M{PL}, R47

**Lettuce Leaved:** Very large medium-green leaves, 3 to 5 inches in length and 4 or more inches in diameter, crimped and undulating. Similar scent to that of common sweet basil but the flavor is not as strong. Low growing, thick-set habit. One of the most vigorous and prolific basil and thus recommended for making *pesto* sauce. Also good as a finger food wrapper. HAMPSTEAD [Cul, Re]; B78, C67M{PL}, D92M, E91G, F32D{PL}, F80, 139, J76, J76{PL}, K2, K49M, L42, M53{PL}, N19M{PL}

**Licorice:**<sup>3</sup> (Anise, Oriental, Thai, Horapa) Stems, leaf veins and flower bracts are deep-purple while the flower-stalks are a pale violet. Vigorous plants; height 2 to 3 feet. Very strong licorice or anise-like aroma and flavor. Makes a nice addition to fruit salads and poultry. Also widely used in Southeast Asian cuisine. COST 1988 [Cul], HAMPSTEAD, HUTSON 1987 [Re], ROUTHIER 1989 [Cul, Re]; A2, C43M, C53, D55, D92M, F80, G6, J20, K66, M53{PL} \ M82{PL}, N19M{PL}, R47

**Lime:** (*O. canum*) Similar in growth habit to Lemon basil but with small, darker green leaves. Strong, distinct lime-like aroma and flavor; excellent in salads or with fish and seafood. Grows 20 to 26 inches tall. Originated in Thailand. A97{PL}, C81M, C81M{PL}, E28M, F93G{PL}, G6, G80{PL}, /57{PL}, J82, K57{PL}, Q34, S55

**Maeng Lak Thai Lemon:**<sup>2</sup> (*O. canum*) Sweet basil with a concentrated lemon fragrance and flavor. Excellent in rice dishes, with fish and poultry or in salads and marinades. The seeds are also used as a condiment in sweets. Vigorous plants, 11/2 feet tall, 2 inch leaves. Originally from Bangkok, Thailand. D92M, E81M, K66

**Mammoth:** (Mostrooso) Very large, lettuce leaf type, nearly the size of a human hand; ideal for drying, stuffing, or making *pesto* sauce. The leaves are large enough to use for wrapping chicken or fish before grilling. Dries well, and does not get bitter after long cooking. C53, C81M, D68, D92M, E7M, E28M, E81M, G6, G68, I99P, J20, J82, L89, Q11M

**Mexican:** (Mexican Spice) Leaves dark-green, glossy, thick; upper stems purple-tinted. Strong, spicy cinnamon-like scent and flavor. Dried, the fragrance keeps for many months. Excellent for tea. Tall, vigorous, bushy growth habit; height 2 to 3 feet. Similar to Cinnamon basil but somewhat coarser. Will grow year round if taken indoors for the winter. B1M, C95, F73D, 139, J20, J76, J76{PL}, L94M, M82{PL}, 053M

Mrs. Burns Lemon:<sup>2</sup> A pure strain that has been grown for 60 years in southeastern New Mexico. Many people consider this cultivar far superior to the more common sweet basil. Readily self seeds. Fine for all culinary uses, especially soups, roasts, and fried chicken. Flowers tend to be pink rather than white. C43M, D92M, F32D{PL}, F35M{PL}, F73D, H94M, 116, /57{PL}, J66{PL}, J82, K57{PL}, M82{PL}, N84, 053M

Napoletano: (Italian) Very large, rounded, deeply crinkled leaves; light green in color; luxuriant. Height 18 inches. Very sweet fragrance and distinctive, mellow, rich flavor is only slightly inferior to that of common sweet basil, with less deterioration after flowering. Especially good for making *pesto* sauce. The cultivar most commonly grown in the Naples region. C43M, D92M, E5T, E81M, F37T, F80, 191, J73, J76, K2, K57{PL}, K66, M82{PL}, N19M{PL}

New Guinea: Attractive plant with green, arrow-shaped leaves suffused with dark purple, 1 1/2 to 2 inches long and 1/2 to 3/4 inch wide. Small, light violet flowers splashed with purple. Strong, sweet licorice-like aroma and flavor with mint and cinnamon overtones. Introduced into the United States by Kim Kuebel. DEBAGGIO; C43M, C43M{PL}, J76{PL}, M82{PL}, 053M

Persian Anise:<sup>3</sup> 75-80 days. Large, vigorous plant, 2 to 2 1/2 feet tall with attractive purplish foliage. Very aromatic anise-like fragrance and flavor. Excellent for culinary purposes. Also very good for drying. Large, shrubby plants, 2 1/2 feet tall. C95, F73D, J73, K49T

Piccolo: (Piccolo Rno Verde Compatto) Small, light green leaves have intense sweet basil aroma and flavor but the plant has more closely placed leaves and proportionately less stem. Height 2 1/2 feet. Reputed to be the true, authentic *pesto* basil. Particularly favored for this purpose, because unlike common sweet basil it retains its flavor after flowering. HAMPSTEAD [Cui, Re]; C43M, C53, D92M, E81M, F32D{PL}, F80, J73, K2, K66, Q34

Portuguese: Long, drooping, light-green leaves with a spicy aroma and strong flavor. Stems and flower bracts are an attractive purplish color. Excellent for culinary use. Upright, somewhat willowy growth habit; height about 12 inches. M82{PL}

Purple Ruffles:<sup>4</sup> Large, heavily ruffled and fringed purple-black leaves; pinkish purple flowers; larger and showier than Dark Opal. Height 18 to 24 inches. Flavorful, colorful leaves are especially fine for herb vinegars and for garnishing; strongly aromatic when crushed. Germination and early growth tend to be slower than other basils; start indoors for best results. HUTSON 1987 [Re]; B75, C53, C67M{PL}, D68, D92M, E81M, 191, J20, J76, K22, L42, L91M, L94M

Red Ball:<sup>3</sup> (Thyrsiflora) Plants grow 15 to 18 inches tall, and 20 inches in diameter. Leaves are green at the base of the plant but may be purple near the flowers. Inflorescence is in the form of a thyrus; showy, with lavender or lavender and white flowers and deep purple flower-stalks, bracts, and calyces. The very fragrant aroma is sweet and anise-like. Used in Thai cuisine. An excellent ornamental as well as culinary cultivar. DARRAH, HAMPSTEAD; N19M{PL}

Red Rubin:<sup>4</sup> (Purple Passion) Smooth, oval, reddish-purple leaves, 3 1/4 inches long and 1 3/4 inches wide. Deep pink flowers with violet throats. Mild, sweet cinnamon scent with hints of mint and anise. Height 18 to 24 inches. Produces very few green-leaved plants, unlike Dark Opal and Purple Ruffles. Developed in Denmark. DEBAGGIO; C53, D68, E81M, F35M{PL}, F93G{PL}, G6, H94M{PL}, 139, J9M, J82, K66, K73, L42, L89, L94M, M49, M82{PL}, 053M, etc.

Siam Queen:<sup>3</sup> Large leaves, 3 to 4 inches long and 1 1/2 to 2 inches wide, short internodes. Has a sweet spicy flavor with overtones of anise or licorice. Best harvested when 4 to 6 inches tall with harvesting continuing for 3 to 6 months. Ornamental plants with reddish-purple stems and purplish flowers, 30 to 40 inches tall, very high yielding. All America Selections winner for 1997. B73M, B75,

C53, C92, E24, E75{PL}, E97, F13, F37T{PL}, F82, G6, G16, 191, J82, J97M, K66, K71, L89, L91M, M29, etc.

Spice: (O. basilicum x O. canum) Slender, spreading, bushy plant; 2 to 2 1/2 feet high; leaves dark-green; inflorescence dark-purple. Has a very pleasant, strong, spicy fragrance suggestive of O. sanctum, and is one of the best basils for tea. Easily grown and thrives with little care. It breeds true and self sows as far north as Connecticut. Probably a natural hybrid. DARRAH; D92M, E81M, J66{PL}, J82, M82{PL}, N84, S55

Spicy Globe:<sup>1</sup> Attractive, bushy, small-leaved cultivar forming a tight mound that retains its shape all season without pinching; height 10 inches, 12 to 18 inches across. Strong aroma; good for all culinary uses. Recommended for pot culture, and as edging for borders and beds. Produces clouds of tiny white flowers in late summer. A97{PL}, C67M{PL}, C81M, E81M, J76, J82, K22, K49M, L89, M53{PL}, N19M{PL}

Sweet Dani:<sup>2</sup> Attractive, upright plants with a branching habit and uniform shape; height about 26 inches; very strong lemon scent when lightly touched. Excellent with fish and savory dishes. Bred for high essential oil and citrol content, and increased leaf production. Can be cut back several times with excellent regrowth. All America Selections winner for 1998. A97{PL}, E75{PL}, E91G, F35M{PL}, G82, H33M, 139, I50G, 191, J82, K57{PL}, K71, M29, M46, Q34, TIM, etc.

Thai Seed:<sup>3</sup> The seeds are used as decoration on desserts and as topping for ice cream. Soaked in water before use, they swell up to eight times their original size. On desserts they somewhat resemble tapioca, adding an interesting quality and texture. The foliage resembles Licorice basil. Native to Thailand and Burma, and used extensively in Thai and Indian cooking. M82{PL}

Well-Sweep Miniature Purple:<sup>4</sup> Very showy and decorative basil with tiny, purple leaves. Good flavor for culinary use, especially in salads, pastas and meat dishes. Also excellent for tinting herb vinegars a burgundy color. Grows into a small mound, 6 inches wide and 8 inches high. Developed in 1974 at Well-Sweep Herb Farm, by Cyrus Hyde. K57{PL}, M82{PL}

#### CODES FOR SPECIAL TYPES

1. Dwarf
2. Lemon-Scented
3. Anise-Scented
4. Purple-Leaved

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## BEANS AND PEAS

See Cowpea, Fava Bean, Kidney Bean, Lima Bean, Pea, Peanut, Runner Bean, Soybean, Sprouting Seeds and Tepary Bean in Part II: Major Crops. See also Fabaceae, Caesalpiniaceae and Mimosaceae in Part I: Botanical Listings.

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## BEET {S}

### BETA VULGARIS CRASSA GROUP

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#### GARDEN BEETS

#### ORANGE-SKINNED

Burpee's Golden: (Golden) 55 days. Attractive, bright golden-orange roots, develop rapidly; best when eaten small, but retain their sweet flavor and do not become fibrous when larger. Will not bleed like red beets. Excellent in salads, slaws, gourmet borscht, or pickled. Tops are very good boiled as greens. Sow seeds thickly, as germination rate is lower than other beets. A16, B75, C53, C85M,

D11M, D82, E13G{PR}, E24, F44, F70, G16, G44M{PR}, K66, L79, N40{PR}, R47, etc.

### RED-SKINNED

#### *Hybrid*

Red Ace: 55 days. Very early Detroit Short Top type with extremely smooth skin and even, deep red color throughout. Smooth, medium size crown with short, erect tops nearly free of red pigment. Very high sugar content throughout the root and leaf. Bolt and heat resistant and tolerant to cercospora leaf spot. *A87M, DI 1M, D76, E38, F70, F82, H85M, 191, J20, K50, K71, K73, L89*

Sangria: 50-55 days. Uniform, very smooth, globe-shaped roots with small taproots; intense bright red interior color free from zoning; fine texture, rich sweet flavor. Forms globes quickly which can be harvested for "baby" beets. Excellent for fresh use, canning or freezing. Very adaptable and bolt tolerant. *B75M, C85M, D26D, D65, G27M, G57M, G71, G79, G87, H42, K66, L79*

Solo:<sup>5</sup> 45-50 days. Hybrid mono-germ type. Extremely early and higher yielding. Uniform, top-shaped, deep red roots, similar to Red Ace but slightly larger. Glossy, dark-green leaves, 14 to 16 inches tall. Recommended for bunching or processing. Resistant to Cercospora Leaf Spot, downy mildew and root rot. *Al, A87M, C20M, D26D, G82, J84, K10, K73, L42, N52, S75M*

Warrior: 57 days. Highly uniform, globe-shaped, unusually smooth root; tender, smooth-textured, well colored flesh. Includes sugar beet material in its breeding, therefore it is sweeter than other cultivars. Develops very quickly, yet holds its quality even as it grows larger. Good for bunching or processing. Introduced in 1979 by Joseph Harris Seed Co. *A87M, F13, P59M*

#### *Open-Pollinated*

Baby Ball:<sup>3</sup> 58 days. Gourmet specialty market type. Round, smooth, deep-red roots. Developed for its tiny, sweet, exceptionally tender "baby" beets that remain pleasantly small at maturity. Also produces delicious, fast-growing tops for early-spring salads. *F44*

Boltardy: 58 days. Smooth, deep-red roots with very good internal color. Highly resistant to bolting, the solid flesh staying ringless and tender even when grown to a large size; also stands early cold periods especially well. Ample tops make good "greens". Can be sown from early spring into fall. *B49, G53M, N84, O53M, PIG, R32, R47, S55, S75M, TIM*

Bulls Blood:<sup>1</sup> A very old cultivar which is grown especially for its extremely attractive dark reddish-purple leaves which make excellent greens. Delicious, especially when picked young. Dark red roots of good sweetness and quality. Ornamental as well as useful. *A2, E24, I18M, 177, J9M*

Cheltenham Green Top: Long, medium-sized, tapering roots with broad shoulders and dark-red flesh. Bronze-green leaves with red-tinged stems. Very long roots have the advantage of searching for water in dry summers, especially on sandy soils. Hardy; lift with care in late autumn and store. Introduced in 1905. *B49, N84, R32, S55, S75M*

Chioggia: (Dolce di Chioggia, Peppermint Beet, Candy Cane Beet) Attractive rosy-pink skin. White flesh with bright-pink alternating concentric rings. Smooth, medium height tops are solid green with red-shaded stems. Most attractive grated raw but tastier cooked. Becoming well-known in U.S. specialty markets. An old traditional Italian cultivar. *B8, B8M, B49, D68, E13G{PR}, E24, E97, G6, G93M, 177, K49M, K66, K71, L7M, L89, N40{PR}, O53M, Q11M, Q34, R32, S55, etc.*

Crapaudine: (Rough Skinned) 53 days. One of the oldest cultivars, distinguished by the peculiar appearance of the skin, which is black and resembles the skin of a black winter radish. Root rather long, almost entirely buried in the soil; flesh very red, sugary and firm.

Leaves almost entirely green, with red stalks. *VILMORIN; E63D, S95M*

Crimson King: (Improved Crimson Globe) Medium-sized, globe shaped, 3 inch diameter roots; deep crimson, slightly zoned. Excellent flavor and tenderness; good in salads. Grows quickly for early use. Good keeper; can be sown late for autumn and winter use. An improved version of an old, well-established favorite. *B49, R32*

Crosby's Egyptian:<sup>4</sup> (Early Crosby Egyptian, Crosby's Extra Early Egyptian) 55 days. Deep-red, smooth, turnip-shaped root; dark-red internal color, with slight zonation; rapid growing. Tall, erect tops are bright glossy-green; very flavorful; excellent for markets where beets are sold in bunches. Ideal for forcing for early market. Introduced in 1880. *A75, C92, C95, E38, F92, G68, G79, K49M, K71, L7M, M46, M95M, N52*

Cylindra:<sup>2</sup> (Tendersweet Cylindra) 60 days. A unique, long cylindrical beet that will give 3 to 4 times the number of uniform slices as a round beet. Smooth, dark-red roots, up to 8 inches long and 1 3/4 inches in diameter, grow almost entirely underground. Will grow over a long season, maintaining its sweet, tender flavor. *B73M, B75, B75M, C44, C85M, D65, D82, E38, F82, G16, H42, R47*

Cyndor:<sup>2</sup> 45-50 days. Early cylindrical type with deep red color. Long, smooth, uniform roots; 8 to 10 inches long and 2 1/2 to 3 inches in diameter; free from zoning. Medium tall tops, dark-green with a maroon tinge. Ideal for slicing, pickling or freezing. Excellent germination and vigor. Resistant to curved root. *C28, DI 1M, F70, G57M, M49, N52, TIM*

Deacon Dan: Heirloom from Lancaster County, Pennsylvania. Striated red and white when cut raw. Slightly golden when cooked, turning deep red after cooling. Sweet and tender even as it grows large. Delicious served plain, with butter, or a vinegar-based sauce. Long season type that stores well. Thought to have originated with Deacon Dan Burkholder. *F24G, L88J*

Detroit Dark Red: 58 days. Smooth, uniform, globe-shaped, dark-red root; small tap root; interior color blood-red, with indistinct zonation. Tops are 13 to 15 inches tall; glossy dark-green tinged with maroon. Standard all-purpose cultivar. Introduced in 1892. *A16, A75, B73M, B75M, E24, E59Z, H33M, H42, H85M, I67M, 184, K73, L7M, M49, N16, etc.*

Dwergina:<sup>3</sup> 58 days. Improved short-topped beet in the Detroit Dark Red class. Distinguished by its intense color, tender, dense and smooth texture and sweet flavor. Round, very smooth-skinned beets; completely free from zonation; grows slowly at maturity, staying relatively small. Recommended for "baby beets" as well as growing on to normal size. *B49, J39, N84, R32, R47*

Early Blood Turnip-Rooted: (Early Dark Blood Turnip) 55 days. Root smooth, flattened and symmetrical; about 4 inches in depth and diameter; skin deep purplish-red; flesh deep blood-red, sometimes circled and rayed with paler red, remarkably sweet and tender. Adapted for summer or winter use. Known prior to 1863. *BURR; F24M, G57M, I63Z, M95M*

Early Wonder:<sup>4</sup> (Greentop) 55 days. Semi-globe shaped, smooth-skinned, uniform roots; about 3 inches in diameter; skin dark red; flesh deep red, with lighter zones. Medium-tall, bright glossy-green tops grow quickly and are excellent for bunching and beet greens. *A16, A25, A75, B73M, B78, C44, D82, E38, E59Z, G68, G79, H33M, J20, M46, N16, etc.*

Early Wonder Staysgreen:<sup>4</sup> (Staysgreen) 50 days. A favorite where beets are grown primarily for their greens. These are sold bunched, with large vigorous tops attached to young beets. Extra tall, bright glossy-green, tender, red-veined tops; stay green in cool weather longer than other Early Wonder strains. Smooth, flattened globe-shaped root. *H54*

Flat Egyptian: (Early Flat Egyptian, Egyptian Turnip-Rooted, Noir Plate d'Egypte) Root rounded and flattened, growing almost

entirely above ground; becoming irregular as it increases in size; skin very smooth, violet or slate red; flesh deep purple-red. Excellent for forcing for early market. Roots are somewhat flatter when transplanted from indoors to out. Introduced before 1885. VILMORIN; N81, PIG, P59M, P75M, T27M

Formanova:<sup>2</sup> (Cylindra Improved, Cook's Delight) 50 days. Unique, cylindrical-shaped root; 6 to 8 inches long and 2 1/2 inches in diameter. Flesh is dark red, tender and flavorful. Especially useful for slicing, the slices being very uniform in size, resulting in little waste. Also very popular for home pickling or freezing. A16, B49, D27, D68, E59Z, FI, F92, G6, G87, K49M, L42

Forono:<sup>2</sup> 60 days. A long, tankard-shaped beet which grows as much above as below ground. Smooth, ruby-red roots cook quickly and have a high sugar content. Tops are quite short. Suitable for winter storage. Developed especially for canning, the unusual shape making it perfect for uniform slices. E97, G6, L39, L77, J9M, L89, N81, R32

Green Top Bunching:<sup>4</sup> 55 days. Attractive, heavy, bright glossy-green tops maintain their appearance well during adverse cooler weather; medium length is ideal for bunching; excellent flavor. Uniform, slightly-flattened, smooth-skinned roots; flesh is sweet, tender and fine-grained. Good all-purpose cultivar. AI, C28, DIT, D26D, F63, G57M, G79, G93M, H61, J84, K71, K73, L42, N52

Little Ball:<sup>3</sup> 45 days. Specially selected for gourmet "baby beets", if closely spaced Little Ball will produce uniform, smooth-skinned, globular roots about the size of a silver dollar. The flesh is sweet flavored whether used fresh or for pickling. Retains its deep-red interior color even after cooking. A16, B75, C20M, D11M, E38, F70, G57M, G79, G93M, H95, K66, L89C

Little Mini Ball:<sup>3</sup> 54 days. One of the first true "baby beets". Roots are about the size of a silver dollar at maturity; round, not globe-shaped. Used for whole pak pickled beets. Short tops are good for greens. D27

Lutz Green Leaf: 70 days. Very popular for using fresh in summer; roots also hold well for picking into fall and for winter storage. Glossy green, elongated tops with pink midrib have excellent eating quality. Top-shaped roots are rich purplish-red, with dark red flesh shading to lighter zones. Sweet and tender used small or large; even large roots are quick-cooking. D11M, F70, F82, G57M, G71, G71M, L39, L84, J20, K49M, K71, L7M, N34{PR}, R47

MacGregor's Favorite:<sup>1</sup> (Dracena Beet) 60 days. An old Scottish heirloom that is very ornamental with a profusion of narrow, spear-shaped leaves that are a striking blood-red with a metallic sheen. Deep-red, elongated, 3 inch roots have a fine flavor. The slender leaves interplant attractively with flowers, borders and beds. C53, L77, O53M

Monodet:<sup>5</sup> 45 days. A mono-germ type producing only one sprout per seed, thereby reducing the need for thinning. Well-rounded flavorful roots for use in summer and autumn. Tops make excellent "greens" for cooking. S61, S75Af

Monogram:<sup>5</sup> 65 days. High quality mono-germ type with excellent internal color. Uniform, smooth, globe-shaped roots; medium to small in size Very good flavor. Each seed produces only one seedling, eliminating the chore of thinning. Ideal for precise, intense plantings. Vigorous and productive. J20, L91M, S75M

Monopoly:<sup>5</sup> 60 days. Mono-germ type, bred to produce only one sprout per fruit. Elongated, globe-shaped root with a fine texture and sweet taste; holds well in the garden without getting pithy or tough. Derived from Boltaidy, having the same high quality and resistance to bolting. K66

Ruby Queen: 60 days. Round, smooth, globe-shaped, deep blood-red root; deep red interiors are free from zonation under normal conditions; very uniform; tender, sweet flesh. Tops are short, bright green, narrow-leaved and turn red in cool weather. Leading canning cultivar in the Northeast. All America Selections winner in 1957.

A16, B6, B75M, D11M, E38, FI, F70, G16, G57M, G71, H33M, H61, H95, L84, K73, N16, etc.

Spinel:<sup>3</sup> 60 days. Small, Detroit-type "baby beet" bred for the critical gourmet trade of the expensive restaurants of Europe. Smooth, globe-shaped root; bright-red internal color. Can be harvested as a baby beet after 40 to 45 days, but can stand in the field much longer without getting over mature. Often used for whole pack canning. L39, L91M, N24M

Sweetheart: 58 days. Round to top-shaped roots are not smooth or uniform, but make up for it in flavor; solid red flesh that's uniform throughout. Sugar beet in the parentage makes this cultivar extra-sweet. Tops are of medium height, tinged with red. For fresh use, canning and storage. Developed by Professor E.M. Meader at the University of New Hampshire. Introduced in 1958. G6, J39, L7M

Winter Keeper: (Long Season) 78 days. Produces a very large, rather rough, almost mangel-like beet with deep red interior. Remains sweet and tender even when very mature. Large green tops can be harvested separately for "greens". Mature beets are easily stored in a bushel of moist sand for winter consumption. A2, B6, E24, F13, F24M, F80, G82, J25M, L42, L89, N24M, N84

#### WHITE-SKINNED

Albina Vereduna: (Snowwhite) 55 days. Large, globe-shaped root; white inside and out. Has a high sugar content and a rich flavor. Unusually thick and durable skins make for excellent storage in the ground during fall and winter. Curled, wavy leaves make tasty "greens". D56M, L77, J39, J9M, L89, L91M, O89

Albino White: 50 days. A novel "non-bleeding" beet with pure-white, fairly smooth, globe-shaped roots that are sweet and mild-flavored. Makes unusual sliced and pickled beets. Plain green tops, high in vitamins, may be used as "greens". C20M, F73D

White: 55 days. Globular, white roots with all the flavor of a red beet. Tender, edible skin. Can be cooked with other vegetables without staining. Larger, taller and more succulent foliage. Good specialty market item. B49, G6, G68, PIG, R47

#### MANGELS

Large, swollen-rooted beets generally used as animal feed due to their coarseness although some types are suitable for the table when young. Almost certainly originated by crossing a form of garden beet with a leaf beet. J97M, K49M

Colossal Long Red: 100 days. Roots frequently grow 2 feet long, about half growing above the surface; weighing up to 15 pounds each. Skin is bright rich-red. Flesh is white, tinted with rose. Relished by livestock, particularly milk cows. A2, F73D, K20M, K71

Golden Tankaid: (Yellow Tankard) Large, heavy, smooth root; tapering at both ends, more abruptly at the bottom; deep orange-red skin; firm, thick, creamy yellow flesh, very sweet. Excellent for the table. Hardy and drought resistant. Will keep all winter if stored well. VILMORIN; F73D, K71

Jaune d'Eckendorf: 110 days. Very large, round, yellow, sweet forage beet. Keeps all winter if properly stored. Best planted in late spring for fall harvesting. A good food supplement for rabbits, goats and chickens. Will yield up to 50 tons an acre. For the table, boil and then add butter and chopped chives. N81, Q11M

Long White Green Top: (Blanche a Collet Vert) Long, cylindrical root, 20 inches in length and 5 to 6 inches in diameter; often grows 1/2 or 2/3 above ground; skin white below ground, greenish above. Very vigorous and productive, growing for a long period late into the season. VILMORIN; Q11M

Mammoth Long Red: (Long Red) 110 days. Roots extremely large, tapering; grow half above ground, half below; weigh up to 30 pounds each; skin light-red; flesh white, tinged with rose Very productive; will yield from 30 to 40 tons per acre on well-prepared

land. Good livestock fodder; also good for table use. E97, F80, G16, G57M, H85M, I63Z, J39, K5M, K10, M49, Q11M

Prizewinner: 110 days. Large, half-long, oval roots that grow partly above ground; golden-orange in color; solid flesh. Tops grow 12 to 18 inches tall. Unusually sweet for a mangle, so sweet it is prized by home-made wine enthusiasts in England. Easy to dig and top. An old English heirloom. B49, R32, S55

Wintergold: 100 days. Large, heavy roots, often 12 inches in length. High in vitamins and sugar. Suitable for use as a beetroot, juiced, or in salads. Tops can be used like Swiss chard. Also used as animal fodder. Sown in autumn in warm winter areas; keeps well. FI, PIG

Yellow Globe: Large, roundish yellow roots with a high sugar content. May eventually grow as large as a football. Can be sown in spring, summer or fall. Popular in Australia. R47

Yellow Intermediate: (Giant Yellow Intermediate) Large half-long roots, grayish-green above ground, orange below; sweet solid white flesh. Easy to pull and top. Yields well under varied conditions. One of the most widely grown of all mangels. Developed by Vilmorin in the 1800's. A2, B49, 199M, K49T, L77D, N84

#### SUGAR BEETS

Relatively highly bred types, mostly bred for sucrose extraction commercially. Generally lacking in pigmentation, they have a high root sugar content. Occasionally grown for home sugar extraction or as a home garden vegetable which can be used in soups and stews. Grated sugar beet is said to bring out the true flavor of accompanying vegetables when added to vegetable dishes. BIANCHINI, CLARKE, ORGAN [Cui]. C20M, H85M, J82, K10, R47

Giant Half Sugar: 120 days. Long, oval-shaped roots, slightly tapering at the bottom; reddish above ground and white below. Thick white flesh, higher than normal in sugar content. High in nutritive value. Twice as productive as common sugar beets. Grows half out of the ground to make harvesting much easier. K71

Giant Western: 80 days. Grown for sugar making or stock feeding. Roots are medium large; 10 to 12 inches long, 4 inches wide at the shoulder; yellow-fleshed; weigh 2 to 3 pounds each. High sugar content. Will take on the color of red beets when canned with them; will also add sweetness. Yields 20 to 40 tons per acre. Can be used for fall or spring harvest. D76, E97, F73D, F80, /59M, K71, N84, PIG

Half Sugar Rose: 100 days. A cross between a mangel and a sugar beet. Oval-shaped root; green above the ground, white below; flesh white and sweet. Keeps well. Heavy yielding. Mature roots supply food of high nutrient value for feeding purposes. U8D

Klein Wanzleben: Long, tapering roots with large shoulders. White skin and flesh. Ideal for sugar manufacture, containing the highest percentage of sugar of any sugar beet. Two large roots can produce 1 cup of sugar and 1/2 cup of blackstrap molasses; 100 tons of roots have yielded as much as 18 tons of sugar. Also used as feed for sheep, but is too sweet for cattle. U63

#### CODES FOR SPECIAL TYPES

1. Red-Leaved
2. Cylindrical
3. Baby
4. Bunching
5. Mono-Germ

## BLACK WALNUT {GR}

#### JUGLANS NIGRA

Beck: Medium-sized nut, averaging about 37 per pound; shell thinner than average; kernel cracks out nearly 100% in quarters and halves; flavor superior to most cultivars; ripens early. Tree vigorous, symmetrical; produces heavy crops regularly; disease resistant. Won first prize in Michigan nut contest in 1932. BROOKS 1972; I25M{SC}, 140

Bicentennial: Nut size medium to large; flavor good; kernel filling good; cracking quality equal to Thomas. Tree vigorous, a precocious bearer; very haidy. Originated in Huevelton, New York. E91M, L27M{PL}

Bowser: (Boser) Nut size medium, averaging 30 to 35 per pound; shell very thin, cracking qualities excellent; kernel averages 37 % of weight of whole nut; flavor very good. Tree noted for rapid growth. Originated in Xenia, Ohio by John Mitchell Davidson and Homer G. Bowser. Introduced in 1958. BROOKS 1972; I60{PL}

Clermont: Nut 1 1/4 inch long; apex slightly pointed; shell extremely thin, about 1/16 inch thick; kernel creamy white, plump, flavor excellent; cracks out about 40%. Tree produces heavy crops. Resistant to anthracnose. Originated in Clermont County, Ohio by Albert M. Kirtnes. Discovered in 1912, growing along the Ohio River. Introduced in 1959. BROOKS 1972; 140

Cooksey: Medium-sized nuts with thin shells, regularly cracks out halves and sometimes whole kernels; excellent, mild flavor. Vigorous, self-fertile tree, produces very good crops. Very popular in the Pacific Northwest. J61M, NO

Cranz: Small, elliptical nuts, about 35 per pound; very high meat to shell ratio; cracks out readily; ripens in midseason. Protogynous flowering type, must be pollinated by another variety. Bears on lateral branches. Recommended for commercial plantings. Originated in Ira, Ohio by Eugene F. Cranz. BROOKS 1997; B74, I25M{SC}, NO

Deming's Purple:<sup>1</sup> Purple leaves, flowers and husks distinguish this ornamental cultivar, which also has a purple spot on the nut-meat. I25M{SC}

Emma Kay: Has a thin shell, and cracks out a very high percentage of kernels; 30 nuts per pound. Bears heavily in southern Ontario, but in heavy crop years not all the nuts fill well. Nut flavor is reputed to be excellent but the cultivar has not yet been extensively tested. The tree has a spreading crown. Originated in Illinois. JAYNES; B99{PL}, E62{PL}, E62{DF}, E62{SC}, 140, 160{PL}

Farrington: Very large nut; shape distinctive; shell somewhat thick, but cracks well; kernel light-colored, flavor mild, fills well. Tree bears early, regularly and heavily. Anthracnose resistant. Originated in Fayette County, Kentucky by O.M. Farrington. Introduced in 1959. BROOKS 1972; B99{PL}, I25M{SC}, 140

Fonhill: Medium-sized nut; kernel filling very good; good flavor. Tree vigorous, upright; hardy; heavy-bearing; selected for its good qualities as a timber tree. E91M

Football: (Football #2) Large, elliptical nut, about 25 per pound; kernel weight 30% of nut; very good cracking qualities; ripens in midseason. Bears on lateral branches. Susceptible to anthracnose. Recommended for the Plains states and northern areas. Seedling selection made by Leon Falconer of Sarcoxie, Missouri. I25M{SC}, 140

Hare: Very large nut; 20 nuts per pound. Large kernel; good cracking quality, with a high percentage of kernel crack-out. Tree blooms late; yields well. Originated in Rushville, Schuyler County, Illinois by F.M. Hare. Introduced in 1930. BROOKS 1972; B74, I25M{SC}

Harney: Nut shell thin, excellent cracking quality; high kernel percentage. Survival rate in all plantings has been below average. Originated in Cynthiana, Harrison County, Kentucky by Cullie Baughn, U.S.D.A. Soil Conservation Service. Introduced in 1939. BROOKS 1972, JAYNES; 140

Krause: Nut averages about 23 per pound; cracks well; kernel averages about 27% of total weight; quality very good; ripens rather late, first of October. Tree very hardy; very vigorous; produces a great deal of pollen which is shed early. Originated on the farm of Russell Krause, Toddville, Linn County, Iowa. Introduced in 1940. BROOKS 1972; I25M{SC}

Kwik Krop: (Boellner) Precocious bearer, often bears 2 to 3 years after planting. Medium-sized, elliptical nut; kernel 31 % of nut weight; shell thin, cracks easily; kernel plump, mild-flavored, light in color; matures early. Tree hardy, large and vigorous, moderately productive. Originated in Roswell, New Mexico by Louis B. Boellner. BROOKS 1997; B74,I25M{SC}, L33, NO

Lamb: (Lamb's Curly) Fairly large nut; quality better than average. Tree a rapid grower; primarily of use for veneer because of curly-grained wood, but in the majority of sites where grafts have been tested, the curly grain has not been observed. Originated in Ada, Michigan by George N. Lamb of the Walnut Manufacturers Association of Chicago. Introduced about 1935. BROOKS 1972; 140

Minnesota Native: Self-pollinated seedlings of the hardest black walnut tested by St. Lawrence Nurseries, Potsdam, Nov York. The mother tree ripens nuts 2 to 3 weeks before any other black walnut in this area. Nuts are small, but the tree is exceedingly precocious and timber-type. Its seedlings are uniformly vigorous and fast-growing. L27M{PL}

Mintle: Small nut, averaging somewhat less than 10 grams; kernel content about 24% of nut; cracking quality good. It is reputed to have the best flavor of all black walnuts and the ability to store at room temperature for two years without becoming rancid. Survives exceptionally well in plantings. Originated in Glenwood, Iowa by J.R. Mintle. Introduced in 1931. BROOKS 1972, JAYNES; I25M{SC}

Myers: (Elmer Myers) A standard cultivar noted for its very thin shell and good cracking qualities. It has exceptional total-kernel and first-crack kernel percentages and a high recovery of quarters. Resistant to anthracnose. Best adapted to southern growing conditions; at more northern locations kernels tend to be shriveled and bearing is often erratic. Originated in Bellefontaine, Ohio by Elmer R. Myers. Introduced about 1930. BROOKS 1972, JAYNES; B99{PL}, E62{PL}, E62{DF}, E62{SC}, I25M{SC}, 140,160{PL}

Ogden: Large nut, averages 20.7 grams per nut; cracking quality very good; kernel averages 26.6% of nut; pellicle easily removed. Tree bears well in Arkansas and Oklahoma. Originated in Bedford, Kentucky by Joe Ogden. Introduced in 1928. BROOKS 1972; I25M{SC}

Ohio: Well known for its fine cracking qualities. It is moderately resistant to anthracnose, but highly susceptible to husk maggot. Biennial bearer. Discovered in Ohio in 1915. JAYNES; I25M{SC}, I60{PL}

Patterson: Yields large nuts that are pollinated by Minnesota Native. Its seedlings are hardy and grow vigorously, showing a straight, timber-type growth habit. L27M{PL}

Putney: (Green) Exceptionally large nut with good cracking qualities, fills well in short season areas. Produces seedlings that are vigorous and show an excellent timber-type growth habit. Parent tree is probably the largest and oldest black walnut tree growing in northern New York. L27M{PL}

Ridgeway: (Rabbit Ridge) This two-time Kentucky State Fair winner has a very large nut, cracks well, shows anthracnose resistance, and bears heavily. Discovered by Henry Converse. Originated in Illinois. Introduced in 1984. 140

Rohwer: Broadly obovate nut, about 24 per pound, light kernels; kernel weight 25-35%. Excellent quality and cracking characteristics. Krause and Sparrow can be used as pollinizers. Recommended especially for Nebraska and Pennsylvania. Originated in Grundy

Center, Iowa by John W. Rohwer. Discovered in 1926. I25M{SC}, 140

Sauber: (Sauber #1) Medium to large, broadly elliptical nut with a thin shell; light-colored kernels of very high quality; kernel weight 39% of nut. Excellent shelling qualities. Vigorous and very productive. Seedling selected by Paul J. Sauber of Barberton, Ohio. Introduced in 1978. BROOKS 1997; E62{DF}, E62{SC}, I25M{SC}, 140

Schreiber: Large nut; very high total kernel percentage; of good quality. Tree bears very well. Originated in New Albany, Indiana by R.H. Schreiber. Introduced in 1941. BROOKS 1972; 140

Sparks #127: Small, broadly elliptical nut, about 32 per pound; kernel weight 32% of nut; ripens early. Protogynous flowering type that bears on lateral branches. Somewhat prone to alternate bearing and overproduction. Recommended for commercial plantings. Seedling selected by Archie Sparks of Beaver, Iowa. BROOKS 1997; B74,I25M{SC}

Sparks #147: Medium-sized, elliptical nut, about 27 per pound; strongly pointed on both ends, and basal point distinctively long; kernel weight 38% of nut; ripens in midseason. Has the thinnest shell of any black walnut. Bears on lateral branches. Originated in Beaver, Iowa by Archie Sparks. I25M{SC}

Sparrow: Medium to large nut; 27 per pound; hull very thin, hulling readily; shell rather thin, cracking quality good; kernel sweet, rich; quality very good, as good as, or better than Thomas. Ripens about with Snyder and 2 weeks before Thomas. Tree retains foliage well into fall, later than most other cultivars; hardy. Very resistant to anthracnose. Originated in Lomax, Illinois by Harry C. Sparrow. Introduced in 1935. BROOKS 1972; A91{PL}, B74, B99{PL}, I25M{SC}, 140,160{PL}

Stambaugh: A large-kemeled cultivar that bears at an early age. It is susceptible to anthracnose leaf spot infection. Won first prize among 1229 entries in 1926 contest sponsored by the Northern Nut Growers Association. Originated in Browning, Illinois by H.V. Stambaugh. Introduced in 1928. BROOKS 1972; I25M{SC}, NO

Surprise: Large, depressed-obovate nut, about 25 per pound; kernel weight 34% of nut; fills well, and cracks out in quarters; ripens in midseason. Bears on lateral branches. Seedling selection made by Leon Falconer of Sarcoxie, Missouri, sometime during the 1970's. I25M{SC}, 140

Thomas: Large nuts; 30% kernel; cracks well; high-quality kernels with a good flavor. Bears heavily and at an early age. One of the most popular and widely planted cultivars. However, it is considered a poor selection for the Midwest, where the most frequent criticism is that the nuts do not fill well, especially on trees more than 5 years old. Susceptible to anthracnose which can cause early defoliation and poor nut development. Discovered in Pennsylvania in 1881. JAYNES; C11M{PL}, E97, E91M, H4, H65,I25M{SC}, 140,174, L33, M83

Thomas Myers: A selection of Leander Hay, produced by crossing Thomas and Elmer Myers. Probably the same as the Hay cultivar. A very large nut, 20 per pound, with 30% kernel; cracks out easily; medium shell thickness. Bears early, annually, and heavily. Originated in Missouri in 1980. I25M{SC}, 140,186{SC}

Vandersloot: Very large nut, 23 per pound; good cracking qualities. Nut kernel fills poorly; larger but thicker shell than Thomas; excellent flavor. Tree protogynous flowering. Superseded now by other and better cultivars but still preferred by some growers. Largest black walnut in the 1926 Northern Nut Growers Association contest. Originated in York County, Pennsylvania by C.E. Vandersloot. Introduced in 1927. BROOKS 1972; 140

Weschcke: Nut elongated, pointed at both ends; shell thin, cracks easily; kernel sweet, mild, bright, plump; keeps well up to 2 or 3 years without rancidity; ripens in mid-October. Tree vigorous, large, hardy. Originated in River Falls, Wisconsin by Carl



Weschcke. Introduced in 1953. BROOKS 1972; E91M, L27M{PL}, NO

#### CODES FOR SPECIAL TYPES

1. Purple

## BLACKBERRY {GR}

RUBUS SPP.

### UPRIGHT BLACKBERRIES

The type most often grown in northern areas, they grow very tall and upright with long, vicious thorns. Generally easier to care for than trailing blackberries, the canes being self-supporting.

Arapaho:<sup>1</sup> The earliest ripening thornless blackberry. Medium-sized, bright glossy black fruit with excellent quality and flavor both fresh and processed. Ripens over a 4 week season, stores well. Very erect canes; good cold hardness. Resistant to orange rust and rosette. Originated in Fayetteville, Arkansas by J.N. Moore. Introduced in 1993. BROOKS 1997; A39, B19, B75, C15M, D37, D43M, E97, F16, F87, F93, I49M, J2M, J61M, K67, L33, M83, N33, etc.

Bedford Giant: Very large, round fruit; skin black, glossy; flesh very juicy, sweet, flavor good; not as seedy as most blackberries; very good for canning and freezing; ripens very early. Very vigorous plant, with stems often 10 feet in length; very productive, the berries being borne in prolific clusters. Thought to have been selected from a Veitchberry seedling. SIMMONS 1978; R83

Black Satin:<sup>1</sup> Very large, oblong fruit; skin dull black at full maturity; flesh firm, juicy, sweet; quality good; ripens mid-season, mid to late-July. Bush heavy yielding; non-suckering; highly resistant to septoria leaf spot and anthracnose, and moderately resistant to mildew; self-fruitful, but more productive when planted with Dirksen; canes semi-erect. A82, A88M, B43M, C61, F16, F93, H4, I53M, J63M, K67, M65M, M83, O81

Brazos: Fruit very large, with size being maintained longer during harvest than Lawton; attractive; flesh fairly firm, somewhat tart; quality good for fresh market; ripens early, earlier than Lawton. Bush vigorous; productive; resistant to stem and leaf diseases; canes erect. Lawton x Nessberry. Originated in College Station, Texas by J.B. Storey. Introduced in 1959. BROOKS 1972; A19, A82, B19, B43M, C54, C61, E8M, H4, K75T, M83, N33

Brison: Fruit similar to Brazos, but more attractive and with smaller seeds; the flesh is firmer and somewhat sweeter. Recommended for home gardens and pick your own operations. Bush slightly more upright; adapted to the Waco, Texas and south central Texas region. Originated in College Station, Texas by H.H. Bowen, Texas Agricultural Experiment Station. Introduced in 1979. N33

Cherokee: Medium-large fruit; skin black, glossy; flesh firm, sweet; quality good; good for processing; ripens late July. Bush very vigorous and productive; canes very erect in growth habit; moderately thorny. The erect habit results in fruit being borne higher from the ground and more accessible to machine harvest. Developed at the Arkansas Agricultural Experiment Station. B19, B43M, B45M, C54, C61, F87, I83M, J2M, K75T, L47, M83

Chester:<sup>1</sup> Fruit large; skin black; flavor very good; quality high, does not soften, leak or lose color on hot sunny days; ripens after Black Satin. Bush productive, yields about twice as much as most thorned types; very resistant to caneblight. Considered one of the more winter-hardy thornless blackberries; has been grown successfully in Michigan and upstate New York with winter protection. B43M, B58, C15M, C30M, D37, F16, F43M, I50, J61M, J63M, K17, L33, M65M, N24M

Cheyenne: Fruit large, up to 1 inch long; quality excellent; ripens mid-season. Bush productive; canes very erect growing. Excellent for machine harvesting, for processing, pick-your-own operations and home gardens. Developed at the Arkansas Agricultural Experiment Station. B19, B43M, B45M, B58, C54, F93, I83M, J2M, K75T, L47, M83

Choctaw: Medium-sized, short conic fruit with an attractive glossy black finish; similar in firmness to Shawnee but slightly less firm than Cheyenne; excellent flavor; significantly small seed size. Ripens very early and tends to be more concentrated in ripening than other cultivars. Very vigorous and prolific plant; very erect growth habit. Developed by Dr. J.N. Moore of the University of Arkansas. B43M, B45M, F16, F87, F93, I53M, J2M, K17, K75T, M83

Comanche: Very large, attractive fruit; skin black, glossy; flesh very firm; quality good to excellent; makes a good frozen or canned pack; also excellent for pies and jams; ripens after Brazos. Canes vigorous, very upright growing; productive; moderately thorny. Developed at the Arkansas Agricultural Experiment Station. A82, B45M, I53M, J2M, K75T

Darrow: Large fruit, 1 inch long and 3/4 inch wide; skin black, glossy; flesh firm, mildly subacid, quality good; ripens early or about with Eldorado, continuing over a long period. Bush vigorous; reliable and heavy bearer. Originated in Geneva, New York by George L. Slate. Introduced in 1958. BROOKS 1972; A82, B19, B73M, C47, C61, D76, E3, G71, I78, J63M, J83

Dirksen:<sup>1</sup> (Dirksen Thornless) Large fruit; skin black, glossy; flavor sweet; ripens in early July, or a week sooner than Black Satin. Bush very vigorous; heavy yielding; cold-hardy; resistant to leaf spot, mildew and anthracnose; canes thornless. More cold-hardy than Black Satin, which it resembles. One of the hardiest thornless blackberries. B19, B45M, C54, C61, D76, F87, I53M

Doyle Thornless:<sup>1</sup> Sweet, juicy fruits of fine flavor; ripen over a 4 to 6 week period in June and July. Large, bushy plant with ornamental foliage; unusually long primocanes; totally thornless, disease-resistant and non-sucker ing. Produces 10 to 20 gallons of fruit per plant when mature. Cold-hardy to at least -20° F. Ideal for home gardeners. Originated in Washington, Indiana by Tom Doyle. K55

Ebony King: Fruit as large as Eldorado, which it resembles; skin black, glossy; flavor sweet, tangy, pure; ripens early. Bush upright; hardy, having withstood temperatures of 22 degrees below zero; resistant to orange rust; bears annually. Introduced about 1940 by Krieger's Wholesale Nuisery, Bridgman, Michigan. BROOKS 1972; B19, C61, E97, H58, J63M, N24M

Eldorado: Large, roundish to slightly elongated fruit; skin jet black; flesh firm, juicy; flavor rich, sweet; quality good to very good; ripens early midseason, ripening period long. Bush tall, upright-spreading; hardy and productive; seldom attacked by orange rust. Originated about 1880 near the village of Eldorado, Ohio. HEDRICK 1925; I41P

Flordagrind: (R. *trivialis* x) Large, oblong fruit; skin shiny black; flesh somewhat tart, softer than strawberries, juice very red; aroma delightful; very acceptable for pies, preserves and jellies; ripens very early. Bush vigorous; evergreen; canes long, somewhat trailing; adapted to hot, humid summers; winter chilling requirement very short. Originated in Gainesville, Florida. BROOKS 1972; U7D

Hull:<sup>1</sup> Fruit very large; skin black, glossy when ripe; flesh firm, sweet; quality high, does not soften, leak or lose color on hot sunny days; ripens somewhat later than Black Satin. Bush vigorous; very productive, yields of 19,842 pounds per acre have been reported; slightly more winter hardy than Black Satin. Recommended for home gardens and pick-your-own operations. A24, B19, B43M, B58, B75, C15M, C30M, C61, F87, F93, I50, M81M, M83

Illini Hardy: (Illini Winter Hardy) Large, black fruit; flavor sweet, quality good; resembles Harrow. Vigorous, thorny plant; very hardy, has been tested at temperatures as low as -24° F. Should allow blackberries to be grown farther north than previously possible. New introduction from the University of Illinois. FI6, F87, H65, L50, K71, L33

Kiowa: Very large, glossy black fruit of good quality; somewhat firmer than Shawnee; ripens in midseason, 3 days later than Shawnee, has a long harvest season. Moderately vigorous, erect plant, productive; appears immune to orange rust. Originated by J.N. Moore. BROOKS 1997; B19, B43M, C15M, D43M, F93, J2M, K17, N33

Lawton: Large, slightly elongated fruit; skin jet black but becoming bronzed when over-ripe; core large, rather hard; flesh soft, juicy; flavor acid at first, becoming sweet only at full maturity, rich; quality very good; ripens late midseason. Bush tall, upright-spreading; vigorous; productive. Originated prior to 1854. HEDRICK 1925; B19, C61, J2M

Loch Ness:<sup>1</sup> Large, glossy black fruit of good quality; richly tart flavor; ripens with or shortly before Hull. Semi-erect, spineless plant; less vigorous than Chester, Hull or Black Satin; can be grown with little support. Hardy to USDA Zone 5. Originated in Invergowrie, Scotland. Introduced in 1988. BROOKS 1997; B43M, F16, F87, J2M, J61M, K17, M81M, O81, P68M

Navaho:<sup>1</sup> The first erect-growing thornless blackberry. Short-conic fruit, comparable in size to that of Cheyenne; bright glossy black in color; firmer flesh than Cheyenne and Shawnee; sweeter flavor and smaller seed size than other thornless cultivars. Ripens about 15 days after Cheyenne. Developed by Dr. J.N. Moore of the University of Arkansas. A39, B58, C15M, C61, D37, D43M, E97, F16, F87, F93, G8, I49M, 174, J2M, K17, K67, L33, N33, etc.

Oklawaha: (R. *trivialis* x) Fruit about 1 1/8 inches long by 1/2 inch in diameter, somewhat blunt; skin black, turning reddish if exposed to sun after picking; juice deep red, aroma delicate and delightful; ripens 2 to 5 days before Flordagrind, which it resembles. Bush vigorous; canes trailing; semi-evergreen to evergreen; largely self-fruitful. Originated in Gainesville, Florida. BROOKS 1972; U7D{SC}

Rosborough: Fruit very large; flavor sweeter than Brazos which it resembles; quality good; ripens early, average ripening date mid-May; ripens over a long period, approximately 25 days. Bush heavy yielding; withstands moderately dry weather; canes erect. Originated in College Station, Texas by H.H. Bowen, Texas Agricultural Experiment Station. Introduced in 1979. B43M, F93, J2M, K75T, L33, M83, N33

Shawnee: Fruit very large, attractive; skin black, glossy; flesh firm, very sweet and juicy; ripens later and over a longer period of time than other Arkansas blackberry cultivars. Canes very upright growing. Bush vigorous; disease resistant; productive; in production tests, Shawnee produced 13,391 pounds per acre, compared to 5,598 pounds for Cheyenne. Developed at the Arkansas Agricultural Experiment Station. B15M, B19, B43M, B45M, C15M, C30M, F87, F93, G17, I53M, I83M, J2M, K17, L33, M83, etc.

Silvan: Large, maroon-black fruit; mild very sweet flavor; excellent fresh or for processing; ripens very early. Vigorous, productive plant; shows excellent tolerance to heavy soils, wind and drought; also very disease resistant. Selected in Victoria, Australia from a progeny raised from a cross made in Oregon between Marion and a Boysen hybrid. JENNINGS; B43M, C15M, K17

Smoothstem:<sup>1</sup> Fruit large, blunt conic; skin jet black, firm; flavor good; matures about August 1, or a month later than Eldorado. Bush winter hardy at Beltsville and southward; productive; non-suckering; canes thornless, semi-upright, 8 to 10 feet long. Recommended for local market and home gardens. Originated in Beltsville, Maryland. Introduced in 1966. BROOKS 1972; B19, B73M, E3, G23, I78

Thornfree:<sup>1</sup> Fruit medium-large, blunt conic; skin glossy black; flavor good, tart; adheres firmly; ripens 3 weeks later than Eldorado. Bush winter hardy at Corvallis, Oregon and Beltsville, Maryland; very productive in fertile soils; canes thornless, semi-upright, 7 to 8 feet long. Originated in Beltsville, Maryland. Introduced in 1966. BROOKS 1972; A82, B19, B43M, C61, H49, I53M, K71, L33

Thornless Evergreen:<sup>1</sup> Fruit large, 1 1/2 inches long; skin black; flesh very firm and sweet; seeds large; quality fair; excellent for pies, jellies and jams. Bush very vigorous and productive; disease resistant; must be propagated from tip layering to preserve thornless trait; canes semi-trailing. Grown commercially in Oregon. STEBBINS; A82, C54, K17, P59M

Waldo Thornless:<sup>1</sup> Produces high yields of highly-flavored berries that are easy to pick. Unlike some other thornless cultivars, Waldo remains thornless, even from the suckers. Originated in Corvallis, Oregon at the Oregon Agricultural Experiment Station. Named after Dr. George F. Waldo, who developed the Marionberry. C15M, I49M, K17, M81M

Womack: Fruit similar to Brazos, but more attractive and with smaller seeds; the flesh is firmer and somewhat sweeter. Recommended for home gardens and pick your own operations. Bush slightly more upright; adapted to the Waco, Texas and north Texas region. Originated in College Station, Texas by H.H. Bowen, Texas Agricultural Experiment Station. Introduced in 1979. M83, N33

#### BLACKBERRY-RASPBERRY HYBRIDS

Included here are direct crosses between species of blackberry and raspberry as well as progeny of such crosses. They are characterized by a distinct flavor that combines the best qualities of both parents.

Boysen: (Boysenberry) Fruit very large, 1 1/4 inches or more long; skin dark red to purplish-black; flesh rather soft; aroma distinct; flavor very fine but not as sweet as Young, suggestive of raspberries; ripens 1 week before Young. Bush trailing, more vigorous than Young, high yielding. Originated in Napa, California by Rudolf Boysen. Introduced in 1935 by Walter Knott, Knott's Berry Farm, Buena Park, California. BROOKS 1972; A82, A88M, A98{ED}, C54, C61, H3{PD}, H49, J2M, J61M, K17, K75T, M81M

Cascade: Loganberry hybrid that was popular about 30 years ago. Bright deep red fruit with excellent flavor, dessert quality high, also excellent for canning or freezing; very small seeds; ripens in July. Vigorous, productive bush, hardy only in the Pacific Coast and similar regions. Originated by George M. Darrow and George F. Waldo. BROOKS 1972; C15M, J61M

Douglass:<sup>1</sup> Medium to large, glossy black fruit of excellent quality and flavor, similar to Marionberry; small seeds; ripens in mid-season. Excellent fresh or made into jelly or juice. Vigorous, trailing canes that require trellising; thornless; hardy to at least 5° F. Complex hybrid involving Boysenberry, Marionberry and several blackberries. Developed by Barney Douglass. C15M, J61M

Logan: (Loganberry) Large fruit, up to 1 1/4 inches long; skin dark-red to dusty maroon, covered with dark hairs that dull its color; flesh firm, very juicy; flavor tart unless fully ripe; excellent for canning and pies. Bush trailing; very vigorous; needs trellis support. Originated in Santa Cruz, California by Judge J.H. Logan. Introduced in 1880. SIMMONS 1978, STEBBINS; A98{PD}, B19, C25P{PD}, C61, D7{PD}, I49M, J61M, K17, LI, O81, P68M

Marion: (Marionberry) Medium to large fruit; skin bright black; flesh medium firm; quality high with excellent flavor; ripens with Boysen. Excellent for local markets, canning, pies, jams, etc. Bush trailing; a vigorous grower; very productive, has higher yields for a longer period than Boysen; adapted to western Oregon and western Washington. Chehalem x Olallie. Originated in Corvallis, Oregon by George F. Waldo. Introduced in 1956. BROOKS 1972; A38M{PD}, A98{PD}, B19, C15M, C25P{PD}, C34, C54, I49M, J61M, K17, M81M

Nectar: (Nectarberry) Very large fruit; dark red to purplish black; drupelets large, 9 around the core instead of 10 or usually 11 as in Boysen; flesh juicy, somewhat acid, flavor pleasant, seed very small; ripens from late July to late August. Bush trailing; production and habit almost if not identical with Boysen. Thought by many to be a chimera of Boysen, which it resembles. BROOKS 1972, SIMMONS 1978; C54, 153M

Ness: (Nessberry) (*R. rubrisetus* x *R. strigosus*) Fruit larger than Logan; skin deep-red to blood-red, turning brown when overripe, glossy; drupelets large; flavor of raspberry, high acidity; keeping quality good. Bush very vigorous; growth habit like raspberry; canes up to 15 feet in length. Originated in College Station, Texas by H. Ness. Introduced in 1921. BROOKS 1972; H4

Olallie: (Olallie Berry) Large fruit, slightly longer and more slender than Boysen; skin black, glossy, attractive; flesh firm; flavor good but peak quality reached only at full maturity; excellent for processing. Bush very vigorous; canes trailing; very susceptible to orange rust when grown in a warm climate; winter-chilling requirements shorter than for Boysen. Logpi x Young. BROOKS 1972; A63, A88M, C15M, C54, G87M{ED}, H4, I49M, I58P{PD}, I83M, J11M{PD}, K17, LI, M81M

Sun: (Sunberry) (*R. ursinus* x *R. idaeus*) Similar to T<sup>h</sup>berry, but fruits are slightly smaller and are produced much more abundantly. Fruits are also darker colored and sweeter than Tayberry. Originated at the East Mailing Research Station. Hybrid cross between a wild blackberry and a red raspberry. JENNINGS; 081

Tay: (Tayberry) Fruit large, long conical in shape; 50% larger than Logan, with a brighter and less downy appearance; skin deep purple when fully ripe; flavor sweet, strong; quality excellent; suitable for fresh market, frozen fruit, jam or wine. Bush similar to Boysen and Young in growth habit; produces fruit on short, strong laterals, making it easy to pick. Originated at the Scottish Horticultural Research Institute. Introduced in 1979. JENNINGS; B19, B43M, C54, D7{PD}, E97, G5M{PD}, G87, H42, I49M, I49M{PD}, J61M, K17, M81M, 081

Thornless Boysen:<sup>1</sup> Similar to Boysen but fruit is smaller; bush is less productive. Originated in El Monte, California by D.L. Duffin. Introduced in 1938. Bud mutation of Boysen; discovered in 1936. BROOKS 1972, STEBBINS; A63, B43M, B73M, C34, C61, D76, E3, I74, I78, J2M, J63M, K71, L33, M65M, M83, N33, etc.

Thornless Logan:<sup>1</sup> Medium-large, lavender-red fruit, does not darken while ripening; fine hairs dull its color; flesh soft, tart, high in acidity. Excellent for pies, juice, canning, and wine making. Ripens earlier, produces over a longer period, and is more prolific than standard Logan. Plants are more vigorous and canes are stronger. Introduced about 1935. C15M, C34, C54, M81M, 081, R83

Thornless Young:<sup>1</sup> Large, dark-red fruit. Similar to Boysen, but is shiny and less acid in taste. Bears 10 days earlier than Boysen, but is about 20% less productive. Good for canning and freezing. Bush vigorous; productive; canes trailing, thornless. C54

Young: (Youngberry) Fruit very large, roundish, appearance outstanding; skin deep wine-colored, glossy; flavor very sweet, excellent for frozen pack and jam; ripens mid-season. Bush trailing; high-yielding; productive; very vigorous; adapted to east Texas and southern Arkansas. Phenomenal berry x Austin Mayes dewberry. Originated in Morgan City, Louisiana by R.M. Young. Introduced in 1926. BROOKS 1972; B19, B43M, C54, C61, K75T, M81M, 081

#### DEWBERRIES

Sometimes called trailing blackberries, they are more tender as a rule than upright types and are generally winter-killed when grown in the North. More difficult to care for with weak canes that must be tied to poles or trellises. B73M, D81P{PD}, D97{PD}, E3, F93, H4, I78

Austin:<sup>1</sup> (Austin Mayes, Austin Thornless) Said to be a seedling of Mayes and similar to that cultivar, but thornless; ripens early to mid-season. Originated about 1918 with J. Parker, Tecumseh, Oklahoma. Introduced in 1924 by J.M. Parker & Son Nursery Company, Fayetteville, Arkansas. HEDRICK 1925; A82, B19, B43M, C54, H4, I49G, I53M, J2M, K75T, M83, N33

Lucretia: (*R. flagellaris*) Medium to large fruit; skin jet black; drupelets large; core soft; flesh juicy, firm; flavor pleasantly sprightly when fully ripe, otherwise rather tart, rich; quality very good; ripens early. Bush vigorous; trailing; very productive; almost immune to orange rust; susceptible to anthracnose. Originated before 1875. HEDRICK 1925; B19, C61, D76, J2M, J63M, K75T, M83

Perron's Black:<sup>1</sup> (*R. canadensis*) Very large, aromatic fruit; high sugar content; quality excellent; ripens from mid-July to late October. Excellent for pick-your-own, home gardens and roadside markets. Very vigorous, trailing, suckerless plant; thornless. Developed by W.H. Perron & Co. of Quebec, Canada. Selected for its hardiness. BROOKS 1997; B43M, D11M, F70, G50

#### CODES FOR SPECIAL TYPES

##### 1. Thornless

## BLUEBERRY {GR}

#### VACCINIUM ASHEI

#### VACCINIUM CORYMBOSUM

#### HIGHBUSH

Generally grown in northern areas with 1,000 or more hours of temperatures below 45° F. every year. Considered to be superior in flavor to rabbiteye blueberries, however they require more pruning. Southern types are being developed that combine the high quality fruit of the northern highbush with the low chilling requirements of rabbiteyes. Mostly *V. corymbosum*.

#### NORTHERN

Atlantic: Fruit cluster loose; berry large, oblate; skin blue, attractive; flesh firm, aroma slight, flavor good, dessert quality medium; resistant to cracking; ripens late, just before Jersey. Bush vigorous, open spreading; very productive; subject to bacterial dieback in Oregon and Washington. BROOKS 1972; H65

Berkeley: Fruit cluster loose; berry medium-large, about 70 per cup, oblate; skin very light blue, very attractive; flesh firm, aroma slight, slightly subacid; dessert quality medium; not subject to cracking; stores well; scar very good; ripens in late midseason, about a week after Stanley and a week before Jersey. Bush medium productive, yields approximately 5 pounds of fruit; height 5 to 6 feet. BROOKS 1972; A40, B58, C61, C93, C93Z, D60, D65, D79M, E87, F16, G23, G71, I27M, J99G, M99G, etc.

Bluechip: Fruit cluster loose; berry large, averaging 65 per cup; skin light blue; quality very good; scar small to none; ripens in mid-June at Castle Haynes, North Carolina. Bush upright, never spreading; height 4 to 5 feet; a reliable bearer, yields up to 20 pounds of fruit at maturity; disease resistant. C93Z, D79M, F16

Bluecrop: Large, medium loose cluster; berries large, about 65 per cup; skin very light-blue; flesh very firm, subacid, flavor good, dessert quality good, moderately aromatic; resistant to cracking; scar small; ripens early-midseason, about 4 days before Berkeley. Bush upright-spreading, height 4 to 6 feet; vigorous; a consistent producer of 10 to 20 pounds of fruit. BROOKS 1972; A24, A39, A40, A84M, B43M, B58, C9, C61, C93, C93Z, D60, D79M, F16, F48, I73M, J2M, J16, M3, etc.

Bluehaven: Very large, round fruit, 60 per cup; skin light blue; flesh very firm, flavor and quality excellent; picking scar very small and dry; ripens about July 15 at South Haven, Michigan; holds

quality well on bush; can be picked over a 4 to 6 week period. Bush vigorous and hardy; an inconsistent producer, yielding between 5 and 20 pounds of fruit; widely adapted; height approximately 4 feet. BROOKS 1972; C93, F16

Bluejay: Medium-large fruit, about 76 per cup, spherical; skin light blue; flesh firm; mild pleasant flavor, only slightly tart; small, dry scar; will not drop, crack or bleed; ripens early-midseason, 3 to 4 days before Bluecrop. Bush upright, only slightly spreading, height 5 to 7 feet; extremely vigorous; yields 10 to 20 pounds of fruit. A40, A84M, B43M, B75, C93, D60, D76, F16, F48, H65, I73M, J2M, M3, M81M

Blueray: Small, tight cluster; berry very large, about 60 per cup; skin medium light-blue; flesh firm, aromatic, flavor fine; non-cracking; scar medium; ripens in midseason, with Ivanhoe and Rancocas; resembles Dixi. Bush upright, height 4 to 6 feet; very productive, yields 10 to 20 pounds of fruit at maturity. BROOKS 1972; A39, A84M, B43M, B58, B73M, B75, C61, C93, C93Z, D60, D65, E47, F16, F48, G16, G72, I27M, 178, J2M, J16, J83, etc.

Bluetta: Medium-sized fruit, about 71 per cup; skin blue-black; flesh firm, has more flavor than Weymouth; ripens early, with Weymouth. Bush short, compact-spreading; height 3 to 5 feet; vigor medium; consistently productive, yields 10 to 20 pounds of fruit; more resistant to spring frosts than Weymouth. BROOKS 1972; A18, A88M, BIG, C61, C93, C93Z, D11M, D60, D79M, E87, F16, F70, H88, J99G, M3, etc.

Brigitta: Large medium-blue, very firm berry, cup count about 65; scar small and dry; flavor good; quality excellent; ripens late, between Bluecrop and Lateblue; ships and stores well. Vigorous, upright, high yielding bush; easy to propagate by softwood and hardwood cuttings. One of the most important blueberry cultivars developed in Australia. Has been introduced into the United States and Chile. Originated in Knoxfield, Victoria. BROOKS 1997; A24, A84M, C93, F16, I73M, J61M, M3

Burlington: Medium tight cluster; berry medium-small, 75 per cup; skin blue; flesh firm, aroma slight; dessert quality very good; small scar; resistant to cracking; matures late, lasting 1 week after Rubel. Bush vigorous, upright spreading; height 5 to 7 feet; an inconsistent producer in colder climates, yielding between 5 and 10 pounds of fruit. BROOKS 1972; A18, E47, F16, F48

Collins: Medium-sized, tight cluster; berry medium-sized, about 70 per cup; skin light blue; flesh very firm, highly flavored, sweet to mildly subacid; resistant to cracking; does not drop; ripens early, midway between Earliblue and Bluecrop. Bush erect, slightly spreading, height 4 to 6 feet; yields between 10 and 15 pounds of fruit. BROOKS 1972; A40, B19, B43M, C61, F16, F48, G79M, J2M, K75T, M92

Coville: Fruit cluster loose; berry large, about 65 per cup; flesh firm, flavor tart until ripe, aromatic; dessert quality good; little or no picking scar; resistant to cracking; does not drop; ripens late, 30 days after Earliblue. Bush upright, height 4 to 6 feet; vigorous; productive, yields 5 to 8 pounds of fruit. BROOKS 1972; A40, B19, B58, B73M, C47, C61, C93Z, F16, F48, G43, G71, G79M, H49, I27M, 178, etc.

Darrow: Medium-sized, attractive cluster; berry large, 57 per cup; skin light blue; flesh firm, aromatic, highly flavored, tart to mildly tart depending on maturity; neither drops nor cracks during wet weather; scar medium; ripens about with Coville, which it resembles. Bush erect; vigorous; consistently productive, more so than Coville. BROOKS 1972; A40, B74, C34, C54, D60, E87, F16, I49M, 174, J61M, M81M

Duke: Ivanhoe x Earliblue. Medium-sized, light blue fruit; firm, somewhat aromatic, ripens early about the same as Bluetta. Vigorous, upright bush, produces consistently. Developed by the New Jersey Agricultural Experiment Station and the USDA as an alternative to Bluetta. Introduced in 1986. ECK 1988; A40, A84M, BIG,

B58, C34, C93, C93Z, D37, D60, D69, D79M, F16, F48, H49, 150, I73M, M3, etc.

Earliblue: Fruit cluster medium, long, loose; berry medium to large, about 65 to 75 per cup, oblate; skin light blue; flesh very firm, subacid, flavor good, moderately aromatic, dessert quality good; resistant to cracking; ripens very early, with or before Weymouth. Bush upright, height 4 to 6 feet; vigorous; yields 8 to 15 pounds of fruit. A24, A40, B58, C93Z, D60, E47, F16, G72, H88, I73M, J16, K28, M99G

Elizabeth: Very large, tender fruits; skin color fair. Excellent, sweet flavor, of gourmet quality. Ripens over a very long season, from midseason to very late. A good shipper. Upright, spreading bush with loose fruit clusters. Originated in Whitesbog, New Jersey by Mrs. Elizabeth White. Discovered about 1950. BROOKS 1972; C93Z

Elliott: Small to medium fruit, about 75 per cup; skin light blue; flesh very firm, good mild flavor when fully ripe; small, dry scar; won't crack or drop; ripens very late. Bush very upright, slightly spreading, height 5 to 7 feet; consistently yields 10 to 20 pounds of fruit. BROOKS 1972; A18, A40, A84M, B75, C93, C93Z, D60, F16, H49, H88, I73M, J61M, M3

Herbert: Fruit clusters loose; berry large, averaging 65 per cup; flesh soft; scar large, will leak, making the fruit an unattractive black color; hangs well on the bush; ripens late, about the same time as Jersey, Rubel, and Dixi, earlier than Coville and later than Berkeley. Bush consistently productive. BROOKS 1972; A18, A24, A40, BIG, C61, C93Z, D65, F16, G23, H65, H88, M81M

Jersey: Fruit cluster very loose, long; berry medium-small, about 110 per cup, round-oblate; skin blue; flesh firm, aroma lacking; dessert quality fair; picking scar small; ripens late, with Rubel; keeps well. Bush upright-spreading, height 5 to 7 feet; vigorous; productive, yields 7 to 10 pounds of fruit. Very widely grown. BROOKS 1972; A24, A40, A84M, B58, B73M, C61, C93, D60, F16, H65, I78, J16, J83, M65M

Lateblue: Medium-sized cluster; berry small, about 94 per cup; skin light blue; small stem scars; flesh firm, highly flavored; smaller and ripens 7 days after Coville. Has the outstanding feature of simultaneously ripening its fruit during high temperatures. Bush erect, vigorous, height 5 to 7 feet; consistently productive, yielding about 9 to 12 pounds of fruit. BROOKS 1972; A40, H88, M92

Legacy: Medium-sized fruit with superior flavor; very small stem scar; good firmness; ripens in late midseason, after Bluecrop. Vigorous, upright, high yielding bush. Recommended for the warmer parts of the northern highbush growing area. Selected at Weymouth, New Jersey. Released in 1993. BROOKS 1997; B74, C34, C93Z, D60, E87, I49M, J61M

Meador: Medium to large fruit, about 65 per cup; skin medium blue; flesh very firm, of good quality; small, dry scar; ripens in midseason. Bush upright, slightly spreading; height 5 to 7 feet. Recommended for areas where winter temperatures drop below -25° F., and heavy snow loads are frequent. Originated in New Hampshire by Professor E.M. Meador. F16

Northblue:<sup>1</sup> Large, attractive dark-blue fruit; flesh firm, quality very good; stores well with refrigeration; ripens early-midseason. Bush vigorous; half-high, height 20 to 30 inches; yields between 3 and 7 pounds of fruit annually. Can survive winter temperatures of -30° to -35° F. A65, A84M, B26, C34, C93, D60, D76, E87, E97, F16, G16, L27M, L70, L79, M81M, N24M, etc.

Northcountry:<sup>1</sup> Medium-sized fruit, 1/2 inch in diameter; attractive sky-blue skin; quality good, flavor sweet to mild, reminiscent of wild lowbush blueberries; little or no picking scar; ripens early-midseason. Bush vigorous; half-high, height 18 to 24 inches; yields between 2 and 7 pounds of fruit. Can survive winter temperatures of -30° to -35° F., but production is maximized when snow protection

is adequate. A74, A84M, C34, C93, D60, D65, F16, I49M, 174, L27M, L79, M81M

Northland:<sup>1</sup> Fruit clusters long, loose; berry medium-sized, about 136 per cup, round; skin medium blue; flesh firm, flavor good, reminiscent of wild blueberries; picking scar small and dry; ripens early-midseason. Bush moderately spreading, height 3 to 4 feet; vigorous; a consistent bearer of 15 to 20 pounds of fruit. BROOKS 1972; A24, A40, A74, B26, C61, C93, D60, D65, F16, F48, G16, G23, H65, L27M, M3, etc.

Northsky:<sup>1</sup> Fruit small; skin an attractive sky blue color; flesh firm, highly flavored; quality very good; stores well with refrigeration; ripens early-midseason. Bush 18 to 24 inches; yields between 1 and 2 pounds of fruit. Classified as a half-high but grows as a low spreading bush. Would make an excellent low border for edible landscaping. Can survive winter temperatures of -35° to -40° F. A65, A84M, C93, D60, E87, F16, H65, I49M, J61M, L27M, M3, M81M

Olympia: Medium-large fruit; skin medium blue, thin; flesh aromatic, flavor very good; resists cracking; does not drop; ripens in midseason. Bush very tall, spreading; vigorous; very productive; adapts well to most types of soil. Originated in Olympia, Washington by Joseph Eberhardt. A18, A88M, B74, C34, D60, E87, I49M, 174, J61M, J99G, LI, M81M

Patriot: Fruit cluster tight; berry very large, between 50 and 60 per cup, slightly flat; skin medium blue; flesh firm, flavor very good; small, dry, recessed scar; ripens early. Bush upright-spreading, height 4 to 6 feet; very vigorous; consistently yields 10 to 20 pounds of fruit. A40, A84M, B26, B58, B74, C93, C93Z, D60, D76, F16, F48, G16, H65, H88, I49G, 150, J2M, L27M, Mi, M81M, etc.

Pemberton: Very loose cluster; berry medium to large, roundish; skin darker blue than Atlantic and Jersey; flesh firm, aroma slight, dessert quality fair to good; scar poor; season late, just before Jersey and Rubel; difficult to pick; cracks some in wet weather. Bush very productive; extremely vigorous. BROOKS 1972; A18, D76, E47

Rancocas: Fruit cluster tight; berry small, about 130 per cup, oblate; flesh firm, crisp, aroma slight, flavor mildly subacid; large scar; dessert quality fair to good; ships well; ripens early-midseason, after Collins; cracks badly in wet weather. Good for processing. Bush upright-spreading, height 5 to 7 feet; a consistent producer of 10 to 20 pounds of fruit. BROOKS 1972; A18, F16

Rubel: Fruit cluster long; berry small, 132 per cup; skin light blue; flesh firm, flavor very good; medium picking scar; ripens late. Bush upright, height 5 to 7 feet; very vigorous; yields between 8 and 10 pounds of fruit. An older cultivar, still preferred by many for pies. Originated as a wild seedling in Whitesbog, New Jersey. Selected by Elizabeth C. White in the early 1900's. A18, A84M, F16, G72, I41P, K28, M3

Sierra: Large, medium-blue fruits, about 50 per cup; small stem scar; quality very good to excellent; ripens in midseason. Extremely vigorous, upright bush, very productive. Recommended for fresh market and U-Pick operations. Chilling requirements high. Widely adapted, has tested well in all major blueberry growing regions in the United States. Originated at Beltsville, Maryland. Introduced in 1988. BROOKS 1997; A24, A40, A84M, C93, D60, F16, H88, I49M, I73M, 174, J61M, Mi, M81M

Spartan: Very large fruit, about 60 per cup; skin powdery to dark blue; flesh very firm, quality excellent; medium dry scar; ripens early. Bush upright, height 5 to 7 feet; vigorous; yields between 8 and 10 pounds of fruit. After the first 2 pickings the fruit size drops off considerably. A18, A40, A84M, B74, C93, C93Z, D60, D79M, F16, F87, J7M, 174, J2M, J61M, Mi, etc.

Tophat:<sup>2</sup> Ornamental, dwarf type cultivar. Height of bush only 20 inches at maturity, with a spherical shape of about 20 inches in diameter. Perfect for growing in a pot on the patio or indoors on a sunny windowsill. Berries medium-sized, bright blue, firm, of good

flavor. B73M, C34, C61, D60, D65, D79M, D95, E97, F16, F48, 174

Toro: Medium-sized fruit, about 75 per standard cup; skin medium blue; flesh firm, flavor good; quality excellent; small, dry scar; ripens early-midseason. Bush upright, height 5 to 7 feet; very vigorous; a consistent and heavy producer. Released by the New Jersey Experiment Station in 1987. A40, A84M, B74, C34, C93, C93Z, D11M, D60, D79M, F16, F70, H88, I49M, I75M, J61M, Mi, M81M, etc.

Weymouth: Fruit cluster loose; berry medium to large, round oblate; skin dark blue; flesh soft, aroma lacking; dessert quality usually poor; scar medium; tends to drop; season very early. Bush erect, spreading, low in vigor; very productive. Originated in Weymouth, New Jersey by F.V. Coville. Introduced in 1936. BROOKS 1972; A18, C93Z, E47, 081

### SOUTHERN

Avonblue: Medium to large fruit, about 75 or 80 per cup, very round; skin attractive; flavor mild and acid, quality best of the southern highbush cultivars; ripens May 7 at Gainesville, Florida. Bush somewhat spreading, height 4 to 5 feet; yields 7 to 14 pounds of fruit on well-kept irrigated plantings. F48, G17

Challenger: (Misty) Large fruit, about 65 per cup; very attractive with a light blue cast that holds up when packed for fresh market; flesh firm; little or no picking scar; ripens May 1 to 3 at Gainesville, Florida about 4 days later than Sharpblue. Vigorous upright bush, height 6 feet. Used for commercial plantings and to pollinate Sharpblue. Released by the University of Florida in 1989. D37, D79M, F16, G17, I83M

Georgiagem: Medium-sized fruit, about 80 per cup; flesh firm, flavor pleasant; small, dry scars; ripens early, May 8 at Gainesville, Florida. Bush vigorous, tall and upright, height 5 to 6 feet; moderately productive; self-fruitful. Very good for fresh markets. Introduced in 1986 by the Coastal Plains Experiment Station, Tifton, Georgia. A84M, A88M, B45M, C54, D37, D60, D79M, E87, F16, F5JM, G17, I83M, J99G, LI, M81M, N20, etc.

O'Neal: Very large, attractive fruit with excellent firmness and little to no picking scar. Quality will not deteriorate under high temperatures. Spreading, well-proportioned bush; height 6 feet; will produce fruit in the South without a pollinator; appears to do well in lighter soils where others fail. Earliest ripening highbush cultivar. A84M, A88M, B45M, C54, D37, D60, D79M, E87, F16, F5JM, I49M, 174, I83M, J61M, J99G, LI, M81M, N20, etc.

Reveille: Small to medium-sized, light blue fruit with good flavor and quality; excellent firmness; ripens slightly earlier than O'Neal. Productive bush with excellent vigor and precocity; resistant to stem canker. Requires 600 to 800 hours of chilling. Originated in North Carolina. Introduced in 1990. BROOKS 1997; A84M, C54, D60, D79M, F16, I49M, J99G

Sharpblue: Fruit medium to large, about 75 or 80 per cup; quality fair to good; small scar; ripens April 27 at Gainesville, Florida. Bush fast-growing and very vigorous, height 5 to 6 feet; yields 8 to 16 pounds of fruit. The number one southern highbush planted in Florida. B45M, C54, D79M, F16, G2M, G17, Q93

Sunshine Blue: Medium-sized fruit, about 80 per cup; flesh very firm, quality good; ripens May 10 through June 15 at Gainesville, Florida; can be stored. Bush 3 to 4 feet tall and wide; yields between 5 and 10 pounds of fruit; appears to tolerate high pH soils better than all other southern highbush and rabbiteye types. Grows well in pots. B74, C34, D60, E63, E87, F16, F5JM, I49M, J61M, M81M

### RABBITEYE

Native to the southeastern United States. Requires less chilling, only about 500 hours below 45° F. every year. Grows taller than highbush types, ranging from 8 to 20 feet tall. Also not as sensitive to soil acidity and is far more heat and drought resistant. Much more productive than highbush blueberries. (*V. ashei*)

**Aliceblue:** Large fruit, about 70 to 75 per cup; flesh firm, aromatic, flavor very sweet, quality good; ripens early. Bush tall and spreading, height 6 to 10 feet; yields between 7 and 14 pounds of fruit. Good for fresh or processed sales. B45M, D79M, G17

**Baldwin:** Fruit medium-sized, dark blue; flesh firm, flavor good; small, dry scars; ripens over a 6 to 7 week period, beginning the same time as Delight. Recommended for pick-your-own and backyard plantings. Bush vigorous, upright, produces large crops regularly. Originated in Tifton, Georgia. B45M, D79M, G17

**Beckyblue:** Large fruit, about 70 to 75 per cup; flesh firm, very sweet with a mild blueberry flavor; quality excellent; no picking scar; ripens early; stores well. Bush tall and upright, height 6 to 10 feet; yields between 8 and 12 pounds of fruit. One of the leading cultivars in north Florida. B45M, D79M, F16, G17

**Bluebelle:** Large, dark fruit; flavor very good; ripens over a relatively long period of time, three to four weeks. Bush upright, moderately vigorous; productive. An excellent cultivar for pick-your-own operations. A82, B45M, D79M, G17, K75T

**Bonitablue:** Fruit large, between 70 and 75 per cup; flesh firm, quality excellent, very sweet, with a mild blueberry flavor; no picking scar; ripens early; stores well. Bush tall and upright, height 6 to 10 feet; yields 8 to 22 pounds of fruit. One of the leading cultivars in northern Florida. B45M, D79M, F16

**Brightwell:** Medium to large fruit, between 75 and 80 per cup; skin light-blue; flesh firm, sweet, quality excellent; little or no picking scar; ripens early to midseason and over a long period. Bush tall and spreading, height 8 to 12 feet; vigorous; consistently yields 8 to 14 pounds of fruit. Good for commercial or home use. A84M, B45M, D79M, F16, F93, G8, G17, H4, I53M, K75T

**Briteblue:** Medium-large fruit, about 75 to 80 per cup; skin light blue; flesh very firm, flavor fair; ripens in midseason, later than Tifblue; handles well for distant marketing. Bush open-headed and spreading; height 8 to 12 feet; vigorous; yields 8 to 12 pounds of fruit. A82, B45M, D79M, I53M, M69M

**Centurion:** Fruit medium to large; darker in color than most rabbiteyes, moderately firm; of excellent dessert quality; ripens midseason to late, 2 weeks after Tifblue. Bush upright, easy to manage, vigorous and productive; adapted to heavy soils. Developed by the North Carolina Agricultural Experiment Station and the USDA. Introduced in 1978. ECK 1988; B45M, D79M, G17

**Chaucer:** Medium-large fruit, about 75 or 80 per cup; quality fair; has a tendency to tear when picked; ripens early to midseason. Bush tall and spreading, height 8 to 12 feet; vigorous; yields 12 to 25 pounds of fruit. Should be planted in areas of low frost damage. B45M, D79M

**Choice:** Fruit small to medium, about 80 or 90 per cup; skin darker than normal; quality very good but mainly used for the process market; ripens midseason to late. Bush tall and upright with some spreading, height 8 to 12 feet; vigorous; yields 8 to 12 pounds of fruit. D79M, G17

**Climax:** Medium to large fruit, about 75 to 80 per cup; quality good; little or no picking scar; ripens early. Bush tall and spreading, height 6 to 10 feet; yields between 8 and 22 pounds of fruit. Good for fresh market or processing. One of the leading pollinators for other rabbiteyes. A82, A85M, C30M, D79M, F16, F93, G17, G65M, G72, H4, M83

**Delite:** Fruit medium to large, about 75 to 80 per cup, round; skin light blue; flavor excellent, not tart before becoming fully ripe as are other cultivars of rabbiteye blueberries; ripens a few days later than Briteblue. Bush tall and upright, height 6 to 10 feet; yields between 8 and 15 pounds of fruit. BROOKS 1972; A82, B45M, D79M, F93, G17, G65M, H4, I53M, M69M, M83

**Garden Blue:** Medium-sized, round fruit; skin light blue; flesh firm, flavor good; scar small, dry; ripens early to midseason. Bush

upright; vigorous; consistently high yielding; fruit well distributed on long shoots making picking easy. D79M, G72, K28

**Homebell:** Medium-large fruit; skin medium dark blue; flesh firm, flavor mild; ripens in midseason. Bush very vigorous and fast growing, productive; easy to propagate. Recommended for home gardens. Selected at Tifton, Georgia. Introduced in 1955. BROOKS 1972; I4IP, K76

**Powderblue:** Fruit large, about 75 to 80 per pound; skin powder blue, attractive, stands out well amongst other blueberries; flesh very firm, subacid, distinct blueberry taste; quality very good; ripens in midseason. Bush tall and upright, height 8 to 12 feet; vigorous; yields 8 to 14 pounds of fruit. Good pollinator and companion producer for Tifblue. B45M, D37, D79M, F16, F93, G17

**Premier:** Medium-large fruit, about 75 to 80 per cup; skin light blue; flavor and quality very good; ripens early to midseason; stores very well. Bush tall and upright, height 6 to 10 feet; vigorous; yields 8 to 16 pounds of fruit. Recommended for home and commercial use. A85M, B45M, D79M, F16, F43M, F87, F93, G17, H4, I41P, I53M, K75T

**Southland:** Medium-sized fruit, about 80 to 90 per cup; skin light blue; flesh firm, flavor good; ripens late midseason, with Tifblue; turns soft if stored too long. Bush tall and upright with some spreading, height 8 to 12 feet; yields 8 to 16 pounds of fruit. Recommended for home and commercial use. A82, B45M, D79M, G72, H4, K28

**Tifblue:** Medium to large fruit, about 75 to 80 per cup; skin very light blue; flesh firm, flavor very good; scar very dry and small; ripens early to midseason. Bush tall and vigorous; height 8 to 14 feet; yields 8 to 25 pounds of fruit. Quality holds up well until the last berries are harvested. The present standard among rabbiteye blueberries. C30M, D37, D79M, F16, F43M, F93, G65M, G72, H4, I53M, K76, L33, M69M, M83

**Woodard:** Fruit large, about 70 to 75 per half-pint cup; skin light-blue, appearance excellent; flesh firm, flavor mild, slightly more acid than Tifblue, quality very good when fully ripe; stem scar dry; ripens early to midseason; holds up well in shipping. Bush spreading, height 6 to 10 feet; precocious; yields 8 to 16 pounds of fruit. B45M, D79M, G17, G72, H4, I41P, K28, L33, M69M, M83

#### CODES FOR SPECIAL TYPES

1. Half-High
2. Dwarf

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## BOK CHOY {S}

### BRASSICA RAPA CHINENSIS GROUP

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#### COMMON BOK CHOY

Grown for the broad, white or green leafstalks which are widely used in Chinese cuisine. The smaller green-stalked types, known as *Ching chiang*, *Chin gen sai*, *Shanghai bok choy* or "baby bok choy" are becoming popular in specialty markets. Some types of common bok choy are occasionally grown for their flowering shoots, called *bok choy sum*, although the shoots are considered inferior to regular choy sum. *Bok choy sum*, however, is easier to grow. LARKCOM 1991; G33

#### HYBRID

**Joi Choy:** 45 days. Hybrid version of Lei Chcy, with more uniform growth and maturity and more resistance to bolting. Plants grow 10 to 12 inches tall. Petioles are longer and slimmer than Mei Qing Chcy. Extra dark green, glossy leaves provide an attractive contrast to the ivory white stalks. Good cold tolerance. Can produce 20% more marketable plants than Lei Chcy. A79M, D55, D11M, F70, G82, G93M, H61, 139, 191, K10, K16M, K73, L42, L89, M29, M46, M49, etc.

Mei Qing Choy:<sup>1</sup> 45 days. Green stem Ching Chiang or “baby bok choy” type, more tender and flavorful than white stem bok choy, and favored by selective cooks. Flat, pale misty green stems form a thick, heavy base with broad, oval, rich green leaves. Compact, vase-shaped plant about 1/2 to 2/3 the size of Prize Choy. Highly bolt-resistant and uniform. Tolerant of heat and cold. Easy to grow. *Al*<sub>o</sub>, D55, D68, G6, G93M, 139,177, J20, K10, *K16M*, K66, K73, L42, L91M, M29, M46, etc.

#### OPEN-POLLINATED

Canton Dwarf:<sup>1</sup> 42 days. “Baby choy” type. Semi-compact open plant; produces small to medium-sized heads. Leaves glossy dark green, round in shape, with broad white stalks that are very thick and of excellent quality. Very heat tolerant; adapted to the tropics, subtropics, and summer culture in temperate areas. C92, *G13M*, G33, G93M, *K16M*, S55

Chinese: (Chinese Bok Choy) 60 days. Thick, round, glossy leaves and wide, pale green, crisp stems. Compact and long-standing; excellent resistance to bolting to seed, bolts only when quite mature, if at all. Has good flavor and hearty, wild plant-like quality. Very easy to grow; may be sown from early spring to late fall. A2, *C20M*, E24, G6,139, J9M, 053M

Chinese Flat Cabbage: (Tah Tsai, Tatsoi, Chinese Savoy) Stout, low-spreading plant producing rosettes 12 to 14 inches across of thick, puckered, dark-green leaves with broad, pale green petioles. Leaves and petioles have a thick, dense texture which makes them well suited for cooking in soups. The plants can survive the winter without protection from severe frosts and can also survive heavy falls of snow. Will grow more upright and go to seed in warmer weather. DAHLEN [Pre, Cul], HERKLOTS; B49, D3M{PR}, D55, D68, E59Z, F13, G6, G33, H73{PR}, 139, 177, K66, L42, L59, L89, M46, R47, S55, *S63M*, S70, TIM, etc.

Ching Chiang:<sup>1</sup> (Ching Chiang Cabbage) 40 days. “Baby bok choy” type. Small, compact plants growing only 8 inches tall. Smooth, rounded, very tender leaves on thick, crisp, long green petioles. Fast growing; grows very well in mild and hot weather. Tolerant to rain and dampness. A2, D55, *L79G*> *Q39*

Choho: 25 days. Newly developed hybrid type resembling Misome. Fleisty, dark green, semi-savoyed leaves; light green petioles. Suitable for salads, cooking, stir frying and pickling. Excellent tolerance of high and low temperatures. Also possesses strong disease resistances Very easy to grow. Adapted to growing in all seasons. C20A/, G33,177, M46, Q34, *S63M*

Green Boy: (Benri-Na) 35 days. Developed in Japan by crossing green bok choy with komatsuna. Slender, spoon-shaped, dark green leaves; long, light green petioles. Suitable for stir-frying, pickling or adding to soups Very vigorous, fast growing plant; widely adapted. Benri-na means “convenient leaf” in Japanese. LARKCOM 1991; C20M, D11M, D55, F13, F70, N84, Q3, S55, *S63M*, TIM

Hy Sawi Manis: 30 days. Smooth, dark-green, spoon-shaped leaves, about 2/12 inches wide; light-green, thin, ribbed stalks. One of the most tender of all the bok choys. Has a slightly spicy, non-mustard like flavor. Grows about 9 inches tall, with 9 or 10 stalks per plant. Originated in Malaysia. J73, N84

Lei Choy: 50 days. A slow-bolting strain developed in Holland, which has become popular in the oriental vegetable markets of California. Each plant bears 10 to 14 erect, medium-thick, round, pure-white stalks, 8 to 10 inches long; topped by broad, dark green leaves. Easy to grow. B75, C20M, D55, F13, G71, G93M, H61, K49M, K50, L42, M29, N84

Ming Choi: 45-50 days. Improved type developed for slow bolting and field holding ability. Attractive, deep dark-green leaves; long, erect, round white petioles, tender and succulent. Adapted to spring, summer and fall plantings. Recommended for home gardens and fresh market. C2S, C97, G16, *G83M*, G87, K10, L42

Misome: Newly developed cross of komatsu-na and Chinese flat cabbage. Upright growing plant that grows rapidly during summer and can be harvested just 30 days after sowing. Dark green, savoyed leaves, thick and very tender. Excellent in gourmet salads, for stir-frying, tsukemono pickling, and general Oriental cooking. D11M, D55, F70,177, M46, N84, Q34, *S63M*

Prize Choy: 50 days. Large, tender, dark green, spoon-shaped leaves contrast with thick, rounded, solid white stems which form a celery-like base Vase-shaped heads are 15 to 18 inches tall, compact, heavy, and very attractive with good quality. Slow-bolting. D68, J9M, L13M

Qin Tah Tsai: 40 days. Roundish, dark-green leaves on short, upright stems; very tender. Excellent for stir-frying. Fast growing, suitable for year round production. Good for home gardens, greenhouses, and roadside markets. Recently developed hybrid between Tah Tsai and green stem bok choy. D55, S70

Ryokusai: (F.) 52 days. Hybrid form of Chinese Flat Cabbage or Tah Tsai. Forms a small, semi-erect rosette of bright pine-green leaves. More erect, and therefore cleaner than open pollinated strains. Slow bolting Young leaves add color and flavor to salads. Also tasty in soups or cooked like spinach. There are two forms available. G1M, J20, *K16M*, N84

Seppaku: (Seppaku Tai Sai) 45 days. Larger form of Tai Sai, with mature plants weighing about 2 pounds each. Medium green, spoon-shaped leaves with long, succulent, pure-white petioles that have a somewhat swollen base. A very hardy type, well suited to growing in a cool greenhouse or frame in late fall or early spring. E83T, Q88

Shanghai: (Green Petiole, Green Stalk, Tsing Kang) 45 days. Ching Chiang type. Small, sturdy, erect plants with tender, flat, light green petioles topped by succulent, light green leaves. Harvest can begin at a very early stage. Grows rapidly and tolerates heat very well. Can be planted from spring to autumn, but is more suited to mid-summer growth. C20M, C92, E24, *G13M*, G27M, G93M, 139,177, *K16M*, L11, L59, PIG, Q34, TIM

Spoon Pak Choy: (Spoon Cabbage) 55 days. Smooth, dark-green, rather succulent leaves; rounded, and the edges curved inward like porcelain chopsuey spoons; large, white midribs. Large, fleshy leaf-stalks; fatter near the base; white, tender and crisp. Forms a clump so dense it has been confused with pe-tsai. Easily bolts to seed if grown in the fall in north temperate regions. K49M

Tai Sai: (Taisai, Japanese Bok Choy) Upright plant, 12 to 13 inches tall; uniform, spoon-shaped, bright green leaves with long, stocky pure-white stalks, thicker at the base. Widely adapted and disease resistant. Used at any stage of its rather quick growth. Matures in 35 days if sown in August or early September; 65 days if sown in mid-September; 85 days if sown in early October in Japan. A2, C85M, J73, K49T, L59, L77D, Q34, S55, *S63M*, TIM

Vitamin Green: 45 days. Broad, slightly curled, dark-green leaves, 3 to 4 inches long; thick, narrow, white stalk or greenish white on outermost stalks. Mild, very juicy; tasty either stir-fried or steamed. Individual leaves may be harvested at all stages of growth. Vigorous, slow to bolt, very hardy. Can be grown nearly year round in suitable climates though best sown in late summer in temperate regions and in autumn in warmer areas. LARKCOM 1991; D26G, G6, N84, R47

White Ching Chiang:<sup>1</sup> White “bal-y bok choy” type. Small, dark green leaves; very tender white petioles. Excellent for stir-frying. Fast growing vegetable, can be harvested 30 days after sowing. Suitable for growing all year round in California. D55, N84

Yukina Savoy: Thick, glos<sup>^</sup>, heavily savoyed leaves; dark green in color. Vigorous, upright plant. Heat and cold tolerant. Suitable for year-round production. Recommended for salad mixes and oriental braising mixtures. S70

Yukosai: A hybrid of komatsu-na and pak-choi. Bright dark-green leaves with long dark-green leafstalks. Grows more vigorously than other leafy cultivars from a summer planting. Plant grows 8 to 12 inches tall 25 to 30 days after sowing. Shows stronger heat tolerance and moderate tolerance to turnip mosaic virus. Good for all season cropping. *Q28*

#### FLOWERING BOK CHOY

Also known as *tsoi sum*, *flowering white cabbage* or *mock pak choy*, this type is grown for its thick-stemmed flowering shoots which are cut when the yellow flowers begin to open. The stems are tender enough to cook without peeling. Some forms are called *edible rape* or *yow choy*. DAHLEN [Pre, Cul], HERKLOTS, ROSS [Re], ROUTHIER 1989 [Cul, Re], TANAKA; A2, *C20M*, N40{PR}, FIG, Q34, *Q39*, *S63M*, TIM

hybrid

Autumn Poem: 35 days. Glossy, deep green leaves, flower stalks and buds. Succulent, sweet and tender. Excellent in salads, steamed or fried. Produces many lateral stalks after the central stalk is harvested. Developed for summer and fall sowing for fall and winter harvest, but also adapted to spring sowing. Sprouts from the base for continued harvest. D11M, F70, G6, J20, *K16M*, M46, N84, 053M, *S75M*

Bouquet: 60 days. Vigorous, uniform plant produces numerous side shoots. Harvested for the savoy-type leaves, edible flowers and stalks. Unopened buds should be harvested when stalks are about 6 inches long, then pick side shoots as they form. Also used as a cut flower in the Orient. *Al*, 139, L89, L91M, M29, N84, Q34, R32, *S55*, *S75M*

#### OPEN-POLLINATED

40 Day Yow Choy: 40 days. Early cultivar from Hong Kong. Does not produce side shoots. Seeds are sown mid-April to September, the main marketing period being June to September. HERKLOTS; *L79G*

50 Day Yow Choy: 50 days. A fast-growing type that matures earlier than its name implies. Plants can be harvested 30 days after sowing in the spring and 45 days after sowing a fall crop. Harvest the plant for vegetable use when bolting. Seeds are sown from September to November in Hong Kong. *D55*, *L79G*

60 Day Vbw Choy: 60 days. Slightly slower in bolting than 50 Day Yow Choy. Equally good in quality and taste. Seeds are sown from October to March in Hong Kong. Seedlings are transplanted after 25 to 30 days, 8 inches apart in well-manured beds. One or two side shoots may be harvested after the central stem has been cut a few leaves from the base. HERKLOTS; *C20M*, *D55*, *L79G*

80 Day Yow Choy: 80 days. A rare cultivar that is larger and slower in bolting. Grown mainly for the tender and delicious young leaves and stems. Strongly resistant to low temperatures. A very popular vegetable in China during fall and winter. *C20M*, *D55*, *L79G*

ChinGu Yow Choy: Dark green leaves and stems. The flowering shoots are used extensively in Cantonese cooking. Very easy to grow, suitable for sowing in the spring through the fall. *D55*

Hon Tsai Tai: (Flowering Purple Pak Choy) 45 days. Vigorous, cool-weather plant grown for its attractive flowering stalks. Leaves are dark green, deeply lobed and have purple-red veins. Under ideal conditions each plant will produce up to 40 deep purple-red stalks, which should be harvested as the bright yellow flowers begin to open. Cut above the leaves to ensure continuous production. A2, *D55*, G6, 139, 177, *K20M*, 053M, Q34, R32, R47, *S55*, *S75M*

Hong Kong Yow Choy: (Yu Choy, Oil Vegetable) 45 days. Long, light green petioles are topped by rounded, glossy light green leaves. Tender and delicious with a unique sweet flavor; both the stem and leaves are harvested when the plant begins to flower and used in stir-fried dishes. Grows best in spring and fall. May be sown in summer

but has a tendency to bolt to flower prematurely. *C20M*, N84

Kwan-Hoo Choy: (Kwan-Hoo Chin Tsoi Sum) 50 days. Dark green, narrow leaves with slender, lighter green petioles, few in number; grow alternately on a long, smooth, round stem of green color. Widely grown throughout southern mainland China and the whole South Seas area due to its distinguished resistance to heat as well as abundant rainfall. Sweeter than bok choy. *R47*

Long White Petiole: 45 days. Thick, glossy, spoon-shaped dark green leaves with crisp, tender, sweet white stems. Very good for stir-frying. Produces a large number of inflorescences for vegetable use. Grows to 24 inches tall. Plant in early spring or fall, and harvest when beginning to bolt. *D55*, H49, N84, *S70*

Nabana: Flowering bok choy with distinctive, savoyed leaves. Both the stalks and flower buds are edible. Harvestable 60 days after sowing. May also be picked before flowering when 7 1/2 or 8 inches long. Potential specialty market item. *S70*

Short White Petiole: 45 days. Similar to Long White Petiole, but with a shorter white petiole. Equally good in quality and taste. Excellent for steaming, stir-frying or adding to soups. May be harvested any time after reaching 3 to 8 inches tall. Has become very popular in supermarkets. *D55*, N84

Tsoi Sum: (Flowering White Cabbage) 55 days. A type of bok choy grown for the sake of its flowering shoots. The long, narrow stems are non-clasping, crisp, and are topped by thick, glossy medium-green leaves. Delicious in stir-fried dishes. Unopened flower buds and flowers are also tasty. HERKLOTS; C82, F73D, F85, G93M, 139, L59, *S55*

#### CODES FOR SPECIAL TYPES

1. Baby

## BROCCOLI {S}

### BRASSICA OLERACEA ITALICA GROUP

#### GREEN SPROUTING

#### HYBRID

Emperor: 58 days. Vigorous, early hybrid producing large, uniform dark-green heads that are well-domed, compact and heavy. Generally free from bracting, open florets and other defects. Long stems facilitate harvest. Highly tolerant to black rot, downy mildew and hollow stem. Good secondary side shoot production. Suited for spring or fall crops. D68, *E91G*, G6, *G13M*, G93M, *J74*, K10, K50, L42, M29, M49, N52, R32

Green Comet: 55 days. Upright, compact, 12 to 16 inch tall plants produce rich blue-green, large tight heads; 6 to 7 inches in diameter, without leaves in the center; weight up to 1 pound. Plentiful side shoot production. Resistant to heat and disease. For both spring and fall crops. All America Selections winner for 1969. A16, C85M, E24, *E91G*, *E53M*, *H33M*, H61, J14{PL}, K71, ZJ0, M46

Green Valiant: 65 days. Uniform, compact plants, 18 to 20 inches tall produce domed, very dense blue-green heads; 7 to 8 inches in diameter with fine beads and heavy stems. Good production of 3 inch diameter side shoots. Thin-skinned, sweet and tender. Adapted to a wide range of seasons, but does especially well when planted for a fall crop, as it shows good frost resistance. *Al*, D68, *E75*{PL}, G1M, G6, *G13M*, G93M, *J74*, K73, L42, L89, M29, M49

Packman: 55 days. Heavy yielder of uniform, light bluish-green domed heads, 7 to 8 inches in diameter, set well above the plant. Holds well in hot weather. Excellent side shoot development over an extended period of time. Now the standard, early hybrid broccoli. A87M, C85M, D11M, *E91G*, FI, F70, F82, G6, G16, G71, *H33M*, H42, H61, 139, J20, K50, K73, L89, N16, etc.



Paragon: Hybrid of broccoli and Chinese broccoli. Produces more tender, sweeter tasting stems with less fiber. Unique, umbrella-like, extra long stems. Blue-green heads, about 8 inches across, medium-sized beads. Longer stems also allow for easier bunching. Excellent for freezing. E63D, L42

Premium Crop: 60 days. Medium-sized plant that produces large, compact heads averaging 8 to 9 inches across; rounded, deep-green in color, solid and thick. Small, tight green buds hold longer than most. Produces side shoots, but somewhat fewer than others due to short stem. Excellent quality and uniformity. Resistant to downy mildew. All America Selections winner in 1975. *AI*, D11M, D76, E24, *E91G*, F13, F70, G79, *H33M*, H95, 139, *J74*, J97M, K10, M49, etc.

Small Miracle:<sup>1</sup> 55 days. Unique dwarf broccoli. Only grows about 12 inches tall and 18 inches across. Will produce large numbers of high quality heads in half the space. Dome-shaped, 6 to 7 inch heads with very tight beads; pleasant, sweet flavor. Excellent for erudite. Early enough to be direct seeded in many areas. Can be spaced as close as 8 inches apart, although best yields occur at 12 inch spacings. D26D, D56M, D65, *F63*, G16, *G53M*, 139,191, J20, L79, M46, M65

#### open-pollinated

Atlantic: 55 days. Short, compact fast-growing plant suitable for high-density plantings. Produces medium-large, rounded, compact, solid main heads; averaging 6 1/2 inches in diameter, followed by a good crop of large secondary shoots. Good for fresh market, home gardens and freezing. For spring and fall planting. Introduced in 1960. D76, G71, H54

Calabrese: (Green Sprouting Calabrese, Early Green Calabrese) 60 days. Tall, upright plant, 24 to 30 inches tall; produces small, deep blue-green central heads, 3 to 6 inches in diameter; numerous smaller side shoots are produced for several months. Good for fresh market, canning and freezing. Introduced to the United States by Italian gardeners around the turn of the century. B8, B49, D27, E5T, F24M, F80, G57M, 164, K49M, K71, L7M, N16, R47

De Cicco: 60 days. A rich-tasting old Italian cultivar with small main heads projected well above the foliage. Non-uniform in maturity, resulting in a long cutting period. Large yields of side shoots can be encouraged by harvesting the main head when 3 inches in diameter or less. For spring or fall crops. A25, C85M, C92, *DIT*, E24, E59Z, F44, G6, G57M, L7M, R47

Green Goliath: 55 days. Large, tightly-budded, blue-green central heads mature over a 3 week period instead of all at once. Good side shoot production extends normal harvest period. Quality very good, either fresh or frozen. Widely adapted. Bred especially for home gardens, to give early, extended harvests. Introduced in 1981 by W. Atlee Burpee & Co. B6, B75, C85M, D26D, D82, E24, G16, G57M, G71M, I39M, L7M, N24M

Green Mountain: 85 days. Solid, blue-green, fine-budded heads; main head 5 to 6 inches in diameter; good production of medium-sized lateral heads. Stands a long time before bolting. Recommended for short season areas where nights are cold. Originated in Europe. G68

Italian Green Sprouting: (Calabria) 60 days. Vigorous plants producing heavy yields of large, compact dark-green center heads with tight attractive buds, about 6 inches across. Matures uniformly, the medium-sized lateral heads producing over a long season. Good for home gardens, bunching and freezing. *E53M*, F92, G57M, G87, G79, G93M, 139, L42

Spartan Early: (Spartan) 52 days. Short, compact, uniform plants with heavy central heads, 6 to 8 inches in diameter, solidly packed with medium-sized, deep green buds on short stems. Moderate side shoot production. Standard open-pollinated early broccoli, developed by the Michigan Agricultural Experiment Station. L35{PL}

Umpqua: Introduced by Territorial Seed Company, Umpqua has out-performed all other open-pollinated cultivars in Pacific Northwest trials. Produces less side shoots than Waltham 29, but tends to have darker green buds with larger central heads. Good flavor. Not suitable for commercial growers because of lack of uniformity. Developed by Tim Peters. A2, J9M, K20M, L89, M27

Waltham 29: 75 days. Dwarf, compact plants producing medium to large main heads of uniform dark blue-green color, followed by a heavy crop of side shoots late into the fall. Thick stalks of even length facilitate bunching and freezing. Widely adapted to late summer and fall harvesting, as it yields best under cool growing conditions. A25, B6, B75M, B78, C44, D27, E38, G71, *H33M*, H61,184, J97M, K10, K27M, L7M, etc.

#### PURPLE/RED

Also called *purple cauliflower* and *purple sprouting broccoli*. Many require a long growing season, being adapted to warm winter areas, with heading occurring early the following spring. Easier to grow than either green sprouting broccoli or white cauliflower. The flavor is richer than that of white cauliflower, but milder than that of green sprouting broccoli. E13G{PR}

#### hybrid

Violetto de Catania: One of the earliest purple-headed cultivars. Upright, medium-tall plants; thick, deep purple curds, 15 inches in diameter and weighing 24 to 28 ounces. The head turns bright green after cooking. Adapted to fall cropping in mild climate areas. Q11M

Violet Queen: 70 days. Similar to Burgundy Queen in size and shape. Dark purple heads, not as intense as Burgundy Queen which is a slower growing strain. Turns a lime green color when cooked. Also good raw or frozen. Intermediate between cauliflower and broccoli. Recommended for short season areas where cooler night temperatures arrive in late August and September. C53, D68, E63D, *E91G*, G6, *G13M*, G82,177, *J74*, K10, K50, K73, L42, R32

#### OPEN-POLLINATED

Cardinal: Late purple sprouting type. Produces good sized spears with good flavor. Sown the end of May until mid July, and harvested from mid March into early May. The latest maturing of the cultivars developed by the HRI program in Wellsbourne, England. *S75M*

Early Purple Cape: (Early Purple Sprouting, Purple Sicilian) 220 days. Prolific, frost-hardy, dwarf plants; heads compact, medium-sized, firm but tender, purplish-green becoming green when cooked. Leaves almost entire, mid-rib marked with purple. Excellent, sweet flavor. Should be sown in early April for an early harvest the following Match. GRAY, A., GRAY, P. [Cui]; A2, B49, K71, M46, N24M, N84, PIG, Q11M, Q34, R32, R47

Late Purple Sprouting: Large, upright plants, bred for over-wintering. Produces numerous small, purple heads of excellent, sweet flavor. A longer-flowering strain of Purple Sprouting; from a spring planting, comes into bearing the following April and M<sup>^</sup>, and continues to produce a large number of shoots until July. B49, N84, R32, S55, *S75M*

Purple Cape: 365 days. Plants grow 12 to 18 inches tall, producing medium to large, rich purple heads, very compact and firm. Excellent, mild flavor. Large, dark green leaves, wavy, almost crimped; good to eat when young. Ready for harvesting February through April. May be closely related or synonymous with Early Purple Cape Very old cultivar, known before 1818. GRAY, A.; B49, C95, J9M, 053M, L89, R32, S55, *S75M*

Purple Giant: 80 days. Large, spreading plants produce very large, deep-purple heads on long stalks. Quality excellent; flavor mild; very good in salads. Turns green when cooked; freezes well. Harvested in the fall. Highly recommended for home gardens and roadside stands. G71, K49M

Purple Head: 80-85 days. Large, deep-purple, 8 inch diameter central heads; hold well when mature; non-uniform in maturity; will

not produce side shoots when cut. Fine quality; mild broccoli flavor; turns green when cooked. Good for fresh use or freezing; makes an attractive addition to salads. Hardy; pest resistant; easy to grow. C85M

**Purple Sprouting:** 220 days. Large, 24 to 36 inch tall plants are planted in spring to early summer, and harvested the following March and April after overwintering. Extremely hardy, to 10° F. Produces numerous small, purple heads that are tender, very sweet-tasting, and turn green when cooked. Stalks and leaves may be cooked as well. A2, C53, G53M, K49T, L89, 053M, S55

**Purple Sprouting Christmas:** 210 days. Winter-hardy cultivar that produces very heavy crops of medium-small, purple, juicy, full-flavored heads of excellent quality. Extends the harvesting season; from a July transplanting, will start to bear in January and continue into spring. U15

**Red Arrow:** Improved early purple sprouting type. Ready for harvest in late February, continuing through mid April. Vigorous, very productive plants, easy to grow. Excellent uniformity and winter hardiness. Developed in Wellesbourne, England by A.R. Gray. J9M, L91M, R32, S75M

**Red Head:** Midseason purple sprouting type. Produces larger primary heads and good side shoots. Sown from the end of May to mid June, and harvested from the beginning of March through much of April. Relatively new cultivar developed by HRI of Wellesbourne, England. S75M

**Red Spear:** Early purple sprouting type, earlier than Red Arrow. Produces fine quality spears. Sown from the end of May to mid July for harvesting from mid February to the end of March. Developed in Wellesbourne, England by A.R. Gray. S75M

**Rosalind:** 60-65 days. Early purple heading type with improved violet-purple coloration and a finer texture than other purples. Tolerant of hot summer weather, being sown in late May and June. Usually harvested in the fall. Developed in England by the National Vegetable Research Station. L89, S75M

**Rudolph:** Extra early purple sprouting type. Produces large, good quality spears beginning in January. Usually sown from the end of May to mid July for harvesting in January and February. May produce a December crop in favorable locations from the earliest sowings. Developed by A.L. Tozer. S75M

#### WHITE SPROUTING

Two types are known. Early cultivars, belonging to the Italica Group, mature January through March and produce small, greenish-yellow, fine-grained floral shoots on long stalks with wide internodes. The late cultivars, belonging to the Botrytis Group, mature March through May and develop larger, greenish-white or white floral shoots on relatively short stalks, some bearing a close resemblance to small cauliflower heads. GRAY, A.

**Early White Sprouting:** 220 days. Produces abundant, tender, small white heads over a long period. Frost hardy; can be sown in late spring for a fall harvest, or if sown in fall, plants will stand over winter for a crop early in spring. Small and flavorful heads; delicious raw or cooked. N84, Q34, S55

**Late White Sprouting:** 250 days. Handy, overwintering broccoli that produces numerous small, creamy-white, cauliflower-like heads. Somewhat later than other types, from a spring to early summer sowing will begin to bear the following March and continue into late spring. L89, N84

**White Eye:** Early white sprouting type. Relatively new cultivar that produces very white spears early in the season. Usually planted from the end of May until mid July for harvesting the following winter. Developed by A.L. Tozer of Cobham, England. S75M

**White Sprouting:** 220 days. Handy, overwintering broccoli sown in spring to early summer for a harvest the following April. Large plants producing numerous, small, creamy-white, cauliflower-like

heads that have a mild, delicate flavor. The leaves and stems can be cooked along with the heads. B49, G53M, 053M, R32

**White Star:** Late white sprouting type. Produces good quality spears. Usually sown from the end of May until mid July, and harvested during March and April of the following year. Developed by A.L. Tozer of Cobham, England. S75M

#### CODES FOR SPECIAL TYPES

1. Dwarf

## BRUSSELS SPROUTS {S}

### BRASSICA OLERACEA GEMMIFERA GROUP

#### HYBRID

**Bubbles:** 110 days. Round, dark-green sprouts, 3/4 to 1 inch in diameter; well-spaced on stems; flavor excellent. Holds up well for extended harvests. Somewhat tolerant of warm weather, drought and powdery mildew. Widely adapted and relatively easy to grow. Recommended for home gardens and bedding plant sales. C85M, C92, D26D, D56M, E97, G71, G87, H57M, I67M, J14{PL}, J20, K10, L42, L89, M46, M65, etc.

**Jade Cross:** (Jade Cross E) 95 days. Compact growth habit; height 18 to 24 inches. Sprouts medium-sized, about 1 1/2 inches in diameter; oval; dark blue-green; firm and tightly wrapped. Excellent flavor and quality. Early maturing, uniform and very productive. All America Selections silver medal winner in 1959. Especially recommended for short season areas. A16, B6, C85M, DI 1M, D76{PL}, E38, E97{PL}, F70, G16, M49

**Lunet:** Medium-large, firm sprouts have excellent appearance and very good flavor. Dark green in color; well-spaced; suitable for market or freezing. Consistently high yielding. Cold hardy and long-standing. For harvesting November through December. One of the standards for production and quality in Europe. A87M, C20M, C53, L89C, N52, N84, TIM

**Oliver:** 90 days. The standard in extra-early brussels sprouts. The flavorful, medium green, smooth sprouts are very large and mature remarkably early. Excellent quality. A vigorous, easy-to-grow cultivar for diverse climates. For August and September harvests. C20M, F13, G6, I18M, K73, L42, N52, R32, S75M

**Peer Gynt:** 140 days. Compact growth habit; height 3 feet. Dark green, firm, medium-sized sprouts; easily picked; remain tightly closed longer than other types. Produces high quality sprouts from the base of the stem right to the top. Excellent for market or freezing. Heavy cropper. Unusual for a hybrid in that it crops over a long period. For harvesting September to January. G53M, N84, R32, S55, S61

**Prince Marvel:** 95 days. Uniform, upright plants have long petioles offering good insect control; height 3 feet. The tall stalk produces very uniform, firm, round, smooth, medium-sized sprouts from top to bottom that hold well without rot or cracking. Excellent for fresh market and processing. AI, E24, E91G, G13M, G79, I91, J74, J84, K73, L89, M46

**Royal Marvel:** 85-90 days. Early Jade Cross type. Uniform, round, dark-green sprouts; well-spaced for ease of harvest. Even higher yielding than Jade Cross. Highly tolerant to bottom rot and tip burn. The tight sprouts also tend to resist insect attack. Recommended for home gardens, fresh markets, and processing. AI, A87M, G13M, K10, K16M, M29

**Valiant:** 110 days. Early to midseason type developed in Holland. Produces heavy yields of tight buds on each tall, vigorous stalk. Sprouts are cylindrical in shape; delicate and rich-flavored; both burst and rot-resistant. Plant in early to mid-summer for abundant

fall harvests, extending into winter in mild areas. *150G*, *K66*, *L42*, *M49*

#### OPEN-POLLINATED

**Bedford Fillbasket:** 95 days. Strong plants produce heavy crops of very large, solid, dark-green sprouts, tightly packed on the stems. Provides a continuous harvest from early autumn until Christmas. Height 3 1/2 to 4 feet. *K49T*, *N84*, *O53M*, *S55*, *S61*

**Cambridge #5:** 150 days. Popular winter-hardy cultivar. Very late to mature, the solid sprouts remaining firm until New Year when they should be used, not before. High quality, walnut-sized sprouts. Very heavy yields. Cropping continues until March. Height 4 feet. *B49*

**Darkmar 21:** Very early, high quality Bedfordshire type which produces dark green sprouts of fine flavor. Produces heavy crops that are ready for harvesting beginning in late November. Harvest until December, or through the winter in suitable climates. Originated in England. *B49*, *N84*, *R32*

**Early Dwarf Danish:** 95 days. Compact growth habit; in some years the short stature allows for snow to insulate and protect the sprouts against freeze damage. Good yields of large, high quality sprouts with very good flavor. Early maturing; well suited to areas with short growing seasons. *F44*

**Early Half Tall:** (Continuity) Plant of compact habit; excellent for windy or exposed gardens. Dark foliage. Large, medium-green sprouts of very high quality are produced from top to bottom of the stalk. Height 2 1/2 feet. Very early; for harvesting in September and October. *B49*, *N84*, *R32*

**Energy:**<sup>2</sup> Unique "baby" brussels sprout from Suttons Seeds of England. Specially bred to give outstanding flavor in a small size. Delicious, nutty, buttery flavor when picked at the thumbnail stage. Excellent raw in salads, steamed or stir-fried. Ideal for growing in a pot on a balcony or where space is limited. *E33*

**Evesham Special:** An old traditional variety from England. Strong growing plant, matures to a medium height. Produces heavy crops of good flavored sprouts that are particularly large and bulky. Harvest begins in late September and continues into early December. *N84*, *S55*

**Long Island:** 95 days. Strong, robust plants of compact growth habit; height 18 to 24 inches. Large, thick and close-jointed stalks. Round, tight, dark-green sprouts; 1 1/2 inches in diameter; tender and succulent. Sprouts cover the stalk and are solid the entire length. Good for local markets, home gardens and freezing. For late fall and winter harvests. *G71M*, *G87*, *K5M*, *K49T*

**Long Island Improved:** (Long Island Improved Catskill, Catskill) 100 days. Comparatively dwarf growth habit; height about 2 feet. Well-covered with medium green, globe-shaped, firm sprouts, 1 inch to 1 1/2 inches in diameter; maturing over a period of several weeks. Freezes very well. Hardy and productive. At one time the principal commercial sprout in California until hybrids with more uniform ripening came on the market. *A2*, *B75M*, *B78*, *C44*, *D82*, *E38*, *F80*, *F82*, *G79*, *H61,164*, *K49M*, *L7M*, *L35{PL}*, *N16*, *R47*, etc.

**Noisette:** Small to medium-sized, tight sprouts with a very distinctive nutty flavor. An old French cultivar of gourmet quality. Can be picked over a long period, e.g. from late October to mid-February from a mid-June planting. Height 2 feet. *B49*, *N84*, *R32*, *S55*

**Paris Market:** 90 days. Medium-green, firm sprouts with a rich sweet flavor. Especially sweet after a frost. Sturdy plants set 50 to 100 sprouts over an extended season. Sown in early August for a harvest in the fall. French heirloom, popular since the 1890's. *M32*

**Roodnerf Early Button:** (Early Button) 100 days. High yields of small-sized sprouts of excellent quality. Sprouts keeps well on the stem over a long period of time. Bred specially for its small, even,

deep-green sprouts. For best quality harvest when not much larger than a thumbnail. Matures in late December. *S59M*, *S61*

**Roodnerf Seven Hills:** (Seven Hills) Produces a heavy crop of small to medium-sized, tight sprouts of fine quality. Very hardy; harvest begins in early December, but plants will stand all winter and can be picked as late as March. Most reliable late standard cultivar. *B49*, *N84*, *R32*, *S55*

**Rubine:**<sup>1</sup> (Red) A large, late cultivar with small, tight sprouts of a bright crimson color. Lower yields than green types, but of excellent, gourmet flavor. Said to be less attractive to white cabbage butterflies. For harvesting in December. To preserve the color when cooking, a small amount of vinegar should be added. *GENDERS 1975*, *ORGAN*; *B49*, *C53*, *C85M*, *E63D*, *K49M*, *L89*, *M46*, *N84*, *O53M*, *P59M*, *R32*, *R47*, *S55*

#### CODES FOR SPECIAL TYPES

1. Red
2. Baby

## BUTTERNUT {GR}

#### JUGLANS CINEREA

**Ayers:** Medium-sized nut; good kernel percentage; has a 30% higher crackout rate than the average cultivar. Tree vigorous, upright; late blooming. Foliage appears to be resistant to the anthracnose fungus and is moderately susceptible to the eriophyid mite. Originated in Bellevue, Michigan by Corwin Davis. Appears to be worth propagating. *140,186{SC}*

**Beckwith:** Medium-sized nut with good flavor and cracking qualities, about 35 nuts per pound; kernel 21 % of nut. Very productive tree, one of the most prolific of all butternut cultivars; grows 40 to 60 feet tall; very cold hardy. Originated in Ohio in 1985. *E91M*, *E91M{PL}*, *140*

**Booth:** Very good nut; cracking qualities equal to that of Buckley and Craxey, two of the highest rated for this trait; characteristic buttery flavor. Received a top rating in a Northern Nut Growers Association contest. Vigorous, productive tree with good form, grows 40 to 60 feet tall; very hardy. Originated in Ohio. *140*

**Buckley:** Large nut. Tree a very vigorous grower; appears to have some resistance to the anthracnose fungus but is susceptible to the eriophyid mite. Originated in Iowa. Worthy of propagation. *140,186{SC}*

**Chamberlain:** Nut shell large, medium-thick; kernel plump, without ridges, flavor good; skin medium brown; kernel extraction moderately easy; resembles Love; ripens about September 27 in Heuvelton. Tree extremely hardy; somewhat tolerant of melanconis dieback; susceptible to anthracnose. Introduced in 1967 by Fred L. Ashworth, St. Lawrence Nurseries, Heuvelton, Nov York. *BROOKS 1972*; *E91M*, *140*

**Craxey:** Medium-sized nut; cracks easily, yielding twin halves; kernels average 56% of nut; flavor very good. Tree vigorous; hardy; bears heavily; moderately susceptible to melanconis dieback; somewhat resistant to anthracnose. One of the most widely grown butternuts. Originated in Union City, Michigan by H.P. Burgart. Introduced in 1934. *BROOKS 1972*; *E91M*, *140*

**Creighton:** Medium-sized nut; good cracking qualities, cracks out 50% halves. Tree vigorous; leafs out late and retains its foliage after most others are completely defoliated; foliage normally very clean, occasionally susceptible to eriophyid mite. Originated in Clinton County, Pennsylvania by R.L. Watts. *140*

**George Elmer:** Tree is vigorous and has a rounded nut, medium in size but has not been fully evaluated. Very good cracking qualities.

Foliage is susceptible to anthracnose fungus and eriophyid mite. Needs additional study but appears to be a good cultivar. E91M

Kenworthy: Very large nut with an excellent flavor, fills well. Tree vigorous; very hardy; quite dwarfed in size; appears to be resistant to anthracnose fungus and eriophyid mite. Has characteristics suggesting that it may be a hybrid between butternut and heartnut. Originated in Wisconsin. E91M, E91M{PL}

My Joy: Oval shaped nuts with rich, buttery kernels. Large, spreading tree, 40 to 60 feet tall; somewhat slow to come into bearing. Originated in Pennsylvania. Selected by noted plantsman John Hershey in the 1930's for its good nut qualities. 140

Van Syckle: Nut very large; kernels crack out in halves; flavor excellent. Tree bears heavily. Originated in Johnstown Township, Barry County, Michigan by the Burgess Seed and Plant Company. Introduced in 1959. BROOKS 1972; 140

Weschcke: Medium to large nut; kernel light-colored, tender; smooth convolutions of shell allow kernels to drop out freely; hull easily removed. Tree extremely hardy; very productive when grafted on black walnut or butternut, but difficult to graft. Originated in River Falls, Wisconsin by Carl Weschcke. Introduced in 1938. BROOKS 1972; 140

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## BUTTON MUSHROOM {SN}

AGARICUS BISPORUS

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### BROWN-SKINNED

81 Brown: Noted for its yield consistency and virus resistance even in adverse growing conditions. Steady production through later breaks. Produces high quality medium to dark brown mushrooms for the fresh market. Higher disease resistance than white strains. During spawn run and casing the compost temperature should never be allowed to rise above 72° F. G55M

Amycel 2400: Very heavy bodied mushroom with a slightly flat cap and smooth, brown skin; ivory white, medium length stem, often rather thick at the base. Firmer texture and enhanced flavor compared to white strains. Has greater eye appeal when sliced due to the contrast between the brown cap color and white internal sections. Very even cropping facilitates harvesting. A41

Italian Brown: (Cremini, Portobello) {KT} Known as *cremini* in the button stage and *portobello* after the caps open fully. Cremini have fawn colored caps, are similar to the white button mushroom but have a much firmer texture and a more intense, nutty flavor. Portobello mushrooms are much larger and heavier, may reach 8 inches in diameter and have very dark chocolate, almost black caps and gills. Portobellos are excellent when grilled. Popular specialty market items. A7{DF}, D3M{PR}, E13G{PR}, E21{CU}, D76, E97, F13, G16, H73{PR}, I1M{CU}, 149,149{CU}, 174,191, J11, J11{PR}, J60{SN}, N40{PR}, N40{DF}, etc.

Royal Tan: {KT} Unusual, rich beige-colored mushrooms. More robust flavor than common white button mushrooms. Prized by gourmets. Begins to produce in one month; will continue to produce for several more months. D76, E97, G16, H49, J20

### WHITE-SKINNED

46 White: Produces high yields of smooth white mushrooms over several breaks. Adapted to a wide range of productive growing conditions. High tolerance to verticillium. Does not require as high a carbon dioxide level as hybrids to control pinning. Bed temperatures should never be allowed to rise above 75° F. during spawn run or after. G55M

501 Hybrid Off-White: Produces high quality mushrooms for the fresh market with off-white hybrid's characteristic superior shelf

life. Not as sensitive to scaling as first generation off-white hybrids. Produces good size mix when picking for fresh market. 501 will scale, as do all off-whites or off-white hybrid crosses, if exposed to excessive air velocity or dryness. G55M

900 Off-White: Prolific producer of first and second break mushrooms. Quality is maintained for fresh market packs during the third and succeeding breaks. Thick, flaked pellicle; off-white in color with good shelf life. Low CO<sub>2</sub> sizing levels. Off-white strains in general are characterized by their flaked or rough surface. G55M

Amycel 2100: Produces a mushroom with a well rounded cap and good white coloring. Excellent for fresh market as well as the processed market. High percentage of large mushrooms. Very good shelf life, with a thick veil and good holding ability when stored between 33° F. and 35° F. Does well on a broad range of composts, and is very tolerant of varying substrate conditions. A41

Amycel 2800: Hybrid off-white, easy pinning strain. Well-suited to the fresh market with excellent growing characteristics and handling qualities. Well-rounded, firm mushrooms with good color. Small gill area and heavy stipe encourages a longer shelf life Very tolerant of a wide range of growing conditions. A41

Horst U-1: Produces one of the highest quality, fresh market mushrooms. A true cross between the best white and off-white strains. Deep, white and dense, with well-rounded cap shape. Capable of producing one of the highest percentages of large mushrooms. Long shelf life. Thick veil delays opening. Low sensitivity to bruising. A41

Sylvan 100: High yielding strain. Produces a white, well-rounded mushroom with a dense, fleshy cap. Cap may be slightly scaled, depending on climatic conditions. Mushrooms are medium to large and have a relatively long shelf life. Temperature should be in the 78 to 82° F. range and should not exceed 88° F. at spawning and during spawn run; relative humidity should be 90% or more. Highly suited for prepack, fresh bulk or canning purposes. L77

Sylvan 130: High yielding strain. Produces a white, well-rounded mushroom with a dense, fleshy cap. Cap may be slightly scaled, depending on climatic conditions. Mushrooms are medium to large in size and have a relatively long shelf life. Temperature should be in the 76 to 82° F. range and should not exceed 85° F. at spawning and during spawn run; relative humidity should be 92% or more. Highly suited for prepack, fresh bulk and canning purposes. L77

Sylvan 381: High yielding strain. Generates a pure white, densely tissue mushroom which is medium to large and has a relatively long shelf life. Often produces about 3/4 of its total yield on the first two breaks. Temperature should be in the 75 to 85° F. range and should not be higher than 95° F. at spawning and during spawn run; relative humidity should be 90% or more. Well suited for prepack, fresh bulk or canning purposes. L77

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## CABBAGE{S}

BRASSICA OLERACEA CAPITATA GROUP

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### COMMON GREEN CABBAGE

#### HYBRID

Discovery:<sup>2</sup> 75-85 days. High quality salad cabbage. Round, medium blue-green heads with good wrapper leaves; very tight and solid; weight 4 to 5 pounds; good, crisp texture Very sweet flavor, excellent eaten raw in salads. Small, compact, upright plant allows for high density plantings. Resistant to fusarium yellows. C53, C92, D26D, E53M, E97, F63, G13M, H42, H61,164, J20, K10, L91M, M46, N52, etc.

Dynamo:<sup>15</sup> 70 days. Unique mini or "baby" cabbage, the perfect size for a single meal. Small, bluish-green heads, 22 to 24 inches

wide and weighing 2 to 2 1/2 pounds; densely packed, short-cored. Vigorous and widely adapted, tolerant of severe weather and undesirable growing conditions. Resistant to fusarium yellows. All America Selections Winner in 1997. C85M, D26D, E97, G6, G16, G87, H95, I39, I50G, 191, K10, K66, K71, L42, M29, M46, M49, etc.

Grenadier:<sup>2</sup> 65 days. Relatively open plants with few wrappers. Dense, medium-green heads; weight 2 to 2 1/2 pounds; small cores. Crisp, juicy leaves; sweet, delicate flavor. Very good eaten fresh out of hand or thinly sliced in salads. Bred to be crack resistant and to hold for very long periods. Tolerant to thrips and tip-burn. C20M, F63, G71M, G93M, I18M, J74., K66, K73

Minicole:<sup>1 5</sup> 66 days. Small, round to slightly oval heads; good interior color. Very short core means more cabbage and less waste. Few dark-green outer leaves. Can stand for up to 4 months without slitting. Very compact plant; well-suited to dense plantings or container culture. For late summer and fall harvests. D11M, F70, M49, N81, R32, S55

O.S. Cross: (Flat Top) 75 days. Extremely uniform, flat-topped, oval heads; stay firm a long time; crisp, mild flavor. Excellent for slaws, salads or stir-frying. Very adaptable; good for both summer and fall harvests. Famous for producing the giant Alaskan exhibition cabbages that grow 3 to 4 feet across and weigh up to 70 pounds. All America Selections winner in 1951. C97, E53M, G83M, H33M, H57M, I50G, L79, L91M, RUM, S63M

Safekeeper:<sup>4</sup> 95 days. Hybrid Green Winter type. Much more tolerant to autumn rains and more winter hardy than Green Winter or Storage Green types. Medium length stems. Heavy frame and wrapper leaves give added head protection from early frosts. Sown from June 25th to July 10th for mid-October harvests. Fair tolerance to black rot; not yellows tolerant. B6, L42

Salarite:<sup>2</sup> 57 days. An extra early, semi-savoy ballhead type. Small heads; weight 2 to 3 pounds. Wrapper leaves dark-green, attractively ruffled; thick, tender, juicy and sweet, almost lettuce-like in taste. Interiors solid; butter-yellow in color. Very compact plant. Recommended for home gardeners or super market sales. I39, I91, Q11M

Stonehead:<sup>1</sup> 67 days. Round, very solid, light-green heads; weight 3 1/2 to 4 pounds. Few outer leaves; very short core. Stands a long time without splitting. Compact plant; produces an abundant crop in a small area. Yellows resistant. For early market, home gardens and shipping. All America Selections winner in 1969. B6, D65, E24, E38, E97, G82, H33M, I39, J14{PL}, J20, K10, K71, L42, M49, N81, etc.

#### OPEN-POLLINATED

April Green:<sup>4</sup> 105 days. Most popular Langedijker type in Holland. An excellent keeper; will retain its green color right through the winter. Short stems. Good internal quality and flavor. Exterior color darker green than most other winter types. Recommended for home gardeners and commercial growers. K49M, S55

Brunswick: 90 days. Compact, flattened, dense heads; 9 inches in diameter; weight 7 to 9 pounds. Few outer leaves. Popular for fresh market and kraut. For late summer and autumn crops. Stores very well. Popular in severe climates where late storage types are difficult to mature. Introduced prior to 1876. C28, DIT, D12, E24, F80, G57M, I64., K10, Q11M, S17

Charleston Wakefield: 73 days. Improved form of Early Jersey Wakefield, about a week later in maturing but yielding nearly twice the crop. Dark-green, very solid, conical heads, 6 to 8 inches in diameter; weight 4 to 6 pounds; medium-sized core. Good wrapper leaves. Slow bolting. Popular in the South for over-wintering. C28, DIT, E38, G1M, G27M, G57M, H54, K49M, K71, M95M

Christmas Drumhead: 110 days. Large, flattened, solid heads. Dwarf, compact plant; very hardy, productive and reliable. Can be sown later than most other cultivars, July or August for December

and January harvests. Introduced about 1903. B49, K71, R32, S55, S61

Copenhagen Market: (Copenhagen, Early Copenhagen Market) 68 days. Uniform, globe-shaped light green heads, firm and solid; 6 inches in diameter, weight 3 to 4 pounds. Good wrapper leaves. Stands for a long time without splitting. Compact, short-stemmed plant; heavy yielding. For early markets and home gardens. A16, A75, B75M, C44, D82, E38, E91G, FI, F92, G27M, G57M, G79, H33M, H85M, K10, N16, etc.

Danish Ballhead: 105 days. Medium-sized, round heads, medium dark green with a gray bloom; extremely firm and solid; weight 7 to 9 pounds. Short stem. Good all-purpose cabbage; very good for kraut. Withstands hot, dry weather. Excellent for storage, keeping its fine qualities until spring. Introduced in 1887. A25, B75M, C85M, DIT, D11M, D65, D82, E24, E38, FI, F70, G16, G57M, G71, K27M, L79, M95M, etc.

Delicatess:<sup>2</sup> 70 days. Round, solid, medium-sized heads; of excellent quality and texture, with no coarse ribs. Wrapper leaves few, small. High sugar content; lacks the typical strong cabbage flavor. Excellent in salads and coleslaw. Matures in late summer. E38

Earliana: 60 days. Very early Golden Acre type; quite uniform in size and maturity. Small, deep round heads; 4 1/2 to 5 inches in diameter, weight 2 to 2 1/2 pounds; compact and well-folded. Attractive, medium-green color well into interiors. Ideal size, shape and quality for home gardens. Small plants take less space. B6, B75

Early Flat Dutch: 90 days. Large, flattened, solid heads; 6 to 7 inches deep, 11 inches in diameter; weight 6 to 10 pounds; short stems, medium-sized core. Few outer leaves; can be planted closely. Excellent for sauerkraut and storage. Resists heat, therefore popular in the South. Introduced prior to 1875. E53M, G57M, H61, H85M, K10, K27M, K71, L7M, L10, L35{PL}

Early Jersey Wakefield: (Early Wakefield, Jersey Wakefield) 65 days. Medium-sized, conical, pale green heads; often tinged with red on the side exposed to the sun; weight 2 to 3 pounds. Outer leaves glaucous-green. Slow bolting, but cracks easily. Small plants permit close spacing. For home and market gardens, or shipping. Introduced prior to 1865. BURR, VILMORIN; A16, A75, B78, C44, D82, E24, E38, E59Z, F80, F82, G6, I64, L7M, L35{PL}, M46, N16, etc.

Early Round Dutch: (Round Dutch) 80 days. Large, rounded dark-green heads, 7 to 8 inches in diameter, weight 5 to 7 pounds; very solid; short stems. Few outer leaves. Slow to bolt. Adapted to a wide range of conditions. Popular in the South for kraut. Good for early markets and shipping. A75, C28, DIT, D26D, E5T, G1M, G57M, K49M, M95M

Flower of Spring: (Offenham Flower of Spring) Medium-sized, conical pointed, solid heads; compact and short-stemmed; very good flavor. Ideal for autumn or early spring sowing. Selected from Offenham. Introduced about 1905. Still a very popular home garden cultivar in England. 053M, R32, S61, TIM

Friihes Wiener Breindl: 80 days. Small, flattened globe-shaped heads; gray-green leaves; weight 2 1/2 to 3/12 pounds; very good flavor. Harvested from June and July to September. Soft white cabbage that originated in Austria, where it is used for the fresh market. N81

Glory of Enkhuizen: 75 days. Large, globe-shaped, deep bluish-green heads, 7 1/2 inches in diameter; weight 5 to 10 pounds; good interior quality and flavor. Wrapper leaves few, wavy. Good for cabbage rolls, early kraut and coleslaw. Keeps well. Good market cultivar. C28, C85M, DIT, E5T, E38, FI, G57M, K49M, Q18, R50, S17

Golden Acre: (Golden Acre Yellows Resistant) 65 days. Early Copenhagen Market type. Uniform, round grey-green heads; firm and dense; 6 to 7 inches in diameter, weight 4 to 5 pounds; medium-

sized core; short stems. Good wrapper leaves. Bolts readily. Keeps 60 days after harvest. Small plants permit close spacing. Yellows resistant. A16, A25, B75M, D82, E24, F82, G16, G57M, G71, G79, H33M, H61, H85M, K10, N16, etc.

Greenhead:<sup>4</sup> Medium-large, somewhat flattened heads; firm and solid. Short stem. Retains its light green color in storage. Has a more appealing color than white late cabbages and is preferred by stores and super markets. E38

Greyhound: 64 days. Similar to Early Jersey Wakefield, but much earlier. Small, conical heads, very dense and solid; weight 2 to 3 pounds. Few outer leaves. Very mild flavor; quality good. For spring and fall sowings; can also be over-wintered. Popular in Europe. B49, 053M, R32, S55, S75M, TIM

Harbinger: Small, uniform, conical pointed heads; firm and solid, of good quality and fine flavor. Not prone to bolting. Few outer leaves. Compact plants, suitable for close spacing; very reliable. Recommended for autumn sowing; matures quickly in spring. Introduced about 1891. S61

Holland White: (Holland Late Winter) Traditional Dutch storage cabbage of the ballhead type. Large, light-green heads; firm, close-textured. Very good for cooking, coleslaw or salads. Usually sown in May and June for harvesting October through December. Stores very well. B49, R32, R47, S55

Houston Evergreen:<sup>4</sup> 95 days. Round, solid heads; 7 to 8 inches in diameter, weight 3 to 4 pounds. Few outer leaves. For fresh market, shipping, or winter storage. Retains its apple-green color in storage. Half-tall type. Used primarily on heavy muck land where other Wintergreen types get a bit too tall. D27, L42, M49

Kamtner Steirisches Gebirgskraut: Fresh market cabbage from Carinthia and Styria, two mountainous areas of Austria. Can also be stored for a short period of time. Name translates as "cabbage for use in the hilly regions". N81

Late Flat Dutch: (Large Late Flat Dutch) 105 days. Large, roundish, flattened head; very firm and solid; 12 to 14 inches in diameter; weight 12 to 15 pounds. Outer leaves fairly numerous. Good keeper and shipper. Exceptionally hardy; also resists drought. Introduced prior to 1846. VILMORIN; B78, D82, E97, F24M, G57M, G71, G79, H33M, H61, H85M, 184, K10, K73, L35{PL}

Marion Market: (Yellows Resistant Copenhagen) 75 days. Round, solid heads, 6 to 7 inches in diameter; weight 3 1/2 to 4 pounds; crisp and tender; good wrapper leaves. Widely used for fresh market and kraut. Resistant to bolting. Medium to large plants, larger and coarser than Copenhagen Market; yellows tolerant. Bl, G71, /59M, K27M

Marner Allfriih: 65 days. An open-pollinated German cultivar that has the vigor and uniformity of a hybrid. Small to medium, round, compact head; weight 3 pounds. Stands well without splitting. Numerous tennis-ball sized heads can be harvested if sown May through June. B49, N81

Penn State Ballhead: (Penn State Danish Ballhead) 100 days. Well-wrapped, slightly flattened bail-shaped heads, very firm and solid; 7 to 9 inches in diameter; weight 8 pounds. Good for kraut. Very resistant to splitting. Keeps perfectly in storage until late spring. Not yellows tolerant. B6, E38, G57M, M27

Premium Late Flat Dutch: 100 days. Large, solid head, broad and flat on top; bluish-green, often tinted with red or brown; weight 10 to 15 pounds. Inner leaves creamy white; crisp, tender and flavorful. Outer leaves few, tinged with purple when mature. Good for kraut. Excellent storage cabbage; retains its freshness and flavor till late in the spring. Sure Heading. Introduced prior to 1865. BURR; B73M, D65, D76, F24M, H49,163Z, K49M, K71, L7M, N16

Premstattner Schnitt: Flat-headed cabbage widely used for the production of canned sauerkraut. Also good for fresh salad use, and

when cooked as a vegetable has a slight, fine taste of horseradish. Originally from the town of Premstatter in Styria, Austria. N81

Pride of India: 60-70 days. Early Golden Acre type. Small, round heads weighing 2 1/4 to 4 1/2 pounds; outer leaves few. Susceptible to cracking if not harvested promptly. Higher yielding than Golden Acre under Indian conditions. One of the most popular cultivars in India. Apparently selected from Copenhagen Market. BOSE 1993; N91, Q18, Q45M, R0, R50

Primo: (Golden Acre Primo) 65 days. Small, round, ball-like heads; large, heavy, solid hearts. Few outer leaves. Delicate flavor and tenderness. Grows well in any soil. Good market cultivar and ideal for a small family. Best used for successional sowing from February until mid-July. B49, J20, R32, R47, S55, S75M

Quick-Green Storage:<sup>4</sup> 90 days. Tested for several years as an early green storage type in the Montreal area. Excellent in short season areas where it is difficult to mature good-sized heads before heavy frosts. Retains good color until spring in storage, harvested with Penn State Ballhead. L42

Quintal cPalsace: (D'Alsace) 115 days. A 19th century French heirloom. Large, flattened, compact heads, sometimes slightly tinged with brown on the upper part. Harvested in late fall for winter storage. Long standing, old-fashioned choice for the famed sauerkraut of the Alsace-Lorraine region of France. VILMORIN; G68, K49M, S17

Very Early Paris Market: (Coeur de Boeuf Moyen de la Halle) 60-70 days. Nineteenth Century heirloom still requested by farmers and home gardeners in France for its taste. Numerous, smooth green outer leaves. Large, conical heads weighing 4 to 6 pounds or more. Broad, low growth habit; short stalks. VILMORIN; E63D

Wheeler's Imperial: Solid, conical pointed, dark-green heads; dwarf and compact; mild flavor. Sown in early spring for a crop in April and May, and again in August for a late harvest. An old favorite in England. Introduced about 1884. 053M, S61

Winnigstadt: (Early Winnigstadt, Winnigstadter) Solid, conical pointed, grey-green heads; compact and well-shaped; short stem. Very good flavor. Does well on any soil. Sown in May for a harvest in October, November and December. Stores well. Of German origin; introduced prior to 1860. BURR, VILMORIN; B49, F24G, 053M, R32, S55

Wintergreen:<sup>3 4</sup> Quick maturing, leafy, loose-headed cabbage. Good dark green color. Suitable for growing as *spring greens* or "collards" early in the season, or small-hearted cabbage in late spring. Very high in vitamins A and C, calcium and other minerals. Produces a good crop at the first cut. Can be direct sown. Hardy. Selected from Offenham. BISSELL [Cui]; B49, R32, R47, S55, S75M

Wisconsin All Seasons: 95 days. Flattened, globe-shaped heads, very solid and uniform; 7 to 8 inches in diameter; weight 8 to 10 pounds. Blue-green outer leaves, white inner leaves. Excellent for kraut. Yellows resistant. Good for home gardens; well-suited for winter storage. Resistant to bolting, drought and hot weather. D12, D26D, D65, G57M, G79, /59M, K10, K27M, K71, M46, M95M

Zwaan Jumbo: (Jumbo) 105 days. Very large heads, average weight 20 to 25 pounds, occasionally reaching 35 pounds; very firm and salad. Crisp, pale green leaves, very good for stuffed cabbage. Resistant to splitting. Keeps well. Yields best in peat or muck soils. D11M, D27, F70

## RED CABBAGE

### HYBRID

Red Rookie: (Rookie) 75-80 days. Round, purple-red, medium-sized heads, 6 inches across and weighing 3 to 5 pounds; short to medium-cored; solid and full-colored. Excellent appearance, shape and uniformity. Suitable for sauerkraut, slaw or storage. Semi-open

plant with good wrapper leaves, widely adapted, tipburn tolerant. *AI, C20M, C25, E91G, G75M, G82, G93M, H61, /74, J84, K10, A/6M, K50, K73, M29, M46, Q34, etc.*

**Ruby Ball:**<sup>1</sup> 65 days. Nearly spherical, well-filled, deep purplish-red heads; 6 inches in diameter, weight 4 to 5 pounds; very firm and dense; extremely uniform, short-cored. Excellent wrapper leaves. Good color inside and out. Holds well in the field without splitting. All America Selections winner in 1972. *A16, G71, G82, H61, H95, I39, J20, L89, M46, N52*

**Ruby Perfection:** 85 days. Medium-sized, round, bright purple-red heads; 6 inches in diameter, weight 3 to 4 pounds; very uniform, firm and solid. Good wrapper leaves; good color right to the core. Holds well without splitting. Not yellows tolerant. Ships well. Ideal for late summer crops, or fall harvests for medium-term storage. *AI, C20M, C85M, D68, E75{PL}, G6, G16, H61, /50G, /74, J84, K10, M29, S63M*

#### OPEN-POLLINATED

**Lasso Red:** 70 days. Small, rounded, very firm heads; attractive bright red color; weight 2 to 4 pounds; very uniform. Few outer leaves. Keeps in die field several weeks without splitting. For salads, cooking and red kraut. Can be stored if sown to mature in autumn. *C95, D68, E24, F44, J20, K49M*

**Mammoth Red Rock:** (Red Rock) 95 days. Large, flattened, dark purplish-red heads; 8 to 10 inches in diameter, weight 5 to 8 pounds; firm and solid; rich, distinctive flavor. Popular for pickling, boiling and kraut. Sure heading. Stands fairly well without splitting. Excellent for storage. Standard large late red cabbage. *C85M, E24, G57M, G71, G79, H42, H85M, /64, K10, K71, N16*

**Red Acre:** 80 days. Globe-shaped, deep purplish-red heads; 5 1/2 to 6 inches in diameter, weight 2 1/2 to 4 pounds; firm and solid. Good wrapper leaves. Holds well for a long period without splitting. Compact, short-stemmed plant; yellows resistant. For spring and summer harvests. Excellent for storage. *A16, A25, B75M, C44, D65, D82, E59Z, F82, F92, H61, /64, K10, L7M, M95M*

**Red Danish:** (Red Danish Ballhead) 95 days. Medium-sized, uniform, very solid heads; round, slightly flattened on top; average weight 4 to 6 pounds; good purple-ied color. Widely used for pickling and coleslaw. For fresh market or short term storage. Adapted to late summer and fall crops. Fairly tolerant to yellows. *F24M*

**Red Drumhead:** Round to slightly flattened, deep purplish-red heads; 7 inches in diameter; very solid. Fine, sweet flavor; good raw as well as for cooking and pickling. Holds its color well when pickled. Excellent winter keeper. Medium-sized plant; very haidy. Sow in early spring for an autumn harvest. Introduced about 1867. *B49, F24G, K49T, 053M, 089, R32, R50, S55*

**Red Express:** 55-65 days. Extra early non-hybrid red cabbage. Round to oval, medium-sized heads weighing 2 to 4 pounds; good, dark-red color; tight, solid and dense; flavor very good. Relatively resistant to splitting. Compact, space-saving plants. Bred for Canada and the northern United States. *C20M, C85M, D56M, G6, G87, L79, M65*

**Red Meteor:** (Meteor) 75 days. Uniform, deep globe-shaped, dark red heads; 6 to 8 inches in diameter; weight 2 1/2 to 4 pounds; very solid and sweet. Very good wrapper leaves. Darker, more uniform, and more stable red color under mild weather conditions than Red Acre. Excellent field-standing ability and cold weather tolerance. *B8M, C20M, G93M, K10, K49Z, L42, N52*

**Testa di Negro:** Excellent late maturing cultivar. Very solid, finely ribbed heads. Cooked for kraut or eaten raw as coleslaw. Sown in summer for a harvest in autumn and winter. Originated in Holland. *Q11M, S17*

#### SAVOY CABBAGE

Considered to be the best flavored cabbage. Generally milder than others^ with a tasty, buttery yellow interior. Makes excellent shredded cabbage or "coleslaw", and can be substituted for vine leaves when making *dolmas*. Also has ornamental value with its wavy leaf edges and blistered leaf surface. GRAY, R [Cui]. R47

#### HYBRID

##### *Green*

**Savoy Ace:** 80 days. Uniform, semiglobe-shaped, dark green heads; weight 3 1/2 to 5 pounds; very firm, with a small to medium-sized core. Finely crinkled leaves; sweet, tender flavor. Holds well without splitting. Vigorous, productive plant; resistant to both heat and frost. Tolerant to fusarium yellows. All America Selections winner in 1977. *A87M, B73M, C85M, D65, E9/G, F13, G16, G82, H54, H61, J20, K10, K73*

**Savoy King:**<sup>1</sup> 85 days. Uniform, semi-flat, dark green heads; 9 to 10 inches in diameter, weight 4 to 6 pounds; short core. Good flavor and texture. Stands heat better than other savoy types. Can be harvested 2 to 3 times a year in mild climates. Heads somewhat smaller in the spring; lighter green in warm weather. Yellows resistant. All America Selections winner in 1965. *A87M, C28, F63, G79, I39, J97M, K16M, K73, L91M, M29, M49*

##### *Red*

**Colors:**<sup>1</sup> (B-1568) 100 days. Unique, high quality red savoy. Round, medium-sized head, very firm, short-cored; excellent wrappers. Internal leaves an attractive creamy-purple. Red savoyed leaves turn blue-purple when cooked. Delicately sweet flavor fresh or cooked. Resistant to fusarium yellows. Tolerant of tip bum. *K50, L91M*

#### OPEN-POLLINATED

##### *Green*

**Best of All:** (Sutton's Best of All) 90 days. Early Drumhead type. Very large, solid, medium-green heads. Outer leaves coarsely crinkled. Stands a long time without splitting. Does well on all soils. Very cold resistant. Harvested during September and October. Introduced about 1897. *B49, R32, S55, S61, TIM*

**Blue Max:** (D'Aubervilliers) 75-80 days. Slightly flattened, heavily crinkled closed heads; weight 3 to 4 pounds; attractive, blue and lime-green coloring; tender texture. Quality and flavor very good. Outer leaves appear to be resistant to white cabbage butterflies. *E63D, F44, P59M, 577, S95M*

**Des Vertus:** (Large Drumhead) 75 days. Broad, compact heads, flattened on the top; sometimes slightly tinged with a wine-lees-red color; weight 3 pounds. Deep blue-green, moderately crinkled leaves; mild, sweet flavor. Stands heat very well. Very adaptable; can be planted in spring, summer or fall in mild climates. Introduced prior to 1885. *VILMORIN; U15*

**Lisboa Savoy:** 90 days. Round, light green heads with excellent appearance, about six inches in diameter. Heavily crinkled, tender leaves with a delicious buttery-sweet flavor. Traditionally grown as a late summer and fall crop. Very old heirloom from Portugal. Highly recommended for home gardens. *J73*

**Ormskirk Late:** (Irish Giant Drumhead) Large dark-green heads; very firm and solid. Coarsely crinkled leaves, of good flavor. Will stand for a long time without splitting. Extremely haidy. Sown in May and June for a December through March harvest. An old favorite in the British Isles. Introduced about 1899. *F73D, 053M, R32, S55*

**Perfection Drumhead:** (Perfection Drumhead Vertus Strain) 90 days. Large, nearly round, solid, deep green heads. Very finely curled and crinkled leaves; mild in flavor when touched by frost. Compact, short-stemmed plant. Has the size of the Drumhead, with

the curled leaves and fine flavor of the savcy. Excellent keeper. Introduced prior to 1888. *C20M*, *C85M*, *G57M*, *K49M*

**Savoy Chieftain:** (Chieftain Savoy, Chieftain Drumhead Savoy) 90 days. Large, slightly flattened head; 8 to 10 inches in diameter, weight 4 to 6 pounds; very firm and solid. Dark green, densely crinkled leaves; mild in flavor. Stands well without splitting. For late summer and fall harvests. All America Selections winner in 1938. *A16*, *C44*, *E24*, *F92*, *G13M*, *G27M*, *G71*, *G79*, *G93M*, *184*, *L7M*, *M46*, *M95M*

**Tardivo di Milano:** 120 days. Excellent, traditional Italian variety. Forms large heads with very crinkled, dark-green leaves; matures late. Very resistant to frost. Sown in June and July in Italy. *Q11M*

**Winter King:** 80 days Very late, hardy Ormskirk type. Uniform, solid, slightly flattened heads; short stems. Finely crumpled, ribbed, dark-green leaves; of excellent quality. More resistant to frost than other savoy; can be kept over winter in mild areas. *C85M*, *S61*

### Red

**January King:** 110 days. Semi-savoy type. Solid, flattish, light-green heads; weight 3 to 5 pounds; of excellent quality and flavor. Bluish-green wrapper leaves, tinged with purple in cool weather. Compact, very cold-hardy plants. Sown from May to July; harvested November through January. Will stand without splitting for most of the winter. *A2*, *B49*, *C95*, *J9M*, *K49M*, *L13M*, *L89*, *053M*, *089*, *R32*, *S55*, *S75M*

**Red Verona:** 100 days. Small, attractive, purplish-red heads merging into green at the center. Lightly crinkled leaves. Delicious when cooked with apples and a dash of vinegar added to preserve its color. Harvested in the fall. *K20M*

### CODES FOR SPECIAL TYPES

1. Short-Cored
2. Salad Type
3. Loose-Heading
4. Wintergreen
5. Baby

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## CACTUS

See Cactaceae in Part I: Botanical Listings.

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## CARROT {S}

### DAUCUS CAROTA SATIVUS GROUP

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#### BABY CARROTS

Gourmet type carrots, bred to develop flavor and bright color while still young. Many have a unique rounded shape. Usually harvested when 2 to 3 inches long. Very popular specialty market item.

**Amsterdam Forcing:** 60 days Very smooth, slender, cylindrical, stump-rooted type for forcing and harvesting early as "baby carrots". Grows 6 or 7 inches long and 1 inch in diameter when mature. Flesh is reddish-orange, juicy, crisp, very sweet, virtually coreless, of excellent quality. Short pale green foliage allows for dense plantings. *A2*, *A66*, *B49*, *C85M*, *C95*, *DIT*, *D12*, *E5T*, *E63D*, *G57M*, *K49M*, *RUM*, *R32*, *R47*, *S75M*, etc.

**Babette:** 75 days. Long, slender mini carrot. Smooth, cylindrical roots, 3 to 4 inches long and 1/2 inch in diameter at the shoulder; rounded tips. Good internal and external color. Sweet, crisp flesh with a rich flavor. Excellent early color and sugar development.

**Strong,** 12 inch tops do not break when pulled. *F63*, *G16*, *118M*, *177*, *K49Z*, *K73*, *S95M*

**Baby Spike:** 55 days. Miniature Amsterdam type, 3 to 4 inches long and 1/2 inch in diameter; crisp, very sweet, with exceptional internal color. Colors up and becomes sweet at an early age. Unlike true Amsterdams which become oversized if not harvested at maturity, Baby Spike holds its quality veil past maturity. *C20M*, *C28*, *D76*, *E97*, *184*, *L79*

**Early French Frame:** 67 days. Very smooth, nearly round root, seldom exceeding 2 inches in length or diameter; deep orange-red flesh of good flavor. Quick maturing; ideal for forcing under frames and tunnels, or for early successional sowing outdoors. Performs well in shallow soils. *RUM*, *S61*

**Early Scarlet Horn:** (Dutch Early Scarlet Horn, Early Horn) 68 days. A centuries old cultivar of "baby carrot" for greenhouse forcing and early outdoor use. Root nearly cylindrical, blunt-tipped; 6 inches long, 2 1/2 inches in diameter; skin orange-red; flesh deep orange-yellow, fine-grained, of superior flavor and delicacy. Well-adapted to shallow soils. Introduced prior to 1865. *BURR*, *VILMORIN*; *A2*, *B49*, *F24G*, *I63Z*

**Lady Finger:** 65 days. A gourmet carrot for cooking and serving whole, or canning and pickling whole. Small, cylindrical, golden-orange root; 3 to 5 inches long, 1/2 inch in diameter; flesh tender and sweet, nearly coreless. Short tops. Withstands close planting and produces abundant crops. *DIT*, *D65*, *E5T*, *G13M*, *G57M*, *G87*, *G79*, *H85M*, *184*, *J20*, *J25M*

**Little Finger:** 60 days. Cylindrical, well-stumped root; 4 inches long, 1 inch in diameter; skin very smooth; flesh deep-orange, core very small, very sweet and tender; tops 8 to 10 inches tall. High-density planting recommended. A "baby carrot" suitable for canning, pickling or eating fresh. *A16*, *B6*, *C44*, *F80*, *F82*, *F92*, *G16*, *G79*, *G83M*, *H33M*, *H95*, *I64*, *J97M*, *M46*

**Minicor:** (Amsterdam Minicor) 55 days. A popular Dutch strain of Amsterdam which is used by large commercial packers of baby carrots. Roots are very slender, cylindrical, blunt-tipped; 6 to 7 inches long when mature; flesh deep orange, tender, sweet, fine-grained, never coarse or woody. Usually harvested when 3 inches long. Does well in most soils. *C53*, *D26D*, *D68*, *E24*, *F24M*, *F44*, *G13M*, *K10*, *L7M*, *L42*, *L89*, *L94*, *M32*, *M49*, *Q34*, etc.

**Orbit:** 50 days. A new introduction that is highly tolerant to splitting and yellowing when harvested past maturity, in contrast to Parisienne type carrots. Smooth, round, spherical root; approximately 1 inch in diameter; very sweet; short, dark-green tops, 8 to 10 inches tall. Perfect for the home, market garden or specialty trade. *C28*, *G53M*, *M46*, *M95M*, *N52*

**Parisian Rondo:** (Parisian Ball, Rondo, Round Paris Market, Parisian Market) A 19th century French heirloom that is still popular. Small, uniform, nearly spherical root; only 1 to 1 1/2 inches in diameter when mature; reddish-orange throughout, of excellent sweet flavor. Ideal for processing whole or as a fresh market specialty item. *B49*, *C20M*, *F82*, *N81*, *089*, *Q34*

**Parmex:** 50 days. Paris Market type; an improvement over the standard Planet. A unique round carrot, 1 to 1 1/2 inches in diameter; matures extra early, sometimes with peas. Develops flavor and bright color while still young and smooth. Perfect for growing in heavy soil. For earliest home canning and freezing, and specialty markets. *C53*, *E33*, *G53M*, *111*, *K66*, *P59M*, *S55*

**Sucram:** 65 days. Amsterdam Forcing type. Specifically bred and developed for the select gourmet restaurant and fancy canning trade of Europe. Smooth, slender, cylindrical roots, 2 1/2 to 3 inches long when mature; flesh orange, sweet, tender, of distinct flavor. Good for canning and freezing. *139*, *K49M*, *K49Z*, *RUM*

**Thumbelina:** 50 days. Small, very uniform round roots, 1 to 1 1/2 inches in diameter; thin, tender skin, does not require peeling; bright orange inside and out; crisp, sweet flesh; small core. Short, strong



tops; little or no digging needed. Excellent for “baby” carrots. Widely adapted to various soils, even clay. Ideal for close spacing. All America Selections Winner in 1992. B73M, B75, C92, D26G, D74B, E24, E97, G6, G16, G71, H49,191, J9M, J97M, L89, M29, M32, R47, etc.

### COMMON CARROTS

#### HYBRID

Apache:<sup>1</sup> 65 days. Contains the new Super Sweet gene which contributes high sugar and vitamin A contents Very smooth, dark orange root; grows to 10 inches long; has good early tip fill. Tops reach 18 inches tall; are tolerant to *altmaria*. *AI*, *C20M*, K73, L42, L59G, N52

A-Plus:<sup>1</sup> 65 days. Developed by Dr. Clinton Peterson, the result of new “consumer preferred” plant breeding that is designed to introduce Super Sweet taste and higher vitamin content into new hybrid carrots. Contains 2 1/2 times the carotene and vitamin A of regular strains. Roots medium length, 8 1/2 inches long, dark orange and rich in flavor. H95

Bolero: 70-75 days. Hybrid Nantes type highly rated for flavor. Smooth, uniform, slightly tapered roots; 7 to 8 inches long; good internal and external color; medium core. Excellent sweet flavor, particularly after long term storage. Resistant to *altmaria* blight. One of the most popular carrots in Europe. *AI*, C85M, C92, D27, E24, G6,177, J84, K50, K66, K73, L42, L89, M29, N81, S61M, S95M, etc.

Flyaway: The first carrot to be relatively tolerant of the carrot root fly. Not resistant, but unattractive to egg laying flies and the maggots grow poorly on it. Medium-sized, smooth, sweet roots with the quality of premium Nantes strains. Especially crisp and flavorful when eaten raw. Ideal for organic gardeners. L89, L91M, R32, S55, S75M

Healthmaster:<sup>1</sup> 110 days. Hybrid Danvers type with a high nutritional content. Typically contains 33 to 35% more beta carotene than most other carrots Very large, dark reddish-orange roots, 3 inches or more in diameter and up to 10 inches long. Excellent for slicing or juicing. Usually harvested in the fall, becoming sweeter in storage. D26D, D76, E53M, E97, G57M, G87, H42, H95,139, J20, J97M, L89, L91M, M49

Ingot:<sup>1</sup> 68 days. Long Nantes type. Contains the Super Sweet gene and extra vitamin A content. Cylindrical, 9 inch long root, fills to the tip quickly; deep orange color; good flavor. Similar to A Plus but more slender and cylindrical. Strong, medium-tall tops. Has better seed quality and uniformity than A Plus. For home use, storage and the specialty fresh market. *C20M*, C28, D76, E38, F82, G82, H33M, H42, H54, H95,164,, L7M, L10, L91M

Orlando Gold:<sup>1</sup> 75 days. Contains approximately 50% more carotene and vitamin A than standard cultivars. Extra long, slender root; slightly tapered, almost to a point; rich reddish-orange interior, of high quality and superior flavor; relatively small core. Roots average 12 inches long on muck soils, 10 inches on sand. Introduced in 1982 by Dr. Clinton Peterson. *C20M*, C28, D76, G16

#### OPEN-POLLINATED

Afghan Purple:<sup>4</sup> Very old strain from Afghanistan, one of the centers of diversity for carrots. Dark-purple skin and orange flesh; strong, distinctive flavor. Traditionally used by native tribesmen to produce a fermented alcoholic beverage. In northern India, a similar beverage is known as *kanji*. CAMPBELL-PLATT; F73D

Autumn King: (Autumn King Improved) 70 days. Large, uniform, cylindrical roots; 10 inches long, blunt tipped; crisp, tender flesh, of good flavor, red-cored. A reliable and heavy cropper. Sow in spring for summer use; late May or June for winter storage Very hardy; can be stored in the ground for long periods. B49, K71, L89, N84, O53M, R11M, R32, TIM

Belgium White:<sup>3</sup> 75 days. Pure white carrot of very mild flavor; 7 to 8 inches long, 3 inches across at the top, tapered and pointed; nearly coreless. Can be harvested small, but retains its flavor and quality when older. Good for steaming or cooking in casseroles. Vigorous and productive. Not hardy; must be harvested before frost. B49, O89

Berlicummer: (Berlicummer Bercoro) 65 days. Improved Nantes type. Long, straight, blunt tipped root; up to 10 inches in length, 1 3/4 inches in diameter; orange throughout; coreless; excellent flavor; does not split or crack. One of the best late cultivars; an excellent keeper. For home gardens or market. C85M, RUM, R32, S55

Beta III:<sup>1</sup> 80 days. Contains 3 to 4 times the carotene and vitamin A of regular strains. Developed by Dr. Clinton Peterson of the University of Wisconsin and the USDA. Initially bred to help prevent vitamin A deficiency blindness in underdeveloped countries. D26D, D33

Beta Sweet:<sup>14</sup> Unique purple carrot developed at the Texas A & M Vegetable Improvement Center. Slender, tapered roots, 7 or more inches long and about 1 inch in diameter; attractive, maroon-colored skin and 1/5 inch radius of flesh; bright orange core. Very sweet and flavorful. High in beta-carotene. Dark-green tops, 12 to 12 1/2 inches tall; very tolerant of *altmaria*. Good specialty market item. L89G{OR}, N40{PR}

Blanche a Cbilet Vert:<sup>3</sup> (White Belgian) Root long and thick, sunk in the ground for two-thirds or three-fourths of its length, white on the underground portion, and green or bronze purple above; flesh white, usually tinged with yellow. Heavy yielding. Primarily used for feeding cattle and horses. Introduced prior to 1885. VILMORIN; E5T

Camberley: An excellent combination of Berlicummer and Danvers types. Uniform, 7 to 9 inch long roots, very deep orange throughout. Unique, delicious flavor. Will grow in heavy soils and can be left in the ground over winter. Bred for the canning market and the increasing numbers of organic commercial growers. B49, E24, S75M

Danvers Half Long: (Danvers) 75 days. Roots 5 to 6 inches long by 1 1/4 to 1 3/4 inches thick when used for bunching, tapering to a short-tapered or slightly rounded end; deep-orange flesh, slightly more yellow core. Not adapted to heavy or shallow soils. Standard cultivar. Originated in Danvers, Massachusetts. Introduced in 1871. MAGRUDER 1940; A2, A16, A25, B75, B78, D82, E38, E59Z, F82, F92, G57M, H33M, 184, K5M, L7M, etc.

Dragon:<sup>4</sup> (Purple Dragon) 75 days. Unique purple carrot. Resembles Danvers or Berlicummer in shape. Deep purple skin with contrasting interiors which may vary from solid orange to orange-yellow to bright yellow. Distinctive, sweet spicy flavor. Excellent either raw or cooked. Ideal for specialty markets and farm stands. E24, N24M

Flakkee Long Flacoro: (Flakkee Long Red Giant, Flakee Vita Longa) 65 days Very large, strong root; stump-rooted and red-cored; up to 24 inches long and 4 inches thick. Excellent for storage. High yielding, improved strain. Good flavor. Also used for stock feeding. B49, C85M, 181, N84, RUM, S55

Gelber Goliath: (Yellow Goliath) Late-maturing, very productive carrot from Austria. Extra-long, conical, yellow roots; tapering to a point. Used industrially by the frozen vegetable trade. Also grown for the edible green tops. N81

Gold Pak: (Gold Pak 28) 75 days. Emperor type. Smooth, tapered, nearly cylindrical root; 9 inches long, 11/4 inches in diameter; rich reddish-orange flesh, nearly coreless, of good quality; stores and ships well. Very short tops. Widely used for bunching and cello packs. Needs a deep loamy soil. All America Selections winner in 1956. B6, C28, C44, D27, D76, E97, G16, G57M, K71

Herz Zino: (Lange Rote Stumpfe Ohne Herz Zino) 85 days. Has appeared in the Guinness Book of World Records as the world's largest carrot, weighing in at 7 pounds 11 1/2 ounces. Also widely grown for juicing, containing 55% juice per carrot. Average length 8 to 10 inches. For late summer and fall crops. Introduced prior to 1875. L91M, Q18, R50

Imperator: 70 days. Long, tapered, deep reddish-orange, coreless root. Extensively used for bunching. Adapted only to deep, well-drained sandy or loamy soils. Needs a long growing season of moderate temperatures to produce long, straight, slender, well-colored roots. Originated as a cross between Nantes and Chantenay. Introduced in 1928. MAGRUDER 1940; A25, D65, F82, G57M, G83M, G87, 167M, K5M, K71, M46, M95M

Indian Long Red:<sup>2</sup> Very long and tapering. Offers more of the true carrot taste than the typical blunt spindly forms, and hence is preferred as a sweeter vegetable compared to American cultivars. Q45M, R50

James Scarlet Intermediate: (James' Intermediate) 80 days. Heaving yielding main-crop carrot from England. Half-long, perfectly symmetrical, tapered root; skin and flesh well-colored, reddish orange; flesh tender, of very good flavor; resists splitting. Requires a rich light soil. Introduced about 1870. VILMORIN; B49, 053M, R32, S55

Juwarot:<sup>1</sup> (Juwarot Double Vitamin A) 70 days. Contains double the vitamin A content of normal cultivars, or about 249 milligrams per kilogram. Large, deep orange root; very sweet and juicy. Heavy yielding; good for winter storage. In some countries carrot juice is made specifically from this cultivar. B49, K49T, L91M

Kinko 4 Inch: 55 days. Chantenay type. Small, conical, stump-rooted carrot; deep reddish-orange inside and out; flesh crisp and sweet; quite resistant to cracking. Achieves color and size early. Recommended as first-early carrots, especially on shallow soils. Should be harvested young for best quality. G6, G33

Kintoki Regular Strain:<sup>2</sup> (Crimson Wonder) 140 days. A unique crimson-fleshed carrot from Japan. Long, tapered root; 10 to 11 1/2 inches in length, 2 to 2 1/4 inches wide at the shoulder which is square; skin deep red, glossy; flesh tender and sweet. Best sown from July to October for winter culture in the Northern Hemisphere. F73D

Kokubu: (Japanese Long) 150 days. An endemic cultivar popular in the eastern half of Honshu, Japan where arable soil is quite deep. Roots are commonly 2 feet or more long, 1 1/2 to 1 3/4 inches wide at the shoulder, gradually tapering to a pointed tip; of deep orange color. A late cultivar adapted to summer sowing for a winter harvest. L3J

Kundulus: 65 days. Small, round root; 1 1/2 to 2 inches in diameter; deep orange skin; good flavor. Ideal for quick successional crops and forcing. Produces well when grown very close together. Suitable for window boxes, flats, frames, heavy or shallow soils. Good for freezing and canning. L91M

Kuroda: (New Kuroda) 70 days. Chantenay type. Smooth, medium-sized roots; about 6 inches long, 2 inches in diameter at the crown; tapered and stump-rooted; very good flavor for a Chantenay. Good for heavy soils. For fall crop only; to avoid bolting, do not plant before mid-June. B8M, C53, D1T, D26D, F13, F44, G16, G87, 191, J39, K49Z, Q3, Q28, S63M, 870

Lobbericher: Heirloom yellow carrot from Austria. Late-maturing and very productive. Long, cylindrical, dark yellowish-orange roots; tapering to a point. Traditionally used by the industrial frozen vegetable trade. N81, 089

Long Orange Improved: (Long Orange) 85 days. Roots 12 inches long, 2 inches thick, tapered to a point. Flesh reddish orange with a core of a lighter shade. Useful for both table and stock feeding. Plant in loose soil, and for table use, harvest before roots reach mature size. An improved strain of a cultivar introduced by Dutch breeders

in 1620 and brought to North America by early settlers. I63Z, L7M, L10, Q18

Long Red Surrey: Root very long, narrowing gradually, 5 or 6 times as long as broad, often 12 to 14 inches in length; has a distinctive yellow core. Excellent for fresh markets and also freezes well. Requires a rather deep soil, but is unusually productive. The long root makes it more drought-tolerant when grown on sandy soils. Introduced about 1834. VILMORIN; B49, F73D, N84, R32

Manchester Table: Uniformly long, cylindrical root with a blunt end; sweet, crisp, deep-orange flesh; fine-textured; small core. Selected strain of the Nantes type. Sow in spring and summer. Excellent performer in Australia and New Zealand. PIG, TIM

Nantes Half Long: 65 days. Smooth, well-shaped, perfectly cylindrical root; 6 to 7 inches long, 1 to 1 1/2 inches thick for the whole length; flesh deep orange, fine-grained, tender, sweet, practically coreless, of very high quality. Popular for home garden and local market use. A25, B75, C44, G57M, G87, /59M, L7M

Oxheart: (Guerande) 75 days. Roots short-conic or heart-shaped, very blunt at the lower end; 5 to 6 inches long, 2 to 2 1/2 inches thick; medium-orange, coarse flesh, yellowish core. Rapid growing. Produces well on shallow and heavy soils. Originated in France. Introduced prior to 1884. MAGRUDER 1940, VILMORIN; A2, D82, E24, K20M, K49M, K49T, K71, L7M, L88J, N24M, S55

Red Cored Chantenay: (Chantenay Long Supreme) 70 days. Large, smooth root; slightly tapered, stump-rooted; 5 1/2 inches long, 2 1/2 inches in diameter at the shoulder; deep orange flesh and core, of high quality. Good for bunching. Widely used for canning and freezing. High yielding. Grows well in most soil types. Introduced in 1929. MAGRUDER 1940; A16, A75, D82, E24, F1, F92, G16, G57M, 184, K49T, K73, L7M, M49, N16

Rouge Muscade: 72 days. An old North African heirloom. Large, irregular, unattractive root, often grows to a pound or more; flesh highly aromatic, thick-meated, juicy, sweet, of excellent flavor; core often tinged with green. Excellent for juicing. Bred to grow quickly in the cool winter months; has a tendency to bolt in hot weather. PHILLIPS; L77D

Royal Chantenay: 65 days. Smooth, blunt, cylindrical root, tapers only slightly; 6 to 7 inches long, 2 1/2 inches in diameter; reddish-orange, with uniform interior color; sweet, tender flesh. Used for bunching, market, storage, juicing, canning or freezing. Recommended where soils are too heavy or shallow for most other carrots. B75M, C85M, F82, G57M, H33M, H42, H61, H95, J97M, 191, K71, L79, L89

Scarlet Imperial Long: Longest carrot known; a record was set in 1975 by a California gardener, who grew a carrot that measured 38 1/2 inches from crown to root tip. Skin and flesh salmon-orange; flesh crisp, sweet in flavor. Best grown in deep loam soil. K49T

Scarlet Keeper: 85 days. A large, late cultivar exclusively for fall harvest and winter storage. Heavy, cylindrical, blunt tipped root; 7 to 8 inches long; dark orange with a large, good-colored core. Heavy yielding. Comes out of winter storage in good condition; never turns bitter. A2, E24, H15P, N24M

Scarlet Nantes: (Early Coreless, Nantes Coreless) 65 days. Smooth, cylindrical root; 6 to 7 inches long with very little taper; rich orange-red color throughout; flesh sweet, fine-grained, completely free of any heart or core, of very high quality. Freezes and stores well. Excellent for home gardens and market. A75, D82, E24, F44, F80, G6, G71, H33M, H42, H95, 184, K71, K73, M46, N16, etc.

Scarlet Wonder:<sup>2</sup> 110 days. Long, tapering root; 12 to 15 inches in length; attractive deep scarlet color; very sweet and tender. Should be grown for cooking rather than fresh use. Suitable only for summer sowing for a fall to winter harvest. Very distinct. C20M, 177, K49M, S63M

Short 'n Sweet: 65 days. Shorter Goldinart or Red Cored Chantenay type. Short, thick root; 3 to 4 inches long, 2 inches in diameter at the shoulder; bright orange throughout; flesh rich, sweet, juicy. Excellent for canning and freezing. Does well in both heavy and shallow soil. For early summer and fall crops. B75, D65, G71

St. Valery: (New Red Intermediate) 70 days Very smooth, very uniform root; 10 to 12 inches long, 2 to 3 inches broad at the shoulder; skin bright reddish-orange, attractive; flesh thick, sweet, tender, with very little core. Tops very short and sparse. Performs best in light, rich, well-prepared soil. May be regarded as the connecting link between the half-long and long types. Introduced prior to 1885. VILMORIN; B8, B49, G53M, J73, N84, 053M, R32, S17, S55

Tendersweet: 75 days. Improved Emperor type. Large, cylindrical roots, 7 to 9 inches long with semi-blunt ends and narrow shoulders; deep orange-red in color; crisp, sweet and free of fiber; coreless. Excellent for carrot sticks. Requires a loose, deeply worked soil rich in organic matter to achieve full quality. B6, B8M, D26D, D76, E97, G57M, L7M

Topweight:<sup>1</sup> 80 days. Large, smooth root; 10 to 12 inches long, 3 inches in diameter at the full round shoulder; orange-red; good, sweet flavor. Yields well under adverse growing conditions. Will over-winter in the ground for 6 months without deterioration, cracking or splitting. Extremely high in carotene, vitamin A and vitamin C content. A2, N24M, PIG, R47, TIM

Touchon: (Nantes Touchon, Nantes Special Long) 65 days. Nantes type, but has more intense coloring and is somewhat longer. Smooth, cylindrical roots; 6 to 7 inches long and 1 to 1 1/2 inches broad; deep orange throughout; flesh tender, crisp, sweet, coreless, of very high quality. Good for bunching and winter storage. Sow in spring or summer. A2, C53, D11M, D65, E38, E63D, F70, G68, G87,139, K49Z, K71, M49

#### CODES FOR SPECIAL TYPES

1. High Vitamin A
2. Rea-Skinned
3. White-Skinned
4. Purple-Skinned

## CAULIFLOWER {S}

### BRASSICA OLERACEA BOTRYTIS GROUP

#### SUMMER CAULIFLOWER

**GREEN** (Broccoflower, Cauli-Broc) Mild, delicately flavored cauliflowers with attractive light-green heads. Sweeter than either broccoli or cauliflower. The Romanesco types, sometimes called *Roman broccoli*, have distinctive, spiral-shaped heads. Becoming widely available in specialty sections of supermarkets. The name broccoflower is a trademark of Tanimura and Antle. FIELD; H49, 191, K57{PL}, M46, N24M

#### Hybrid

Chartreuse II: 62 days. Hybrid version of Alverda. Brightly colored, lime-green heads with a distinctive flavor when cooked. The heads do not require blanching as do most white types. Likes slow, steady, unstressed growth for best quality. Should not be grown for mid-summer harvests Very uniform in both curd and plant. E75{PL}, L42, Q34

Green Goddess: 65-70 days. Hybrid Alverda type with exceptional uniformity. Dome-shaped, bright lime-green heads with a distinctive mild, sweet flavor. Easy to grow, no tying of heads required. Recommended for spring and fall crops. Good specialty market item. B75, K10, K60M

Green Harmony: (Floccoli) 80 days. A new cross of broccoli and cauliflower developed in China. Heads pale green in color; medium sized, up to 1 3/4 pounds; tender, with more flavor than cauliflower. Unlike white cauliflower, it does not need to be blanched. Should not be sown before mid-May. L91M

#### Open-Pollinated

Alverda: 64 days. Very uniform, medium-sized heads with a bright yellow-green curd color. Excellent taste, raw or cooked. Medium-sized, productive plants; easy to grow, no tying required. For summer and autumn production. Very popular in specialty markets in Europe and the United States. AI, C20M, F13,177, J74, K73, L89, M49, R32, R47, S55, TIM

Brocoverde: 65-70 days. Medium-sized, semi-domed heads weighing 14 to 16 ounces; mild, sweet, distinctive flavor. Twice as high in Vitamin C and folic acid as regular cauliflower or broccoli. Strong, upright plants of medium height. Tolerant of warm weather, producing heads when regular cauliflower or broccoli fails. Recommended for home gardeners and fresh markets. Ideal for specialty markets. A16, B8M, B75M, C85M, D26D, D56M, E97, F63, G16, G27M, G82, G83M, H57M, K71, M29, M65, etc.

Bronzino:<sup>1</sup> Romanesco type. Very large, yellowish-green heads with small, compact curds. Excellent flavor. An earlier form of green cauliflower for short season areas. Matures a full month or so earlier. Q11M

Chartreuse: (Green Ball) 60 days. Pale lime-green heads, resembling cauliflower; flavor very much like broccoli; texture and quality excellent. Does not require tying or blanching like white cauliflower. Developed in America from Pua-Kea cauliflower crossed with Spartan Early broccoli. E91G

Minaret:<sup>1</sup> 75-85 days. A highly refined Romanesco type, smaller and more uniform. Unusual spiraled, peaked, pale green heads; 4 to 5 inches in diameter. Excellent in fresh salads and dips. Vigorous, productive cauliflower-like plants. For spring and fall crops, and winter harvest in mild areas. C53, G6,177, L89, N84, S75M

Natalino:<sup>1</sup> (Early Romanesco, Precoce Romanesco) 120 days. Highly refined Italian strain, well adapted in mild areas. Medium-sized, spiral-peaked heads, 5 1/2 to 6 1/2 inches in diameter; an attractive chartreuse color. Large, vigorous plants, require about 10 square feet each. Usually planted in spring and summer for fall and winter harvests. D68, J20, Q11M, Q34, S17

Romanesco:<sup>1</sup> 85 days. Unique, compact, spiral-pointed heads with a beautiful pale-green, almost chartreuse color and a delicate, sweet flavor. Individual florets make an exceptional erudite, or the entire head may be cut and used as cauliflower. For spring and fall crops, but flavor is enhanced by cool weather. Grown commercially in northern Italy. A2, B6, B49, F80, 139, K49M, K49T, K57{PL}, L91M, N40{PR}, PIG, R32, R47, S55

Romanesco M:<sup>1</sup> Attractive, light-green, spiraled cauliflower-like heads, 5 to 6 inches in diameter. Sweet, nutty cauliflower-broccoli flavor. Pleasant, firm texture. Heads are of the highest quality when formed in cool weather. Plant in May and June for a harvest in the fall. J9M

Shannon:<sup>1</sup> 80 days. Spiraled, yellowish-green heads with peaked florets, 6 to 7 inches wide; very attractive, resembles Minaret. Excellent for salads and dips. Large, uniform, very vigorous plant, produces large crops in late summer and fall. Keeps well in storage. K50, N81, P59M

Universal: 90 days. Very solid, heavy, bright green head, about 5 inches in diameter; fine beads. Excellent flavor raw or cooked. Medium-sized plant, requires no tying of leaves. Needs even, cool growing conditions. Crops are harvested in the fall. K50

ORANGE*Hybrid*

Orange Bouquet: 75 days. Hybrid of a white cauliflower and a high-carotene orange cauliflower. Semi-domed heads of pale buttery orange or creamsicle color. Much higher in Vitamin A and carotene. Retains its color after cooking. Wrapping isn't recommended as sunlight heightens the color. Suitable for spring or fall plantings. D56M, G6, M65, Q34, S63M

*Open-Pollinated*

Marmalade: Unique orange cauliflower which has good potential as a specialty market item. Domed heads of buttermilk and orange color. Excellent crunchy texture. Retains its attractive color after cooking. Tying the outer leaves over the head is not recommended. Very vigorous, early maturing plants. B49{OR}, R32

WHITE*Hybrid*

Candid Charm: 75 days. Large, very heavy, deep dome-shaped heads; 7 to 9 inches across; uniform in maturity; quality excellent, non-ricey, long holding ability without purple cast. Excellent for fresh market. Vigorous, semi-upright plant; very high yielding; large dark-green leaves for good curd protection. Does best in cool areas. A1, D68, E24, F63, G13M, G82, H61, J74, J84, K10, K16M, K50, K73, L79G, M29, R32, S55, etc.

Fremont: 65 days. Main season "two cut" hybrid. Very white, deep, smooth curds averaging 7 inches across. Large, vigorous plants with exceptional self-wrapping ability; tolerant of heat and stress. Very uniform under varying weather and soil conditions. Recommended for fresh market. Also popular with home gardeners. G6, G13M, J74, J84, K10, K50, K73, L42, L89, M29, M49, N81

Mini:<sup>2</sup> Small, perfectly formed heads of good quality. By planting 1 foot apart in all directions, 4 "baby" or "mini" cauliflowers, about 4 inches in diameter, can be harvested in the same space needed for 1 regular cauliflower. Make successive sowings from spring to fall. TIM

Snow Crown: 50 days. Extremely early, dependable hybrid that shows unusual seedling vigor. Heads are uniform, medium-sized, domed, and solid with good curd quality whether harvested in summer or fall. Flavor mild and sweet. Good resistance to moderate fall frost (25-32° F.). All America Selections winner in 1975. A16, A87M, C85M, G6, G71, G79, H33M, H61, I39, K73, L89, M46

Snow King: (Early Snow King) 45 days. Extremely early hybrid that stands heat very well, and shows good resistance to various diseases. Heads pure white, well-rounded; weighing 1 to 2 pounds each; free from leafiness and riceyness; holds quality well. Plants are erect, vigorous, with rather large leaves that protect center head from frost and sun. All America Selections winner in 1969. DI 1M, D76, E53M, E97, E97, F70, G16, M46, Q11M

*Open-Pollinated*

Alert: 55 days. Vigorous, short-stemmed plant of the Early Snowball class, but with deeper heads and finer texture than others of this type. Heads are pure-white, about 3 1/2 pounds each. Upright leaves offer somewhat better curd protection and are easier to tie and trim. When grown from spring transplants it is often earlier than Snow Crown. F44

All The Year Round: 70 days. Large, compact well-protected head; holds without going to seed for a long period even in hot weather. Suitable for sowing at most times of the year, but ideal for autumn sowing or sowing under glass in early spring. Good for freezing. Most popular cultivar in Europe. B49, K49M, N84, O53M, R32, S55, TIM

Andes: 68 days. Dense, heavy, well-domed heads; not susceptible to riceyness or pinking. Strong, upright foliage and heavy wrapper leaves assures good protection without tying. Suitable for early as well as late sowing, having good tolerance to heat as well as cold conditions. Excellent for freezing. A87M, C85M, G13M, J84, K10, K50, K73, L42, M49, N52

Dominant: 75 days. Very large, heavy, extra firm, snow-white heads. Vigorous growth gives excellent curd protection. Does best on fertile land and has an extensive root system that provides some tolerance to long dry periods. Highly recommended for the quality late crop. D68, E24, F6J, J9M, K49M, N84, R32, S55

Early Snowball: (Extra Early Snowball) 60 days. Uniform, small to medium head, 5 to 6 inches in diameter; smooth, thick and heavy; does not discolor during poor weather. Of dwarf habit, with very short outer leaves, allowing it to be planted close together. Standard main crop Snowball type. Known prior to 1884. A2, B75, B78, E59Z, F80, F82, F92, H33M, H42, H95, J9M, K49M, K71, L7M, L35{PL}, etc.

Early Snowball A: (Super Snowball A) 55 days. Uniform maturing, smooth, pure-white heads; 6 inches across, and weighing 3 to 5 pounds each. Medium-sized plant with good leaf coverage. Fine for greenhouse forcing, frames or outdoor culture. B75M, DIT, D74B, FI, F63, G27M, G71, H61, J14{PL}, J20

Garant:<sup>2</sup> 82-86 days. Early maturing "mini" cauliflower. Specially selected for direct sowing, it is quick-growing, vigorous, without a heavy foliage canopy and will not mature all at once. Harvested when 1 1/2 to 3 1/2 inches across, the small heads are ideal for freezing. Good for small gardens, the plants can be spaced at a distance of only 6 inches x 6 inches. U15

Hormade: 60 days. Produces large, extra-firm, deep white heads of excellent quality. May be harvested over a long season. Large-leaved, vigorous plants have good self-wrapping ability. Resistant to mildew, heat and water stress. R11M, S95M, TIM

Perfection: A fast-growing summer cauliflower still popular with market growers in England, but creamy curded and suffering from competition from whiter kinds. Introduced in 1905. N84, S75M

Predominant:<sup>2</sup> 90-94 days. Late maturing "mini" cauliflower. Can be sown later than Garant for heads that mature in September and October. Small heads require no trimming and are ideal for freezing. Sow in succession from June onwards. Developed by the National Vegetable Research Station of Great Britain. S75M

Self-Blanche: 68 days. Snowball type, with smooth, pure white heads, 6 1/2 to 7 1/2 inches in diameter. Under cool growing conditions, has the ability to produce wrapper leaves that will curl around the head protecting it from the sun. Early crops will not self wrap during warm weather. Best grown as a fall crop in cool growing areas. D82, E91G, G79, G82, H95, K10, K49M, K71

Snow Pak: 80 days. Large, dome-shaped, heavy heads; curds are uniform, creamy-white, deep, firm and smooth. Clasp inner wrapper leaves make it less necessary to tie the leaves for blanching. Well adapted to dry, arid growing areas. For fresh market and processing. C20M, E53M

Snowball X: (Giant Snowball X) 65 days. Large, solid, pure-white head; matures gradually over a period of days, providing a longer cutting period; sure-heading. Outer leaves are long and strong, giving complete protection. Well adapted for use under a wide range of conditions. Highly recommended for home gardens. A16, B49, DIT, D11M, F70

Snowball Y: 70 days. Vigorous growing, high quality Snowball type for an autumn crop. Large, deep, smooth, heavy white head; 6 inches in diameter; matures uniformly over a long harvest period. Heavy outer foliage provides good protection. Recommended for fresh market and home use. DIT, D26D, F6J, G13M, G57M, G82, G93M, H61, I59M, J84, M32, N16

Stovepipe: 55 days. Medium to large head, 5 to 6 inches in diameter, free of riceyness in hot weather. Tall, smooth, erect, stovepipe-like leaves protect curd from exposure to the sun. Grows well in summer, holding at temperatures of 90 to 95° F.; not tolerant of frost. Developed at Michigan State University. Introduced in 1981. U8D

Super Snowball: (Early Super Snowball) 55 days. Large, solid, deep, finely-grained, ivory-white head; 6 to 7 inches in diameter; matures evenly; fine quality, mild delicate flavor. Vigorous, compact plants. Extra early Snowball type, yet unexcelled for the late or main crop. For fresh market or freezing. A25, D27, D56M, D76, E38, G57M, L79

Veitch's Autumn Giant: (Autumn Giant) 80 days. Very large, firm, beautiful white head; well-covered by the inner leaves; matures in late autumn. Large, vigorous growing plant, with a longish stem; hardy. Very old cultivar, known before 1885. Still popular in England. VILMORIN; N84, 053M

White Rock: 75 days. Deep, firm, dome-shaped white heads; 6 1/2 inches in diameter; beautiful, smooth curds. Outstanding self-wrapping ability, can sometimes be grown without tying under cool conditions. Vigorous, erect, medium-sized plants; widely adapted. For late summer and autumn crops. *Al*, C20M, G71M, I50G, J74, J84, K10, K73, L42, L89, M29, N52, R32, S75M

White Summer: 65 days. Firm, deep, smooth pure-white heads; marketable at 6 inches; very good color and texture; can be harvested over a very short period. Excellent curd protection, although tying may be necessary for larger heads. Widely adapted for a mid-season fall crop. C20M, F63, K73

#### WINTER CAULIFLOWER

Armado Spring Plus: 210-270 days. A blend of 5 high quality, Walcherin-type cauliflowers for overwintering in moderately severe climates (above 10° F.). They produce fine, salad quality curds late March through early May. Each cultivar is bred to produce a highly concentrated harvest; when sown together at one sowing date this blend will increase the length of harvest. L89

Early March: (St. Valentine's) Medium-large plants produce large, 6 1/2 inch, smooth, white heads of excellent quality. Direct seed August 15 to 31 for a late winter harvest. C20M

Headman: Multi-headed type. Has the potential to double the yields of ordinary overwintering cauliflower. Most plants will form a typical central head and up to 3 or 4 large side heads. Very white, well-wrapped heads. Developed by Tim Peters. J9M

Inca: The best overwintering cultivar for the Puget Sound area. Developed and commercially grown in the Skagit Valley region. Produces large, firm, high quality heads weighing 2 pounds. Very good frost tolerance; abundant wrapper leaves. Sow seeds in late July and harvest cauliflower from late March to early May. F82, N84, P59M, R32, S55

Late Queen: 90 days. Very hardy, reliable, overwintering cultivar producing large, cream-curd, well-protected heads of good quality; ready for harvesting in April and May. A selection of English Winter. Popular market cultivar in England for over a century. S61

Nine-Star Perennial:<sup>3</sup> (Nine-Star Perennial Broccoli) Tall-growing perennial, producing numerous, pure-white shoots, resembling tiny cauliflowers. Each plant develops a small head surrounded by 9 or 10 smaller ones every spring and early summer, for 4 to 5 years. Plant out at 3 feet apart. Should be planted against a fence, or in an out of the way part of the garden where it can be left undisturbed. ORGAN [Cu]; K49T, 053M, S61

Snow's Winter White: 110 days. Should be sown late spring for a harvest beginning in December and lasting through March if continuous sowings are made. Cold tolerant, but not recommended for very cold districts where severe frosts are likely to discolor the curds. Easier to grow than spring cultivars. B49, 199M, K49T, N84

#### CODES FOR SPECIAL TYPES

1. Spiral-Shaped
2. Mini or Baby
3. Perennial

## CELERIAC {S>

### APIUM GRAVEOLENS RAPACEUM GROUP

#### HYBRID

Mentor: 110 days. Refined, high yielding strain. Large, uniform, smooth round roots; firm, very fine-grained white flesh with a rich, nutty flavor; quality excellent, free from discoloration, pithiness and hollow-heart. Tolerant of cold weather, becoming sweeter after the first frost. Easy to grow. Originated in the Netherlands. J97M, K66

#### OPEN-POLLINATED

Alabaster: 120 days. Round, healthy, smooth-skinned, turnip-shaped root; white inside and out; fine-textured flesh; remains white even after being cooked; keeps well. Best used when about 2 to 4 inches in diameter. Heavy yielding. C20M, G93M, J82, J84, PIG

Alba: Short leaved type. Medium to large, white-skinned roots with very firm pure white flesh. Roots remain white even after blanching. Good flavor and quality. Matures in midseason, and has good resistance to sprouting. Suitable for fresh market and processing. Originated in Europe. C95, N81

Brilliant: 100-110 days. Refined, high yielding European strain. Round, medium-large, relatively smooth roots with buff-colored skin; very uniform; firm, attractive white flesh with a richer than normal flavor; resists pithiness, discoloration and hollow-heart. Dark green foliage. Keeps very well in cold storage. A2, D11M/E75{PL}, F70, G6, G93M, K50, K57{PL}, L3J, L89

Balder: Fine, large, smooth-skinned, heavy-yielding cultivar from Europe. Excellent flavor and texture. Roundish shape and very white flesh. Resistant to septoria disease. Easily grown and requires no earthing up. B49, N84, 053M, R32

Diamant: Excellent celeriac for fresh market with nicely sized roots and excellent internal color and quality. Has no hollow crown and very little off shoots. Stands three-quarters above the ground and is therefore very easy to harvest and clean. C53, D68, K50

Dolvi: 120 days. An outstanding cultivar bred for multiple disease resistance and vigor. Large, nearly round, heavy roots; white interior of fine texture; excellent quality and flavor when cooked or used raw; stores well. 139

Giant Prague: (Prague, Smooth Prague, Large Smooth Prague) 115 days. Root large, almost spherical; evenly shaped; without rootlets, except on the bottom; smooth skin; thick, mild white flesh; stores well for winter use. Best quality is obtained if roots are harvested when 3 to 4 inches in diameter. Standard cultivar, introduced prior to 1885. A16, C44, C85M, D27, E5T, E63D, G68, G71, J20, K49M, L42, M49

Jose: 110 days. Very large roots are round, attractive and relatively smooth and free of offshoots. Tops produce little foliage. The interiors are very white and flavorful, and resist pithiness and hollow heart. Quality very good. Can be planted closer together than other cultivars. L77D, P59M

Marble Ball: 105 days. Uniformly large, smooth, globe-shaped roots; quite free of offshoots; flesh white, thick and solid, nearly free of pith; flavor and quality excellent; stores well for winter use. Best used when 2 inches in diameter. Heavy yielding. N84, P59M

Monarch: 120 days. Very large, smooth, pale-colored roots that wash well; firm white flesh; does not discolor when cut or blanched.

Very well adapted to canning. Heavy yielding. Scab resistant. C85M, C95, L91M, N81, S61M, S75M, S95M

Prague Model: 110 days. Larger in size than the old Giant Prague cultivar. Has globe-shaped roots with small rootlets, fewer in number; fine-flavored flesh; keeps well for winter use. Needs a rich soil. K49M

Snow White: Improved European strain known for its fine inner bulb quality. Large, smooth, well-shaped roots that weigh 4 to 5 pounds; firm, snow-white flesh of excellent flavor. Harvested from late summer through fall. Good bolt resistance and storage qualities. Originated in Denmark. 139, K10

Wiener Riesen: Very large, brown-skinned roots with pure white flesh. Matures midseason to late, somewhat later than standard cultivars. Good resistance to sprouting. Translates as "Viennese Giant". Originated by Austroaat. N81

## CELERY {S}

### APIUM GRAVEOLENS

#### GREEN CELERY

##### HYBRID

Victoria: 100 days. Strong, fleshy, upright stalks with an appealing apple-green color. Excellent flavor and quality. Bolt resistant, holding its quality for a long time Very widely adapted, grows where celery is traditionally difficult to grow. The first hybrid celery bred in Great Britain. Developed by A.L. Tozer. L91M, N84, S75M

##### OPEN-POLLINATED

Chemin: (Golden Yellow) Very distinct celery, the leaves and stalks being naturally suffused with a yellow or golden hue. Broad, solid, ivory-white stalks. Does not require blanching, but stalks are more tender and of better quality if earthed-up in the usual manner. French heirloom from the 19th Century. Originated by M. Chemin in a market garden near Paris. VILMORIN; P59M

EA Special Strain: Tall Utah type with more upright, bright-green stalks which are over a foot long. Better developed hearts with extra trimmed weight. High yielding plant, widely adapted. Good resistance to disease and bolting. Developed by Bountiful Gardens. Selected from Ventura. B49

Florida 683: 90-100 days. Busty, compact, full-hearted plant, 22 to 26 inches in height; medium-green in color blanching to a rich cream; stems broad, thick, solid, 10 to 11 inches long. Resistant to fusarium yellows and mosaic. Selected from Utah 52-70, for higher rib count and better heart formation. A1, C20M, F63, J84, K73, L42, N16

Fordhook: (Burpee's Fordhook, Emperor, Hauser) 130 days. Stocky, compact plants, 15 to 18 inches in height; stalks are thick, stringless, tender but crisp, juicy; after blanching they are a pure silvery-white with a large, tightly folded, full heart of a delicious nutty flavor. Ideal for fall use and winter storage. I67M

Fordhook Giant: 120 days. Short, stocky, dark-green plants, 15 to 18 inches in height; easily blanched to a greenish white with a golden heart. Stalks thick, tender and stringless; flavor very good to excellent. K49M

Giant Pascal: 120-130 days. Large, stocky, dark-green plants, 24 inches in height; hearts are tender, brittle and of good quality; broad, distinctly ribbed, thick, solid stalks, blanch easily to a good creamy-white color; quality very good, flavor nutty. Resistant to blight. Standard green celery for the fall market. C44, D26D, E63D, E53M, G57M, H57M, I59M, K27M, K49M, K71, L79

Tendercrisp: 90-100 days. A productive Giant Pascal type, more uniform and upright than other cultivars. Grows 23 inches high, with compact, massive heads; stalks are 11 to 12 inches long, smooth, glossy, and dark-green in color; large heart; quality and flavor are excellent. Highly recommended for home gardens. PIG

Utah: (Utah Green, Utah Tall Green, Utah Golden Crisp) 90-100 days. Vigorous, stocky, compact plants, 20 to 24 inches tall; medium-broad, full rounded, thick, solid stalks that are tender, crisp and stringless; quality very good, rich, nutty flavor; tightly folded hearts; readily blanches white. Popular home garden cultivar. A16, B6, D27, D82, E38, F92, G83M, G87, J97M, K49M, L11, PIG

Utah 52-70: (Tall Utah 52-70) 120 days. Green Pascal strain with an upright, compact growth habit, 25 to 30 inches in height; good heart development; dark-green stalks and foliage; 10 to 11 inches to the first joint of the stalk; stalk thick, smooth, solid, tender and crisp, of excellent quality. Highly resistant to bolting under adverse weather conditions. Recommended for home garden and commercial plantings. A2, C97, DIT, D12, FI, F63, G13M, G27M, G79, H57M, H95, J20, K50, L42, M49, etc.

Utah 52-70R Improved: A tall green Pascal type, more refined and slightly taller than regular Utah 52-70. Very compact, erect plant, 25 inches high; good heart development with thick, smooth, waxy stalks and attractive dark-green foliage. High yielder; susceptible to bolting. Standard market garden and shipping cultivar throughout the United States. A1, A87M, B75, B75M, C85M, DIT, D26D, F82, G71, G93M, H61, I91, K73, N52

Ventura: 80-100 days. A widely adapted, early, tall Utah type with more upright growth and better developed hearts. Plants average 28 inches in height with long, crisp stalks, 13 inches in length, deep glossy-green in color; retain their crispness. Some resistance to some strains of fusarium yellows. Excellent bolt resistance. C20M, D11M, D68, E24, E75{PL}, F70, G6, G79, J9M, K73, L42, L89, L94, R47

Verde a Costa Piena Gigante: Vigorous, upright plant with distinct long, slender stalks. Both leaves and stalks are an attractive deep green color. Very fragrant, of excellent flavor. Resistant to disease. Grown especially for a fall crop. Q11M, SI 7

##### SELF-BLANCHING CELERY

More compact in growth habit than green celery, if planted close enough together the plants will blanch themselves but their texture and appearance are improved if light can be partly excluded when they are growing. Of very good quality but most are not quite as aromatic as the green types.

Cornell #6-19: 95-100 days. Slightly open plant habit; height 24 to 25 inches. Round, stringless, crisp, extra thick stalks. Combines the good qualities of the Pascal type with the earliness, easy blanching character and color of Golden Self-Blanching. Resistant to fusarium yellows but not blight. Recommended for muck or upland soils in the Northeast. Introduced in 1953. S70

Golden Detroit: (Dwarf Golden Self-Blanching) 85 days. Compact, full-hearted plant; height 18 inches; thick, solid stalks; blanches to a medium yellow color. Petiole length 8 inches. Early, widely adapted cultivar similar to Golden Self-Blanching. B75M

Golden Plume: 90 days. An early yellow market celery that is also recommended for home gardens, and for selling directly from the field. Produces good sized stalks and full, compact hearts which readily blanch to a clear-yellow color; quality very good. Introduced in 1937. E24, L42

Golden Self-Blanching: 85 days. Compact, full-hearted plants, 20 to 25 inches high; thick, solid yellowish-green stalks, 7 to 8 inches long; blanches readily to a golden-yellow color; quality very good, flavor delicate. An early and widely adapted strain suitable for fresh market and home garden use. A16, B6, B49, B78, C85M, E91G, G57M, G79, G82, I39, J9M, K49M, M46

Hopkins Fenlander: 105 days. Traditional British winter variety. Self-blanching, succulent and free of strings. Excellent, nutty, old-fashioned flavor. Relatively easy to grow. Good standing ability, allowing for late harvests. L91M, S75M

Ivory Tower: Very fleshy, uniform smooth stems of high quality. Inner stalks blanch to an ivory white color at maturity. Much taller than Lathom Self-Blanching. Not as tolerant as Lathom to bolting and is best suited to late summer and autumn cropping. Bred by A.L. Tozer Ltd. J9M, S61, S75M

Lathom Self-Blanching: Very compact, solid-hearted type, no need to earth up; crisp, stringless, yellow stalks; very good, nutty flavor. Early strong grower; heavy cropper; fairly resistant to bolting. Highly commended by the Royal Horticultural Society. N84, S55, S75M

Paris Golden: (Yellow Self-Blanching) 115 days. Crisp stalks grow 18 to 20 inches tall, blanch easily to a golden yellow. Both the stem and the heart are delicious, and free from string. I67M

Pieno Bianco d'Ingegnoli: Very long, crisp stalks with yellowish external color and pure white internal color; thick, solid and fleshy. Blanches easily to golden yellow. Appealing for its uniformity, thickness and ease of self-blanching. Sown April to June outdoors, or January to March indoors. Q11M

Tall Golden Self-Blanching: 120 days. High quality, yellow blanching type, slightly taller than regular Golden Self-Blanching. Thick, heavy stalks with tender, stringless flesh. Forms solid hearts very early. Stocky plants, 25 to 30 inches tall, blanches readily. Keeps very well. Standard market and shipping type. J73

Verga d'Oro: An Italian cultivar of great merit. Vigorous, upright plant. Exceptionally wide-based, closely packed stalks; an attractive golden-yellow in color. Suitable for sowing in spring for a harvest in summer and fall. Q11M

#### TRENCH CELERY

English cultivars that are especially adapted to traditional trench culture. Most are very attractive and flavorful with long stems that turn white, pink or red when blanched. Hardier than Self-Blanching types, being ready for cutting from early winter onward.

Clayworth Prize Pink: Medium-sized, crisp heads; long standing. A standard market cultivar, the best and hardiest of the pinks. Develops its full flavor after a frost. A favorite Victorian cultivar for trenching the traditional way. Similar to Giant Pink. N84, S55

Giant Pink: Large, sturdy plants with dark-green leaves; long, thick, pale-pink stalks; solid and crisp; excellent sweet flavor. The stalks will color pink to red, depending upon the time of year (redder in cold weather). In hot areas, plant in fall for a spring crop. Heirloom English cultivar. S61

Giant Red: 120 days. Large, compact plants; broad, thick, solid, tender and crisp stems are tinged with dark-red. Turns a delicate pink when blanched, making it an unusual addition to salads; also quite attractive when eaten with a dip. Very hardy and productive; will stand well into the New Year in mild climates. Heirloom, known before 1877. J20, L89, N24M, N84, 053M, S61

Giant White: Large, compact heads with crisp, solid stems of very good flavor. Maincrop cultivar; resists frosts well. A large, white celery that has been in cultivation for at least 100 years. N84, 053M

Pink: An English cultivar which blanches fairly easily and quickly. Stalks are an attractive pink color; color remains pink even after cooking. Very hardy, will withstand some late frosts. Excellent for table use or for exhibitions. K49M

Pink Plume: 110 days. Very attractive pink celery. Large, thick stalks tinged with pink, softening into an ivory white; very crisp, solid and tender; sweet, rich, delicious nutty flavor. Pale green leaves, delicately blushed with pink. Tall plant, height about 24 inches. Requires only slight banking when blanching it. An old

English heirloom. Ideal for home gardeners and specialty markets. K71, M46

Red: 110 days. Bright red stalks which blanch pink if kept from the light. Keeps its red color when cooled. Well grown plants will mature a heart of flavorful stalks. Hardier than green types. Abundant yielder of spicy celery seed the following season. F73D, F80, J9M, K49M, N7G

Red Stalk: 120 days. Attractive, flavorful reddish stalks that keep their color when cooked. Yields an abundance of spicy seed the second season. Vigorous, stocky, branching plants, 24 inches in height. Hardier than green types. An old English heirloom. A2, I18M, I99M, K49T, L13M

Solid Pink: Attractive pink stalks that hold their color well. Should be planted 12 inches apart and earthed up as the plants grow. Blanches fairly easily and quickly. A hardy variety which will stand some late frost. Usually harvested in November and December. Old English heirloom. Introduced in 1894. B49, R32

Solid White: 100 days. Vigorous plants, 16 to 20 inches high; erect leaves; fleshy, solid, tender and crisp stalks; after blanching become yellowish-white in color; quality and flavor very good. Excellent for table use or for exhibitions. Heirloom, known before 1877. B49, Q45M, R32, R50, S61

## CHERIMOYA {GR}

### ANNONA CHERIMOLA

Bays: Medium to large, rounded fruit, weight 18 to 24 ounces; skin light yellowish-green, covered with conical protuberances; pulp white, juicy, melting, subacid, quality good; ripens February to April. Tree bushy, spreading; a good bearer; does best in coastal areas, especially near Santa Barbara. Produces without hand pollination in some years. BROOKS 1972; A63, B58M, G49, J22

Booth: Medium to large, conical fruit; skin with slight to moderately developed protuberances; flesh of very good flavor but seedy; sometimes tends to darken on the outside; ripens November to March, handles well. Tree a heavy bearer; more tolerant of temperature extremes than others. Best commercial cultivar, especially in inland areas. Originated in Hollywood, California. Introduced in 1921 by Armstrong Nurseries. BROOKS 1972; A63, D23M, G49, I83M

Chaffey: Medium-sized, short-conical fruit, about 4 inches long; weight 3/4 to 1 pound; skin smooth, thick, resists bruising; flesh light cream, quality and flavor very good; seed small, 30 to 60 per fruit; season December to March along the coast of California. Tree bears regularly; is somewhat productive without hand pollination. Grows well in both inland and coastal areas. BROOKS 1972; A63, B58M, G49, I83M

Deliciosa: Medium to small fruit, long-conical in form; skin thin, slightly downy, covered with long protuberances; fairly seedy; ripens in midseason. Flavor very good inland, poor along the coast. Generally bears well but doesn't ship well. Cold-resistant. MORTON 1987a; Q93

El Bumpo: Medium to large, conical fruit; skin with large, rounded protuberances, turns yellow when mature; flesh juicy, not seedy; excellent typical flavor; ripens December to March. Soft, edible skin. Probably a seedling of Whaley. Originated in Villa Park, California by Rudy Haluza. Introduced in 1986. A63, G49, I83M

Fino de Jete: Medium-sized fruit with thumb-print pattern; skin moderately thick, yellowish or whitish-green when ripe; juicy flesh with a subacid flavor; ripens early, beginning in late September. Very productive, but has a tendency to set small, misshapen fruit. One of the principal commercial cultivars of Spain. T49M{SC}

Honeyhart: Medium-sized, conical fruit, weighing up to 2 pounds; skin smooth, plated, yellowish green; flesh smooth-textured, sweet and juicy; flavor and quality excellent; seeds few; ripens November to March. Produces consistently good crops without hand pollination. Originated in Escondido, California by Orton H. Englehart. Introduced in 1976. A63, G49, I83M

Libby: Fruit rounded-conical; skin fingerprinted, may still be green when mature; falls from tree easily when ripe Very sweet, strong, typical cherimoya flavor. Very early maturing, late September to early October. Probably a seedling of Spain. Originated in Villa Park, California by Rudy Haluza. Introduced in 1986. I83M

Mariella: Large to very large fruit, may weigh up to 7 pounds; skin yellowish-green, knobby; flavor very good; ripens November to March; resembles White. Tree bears without hand pollination. Originated in San Diego, California from seed brought from Argentina. I83M

McPherson: Moderately large fruit; skin smooth but with some development of tubercles; quality good; midseason to late in maturity. Tree vigorous; quite productive even without hand pollination. Originated in Orange, California. Introduced in 1933. BROOKS 1972; J22

Nata: Large, conical fruit, weight 2 1/2 to 3 pounds; skin thin and delicate; flesh very juicy, sweet to very sweet; rich, tangy flavor; ripens December to March. Vigorous tree; relatively easy to pollinize. Originated in Fallbrook, California from Ecuadorian seed stock. Introduced by George Emerich. A63

Orton: Medium to large, roundish fruit, weight 12 to 16 ounces; smooth, attractive, light-green skin; creamy-white flesh, sweet and rich; excellent subacid flavor. Begins ripening very early, in October, continues into March. Moderately vigorous, slightly spreading tree. Originated in Escondido, California by Orton H. Englehart. A63

Ott: Heart-shaped fruit, averages 3 inches in diameter, weighs 7 to 12 ounces; smaller than Booth or White; skin green with brownish spots, smooth, tough, medium thick, peels easily; flesh yellow, very fine textured, flavor very pronounced and distinct; high sugar content, up to 26.5%; eating quality excellent; seeds 24 to 36 per fruit; season January through April. BROOKS 1972; A63

Pierce: Small to medium-sized fruit; skin knobby, light green; flesh very sweet, quality very good; seeds few; ripens January to March, has a longer fruiting season along the coast. Tree large, vigorous; a shy bearer with a tendency toward alternate bearing; does best in inland areas. Some production without hand pollination. A63, I83M

Sabor: Fruit of variable size, but generally medium; skin often has nubs or protuberances. Flavor pronounced, excellent. Rated as superior in taste to all others at meetings of the California Rare Fruit Growers. Tree bears well without pollination. Originated in San Diego, California by James Neitzel. Introduced in 1979. I83M

Selma:<sup>1</sup> Unusual pink-fleshed cherimoya rated very highly for flavor. Medium-sized, elongated, fairly smooth fruit; weight 1 to 2 pounds; light olive-green skin with subtle pinkish hues; flesh an attractive pink throughout, darkening to a narrow band of bright-magenta near the skin, smooth to slightly grainy; distinctive, richly complex flavor with strong hints of raspberry. Originated on the property of Lloyd von Haden, Vista, California. T49M{SC}

Spain: Small to medium-sized, conical fruit, average weight 1 1/2 pounds; skin dark green, very smooth; flesh creamy white, sweet, free of grit cells near the skin; flavor excellent; seeds relatively few, black, shiny; ripens December to April. Tree hardy; bears well in coastal areas without hand pollination; leaves very large. Introduced into California from Spain. A63, I83M, Q93

Villa Park: Small to medium-sized, round fruit; skin with small protuberances; flesh sweet, with a rich pineapple-banana flavor; ripens December to March. Originated in Villa Park, California by Rudy Haluza. I83M

White: (Dr. White) Fruit medium to large, short-conical with rounded apex; skin medium-thick, semi-smooth; flavor very good, even after fruit is quite soft; seeds few; ripens December to March. Tree bears well in San Diego County, California, especially near coastal areas. Poor bearer without hand pollination. Originated on the White ranch, Lemon Grove, California. Introduced in 1930. BROOKS 1972; A63, B58M, I83M

#### CODES FOR SPECIAL TYPES

1. Pink-Fleshed

## CHERRY {GR}

PRUNUS AVIUM

PRUNUS CERASUS

PRUNUS X GONDOUINII

### DUKE CHERRIES

Also called *royal cherries* or dual-purpose cherries, these hybrids of sweet and sour cherries have a soft texture and semi-sweet flavor. They are valued for their hardiness in unfavorable climates and for their cooking qualities. (P. x gondouinii)

Belle Magnifique: (Belle de Chatenay) Very large, heart-shaped fruit; skin rich crimson, glossy; flesh yellowish, very soft, very acid until almost fully ripe, acid when ripe, with uncolored juice; resistant to splitting; ripens during August but will often hang until well into September. Tree vigorous, upright-spreading; needs to be pruned as a sweet cherry; self-incompatible, Morello recommended as a pollinator. SIMMONS 1978; U7G{SC}

Brassington: Large, dark red, sprightly subacid fruit; ripens with Early Richmond. Tree productive. A chance seedling found in Oceana County, Michigan, prior to 1913. HEDRICK 1915; F91T{SC}

Krasa Severa: (Beauty of the North) Large, roundish-oblate fruit; skin dark red to dark purple; flesh dark red, juice light red-purple; flavor slightly sour, refreshing, pleasant; stone medium, semi-clinging; ripens very late. Fine for home canning. Resembles English Morello more than a Duke cherry. Tree upright, productive; moderately susceptible to leaf spot disease and brown rot fungus. Originated in the former Soviet Union by I.V. Michurin. BROOKS 1972, MICHURIN; F91T{SC}

Late Duke: A variant of May Duke, ripening from 2 to 4 weeks later. Large, heart-shaped fruit; skin deep red, glossy; flesh pale yellow, soft, juicy, rich, sprightly subacid; quality very good; juice uncolored; stone large. Tree vigorous, upright-spreading; self-compatible; should be pruned as a sweet cherry. Introduced around 1797. HEDRICK 1915, SIMMONS 1978; J61M

May Duke: Roundish, medium to large fruit; skin dark red to nearly black, glossy; flesh dark red, very soft, sweeter than most Duke cherries; flavor rich; juice pinkish; quality very good when ripe; stone smallish. Tree upright, compact; somewhat susceptible to bacterial canker. Partially self-compatible; English Morello recommended as a pollinator. Probably Originated near Medoc, France around 1688. HEDRICK 1915; F91T{SC}, K88T, Q30{SC}

Reine Hortense: (Regina Ortensia) Large, round fruit; skin tender, bright glossy red slightly blushed with amber; flesh pale yellow, with colorless juice, tender and melting, sprightly subacid, flavor excellent; ripens in midseason; susceptible to brown rot. Tree of medium size, upright-spreading, productive. Originated in France early in the 19th century. HEDRICK 1915; N24M

### SOUR CHERRIES (P. cerasus)

AMARELLE CHERRIES Also called *amarella* or *Kentish cherries*. Similar in appearance to Morellos, but most have lighter colored, less acid flesh with colorless juice. In France, where they



are known as *griottes*, they are used in confectionery in many ways and are highly recommended for *cerises a l'eau-de-vie*.

**Carnation:** Medium-sized, roundish-oblate fruit; skin tender, medium to dark red, somewhat variegated with white or yellow; flesh yellowish-white, tender and melting, sprightly, quality very good; juice abundant, colorless; stone free, separates very readily from the flesh leaving it unusually bright and clean; ripens in mid-season or later. Tree medium-sized, spreading, not very productive. First recorded in 1676. HEDRICK 1915; U7G{SC}

**Dwarfrich:**<sup>1</sup> Medium-sized, roundish fruit; similar in color, flavor and flesh texture to Early Richmond, but may average slightly smaller. Bush a true dwarf, growing only 4 feet high; hardy, blooms late; requires a pollinator, Montmorency and English Morello being recommended. Very suitable for small gardens, where it is productive as well as ornamental. Seedling of Vladimir. Originated in Cheyenne, Wyoming. BROOKS 1972; F91T{SC}

**Early Richmond:** Medium-sized, roundish fruit; skin thin, rather tough, light red changing to dark red; flesh pale yellow, with light pinkish juice, striggy, tender, melting; flavor pleasant, sprightly; good to very good in quality; stone free; small; ripens early. Tree medium-sized, upright-spreading; very haidy. Similar if not identical to the Kentish Red of England. HEDRICK 1915; A82, B73M, C54, D76, E3, G72, H49, H90, I9M, K28, L90, M83, M99G, N20

**Meteor:** Large, roundish-oval fruit; skin thin, tender, clear light bright-red, very attractive; flesh light bright-yellow, medium firm, medium juicy; flavor mild, pleasantly acid; quality very good; stone small, long oval, very free; ripens in midseason, 7 to 10 days after North Star. Tree very hardy; bears regularly and annually. Introduced in 1952. BROOKS 1972; D65, E84, C27T{SC}, D69, F53, G16, H90, J16, L27M, L70, M35M, N20

**Montmorency:** Medium to large, roundish fruit; skin bright red, thin, tender, glossy; flesh pale yellow with a reddish tinge, tender, melting, sprightly, tart, of very good quality; juice abundant, light pink; stone free, small; ripens in midseason. Tree semi-dwarf; very productive. Standard sour cherry in the United States. Originated in the Montmorency Valley, Fiance in the 17th century. HEDRICK 1915; A5, A38M{DF}, B83, C29{DF}, C29{PD}, C67{PD}, C75M, E38M{DF}, G47D{DF}, J83, K28, K73M, L97G{DF}, M39M, N24M, etc.

**MORELLO CHERRIES** Similar to the Amarelle cherries, but with deep crimson-red flesh and colored juice. The tender, juicy flesh is bittersweet, too acid for most palates when eaten raw, but delicious when cooked or preserved in some way. H15T{PD}

**Del Nord:** (Griotte du Nord) Fairly large, roundish fruit; skin dark purplish red, glossy; flesh red, soft, very juicy, sub-acid, quality good; juice deeply colored; stone free; ripens about the end of August. Tree of weak growth, becomes drooping with age; self-compatible, bears good crops. Continental cooking cherry. SIMMONS 1978; F91T{SC}

**English Morello:** Large, roundish heart-shaped fruit; skin thin, tender, very dark red becoming almost black; flesh dark red, tender and melting, sprightly, tart; juice abundant, dark-red; quality good; stone free, small; ripens very late. Excellent for cooking, becoming rich dark wine-colored and pleasantly aromatic. Tree small, with drooping branchlets Very old cultivar of unknown origin. HEDRICK 1915; A63, A88M{OR}, A91, A91{SC}, C34, C54, I68, K88T, N20, 081

**Kansas Sweet:** (Hansen Sweet) Medium to large fruit; skin mahogany-red; flesh firm, juicy, somewhat sweet for a sour cherry; resembles English Morello; ripens late June to early July. Tree hardy; productive; fruits satisfactorily in the Great Plains area. Bing or Black Tartarian recommended as pollinators. Originated in Wichita, Kansas by H.J. Hansen. Introduced about 1935. BROOKS 1972; C54, J61M, K88T

**Marasca di Ostheim:** Semi-sweet Morello type of exceptional quality. Medium-sized, dark mahogany-red fruits; firm flesh and very dark red juice; ripens just before Montmorency. Excellent for freezing or cherry desserts. Prized by wine makers for its dark, clear juice. Very hardy and productive tree, does not require cross pollination. Apparently true to name from seeds. Originated in Spain. HEDRICK 1915; G16

**Mesabi:** Skin quite red; flesh lighter red than skin; sugar content midway between sweet and sour cherries; pit smaller than Meteor; very good for sauce and pie; ripens in mid-July; resembles Meteor. Tree spreading, slow growing; heavy yielding; very hardy; tends to bear when small. Originated in Duluth, Minnesota. BROOKS 1972; A74, B15M, F91T{SC}, I49G, I49G{SC}, L70, N24M

**North Star:**<sup>1 2</sup> Fruit roundish heart-shaped, about 3/4 inch in diameter; skin bright red changing to a dark, glistening mahogany red at maturity; flesh dark red, juicy, meaty, tender, flavor pleasantly acid; quality good; stone small, easily removed; ripens very early. Tree a genetic dwarf, grows less than 10 feet tall; self-fruitful; excellent for home gardens. BROOKS 1972; B73M, C75M, D65, D69, E84, E97, F53, G23, H65, I49G, J83, L27M, M11M{PR}, N24M

**Schattenmorelle:** Medium to large, roundish fruit; skin thin and tender, dark red; flesh deep red, tender and melting, sprightly tart; juice abundant, dark-red; quality very good; ripens very late. Excellent for cooking, becoming a rich dark-wine color and pleasantly aromatic. Tree smaller than Montmorency, haidy. German sport of English Morello. F91T{SC}, M22, P68M

**Suda:** Fruit roundish heart-shaped, about 3/4 inch in diameter; skin dark purplish-red; flesh dark red, with dark-colored juice, tender, somewhat meaty, sprightly, astringent, very sour; quality poor; stone free; ripens very late. Tree vigorous; rather unproductive. Originated in the garden of a Captain Suda, Louisiana, Missouri, about 1880. HEDRICK 1915; A91, A91{SC}, F91T{SC}

#### SWEET CHERRIES (*P. avium*)

#### **PURPLE-SKIN NED**

**Angela:** Large, nearly round fruit; skin dark red; flesh firm, juicy, sweet, of good flavor; resistant to splitting; ripens late, with Lambert. Tree a reliable and heavy bearer; more winter hardy than Bing or Lambert; resistant to western x disease and doubling; inter-fruitful with Bing and Lambert. Introduced in 1974. C34, E84, F91T{SC}, H90M{SC}, J61M, K88T

**Annonay:** (D'Annonay) Medium-sized, roundish fruit; skin dark red to black, fairly glossy; flesh pinkish, soft, sweet, juicy, slightly sub-acid; stone clinging. Tree of moderate vigor, tall and round-headed; hardy; bears good crops regularly. Valuable because of its early ripening, the beginning of June. Of French origin. SIMMONS 1978; U7G{SC}

**Attika:** (Kordia) Large, attractive, dark blackish-purple fruits with long stems; very firm, juicy, sweet dark-red flesh. Fresh market quality excellent. Ripens about 10 days after Bing. Blooms late. Qiance seedling that originated in the former Czechoslovakia. B83, M39M, P68M

**Bing:** Very large, heart-shaped fruit, about 1 inch in diameter; skin medium thick, tough; skin color very dark red, almost black; flesh purplish-red with dark purple juice, rather coarse, firm, very meaty, brittle, sweet; of very good quality; stone semi-free large; ripens midseason or later. Tree vigorous, upright-spreading, productive. Originated in Milwaukee, Oregon by Seth Lewelling in 1875. HEDRICK 1915; A82, B83, C29{DF}, C29{PD}, C29{PR}, D81M{PO}, E4, E97, E97P{DF}, F53, H3{PD}, I23M{PD}, J83, K73M, L97G{DF}, M39M, etc.

**Black Eagle:** Large, roundish, heart-shaped fruit; skin purplish black, fairly glossy; flesh dark red, firm, not very fibrous, sweet and rich; quality very good; stone fairly small; ripens in early July. Tree

spreading, drooping; hardy; productive; very susceptible to bacterial canker. Originated in England. SIMMONS 1978; Q30{SC}

**Black Republican:** (Republican) Medium-sized, roundish heart-shaped fruit; skin thin, purplish-black; flesh purplish-red, with dark-colored juice, tender, meaty, crisp; flavor sweet or with slight astringency before fully mature; ripens late. Tree large, spreading; tends to overbear. Originated in Milwaukee, Oregon by Seth Lewelling in the mid 19th century. HEDRICK 1915; B83, C41M, D81{PO}, D81M{PO}, K88T, M39M

**Black Tartarian:** Long, heart-shaped fruit, less than 1 inch in diameter; skin thin, deep purplish-black, glossy; flesh purplish-red, with dark colored juice; firm, meaty, crisp; flavor pleasant, mild, sweet; of very good to excellent quality; stone free, small; ripens early. Tree characteristically large and upright. Introduced into England in 1794 from Circassia, Russia. HEDRICK 1915; B53, B73M, B83, C27T{SC}, C75M, D81M{PO}, E4, E97, E84, G79M, H65, I9M, K73M

**Blackheart:** Medium-sized fruit, heart-shaped but somewhat pointed; skin dark purplish to black, glossy; flesh very dark red, soft, juice plentiful and colored, sweet; quality good; seldom splits. Tree fairly vigorous, very spreading and drooping; productive; handy. SIMMONS 1978; G65M

**Brooks:** Fruit uniformly large, particularly for an early-maturing cultivar; skin dark red; flesh firm and crisp, flavor sweet, rich, well balanced; dessert quality very good; susceptible to cracking; ripens early, about 1 week before Bing. When pitted and sun-dried, makes a large meaty "seedless raisin" that is excellent for snacks and baking. Tree upright, handy, a very productive and regular bearer. A9, B71M, D81M{PO}, E4, K73M, K88T

**Cavalier:** Medium to large fruit; skin rich purple-black, glossy; flesh firm, very sweet; quality excellent for an early cultivar; resistant to cracking; similar to Schmidt's Bigarreau, but matures 10 days earlier. Good holding qualities for the fresh market. Tree upright-spreading, moderately vigorous; somewhat slow to come into bearing; very hardy, reportedly to -26° F. F53, L12, M11M{PR}

**Compact Lambert:**<sup>1</sup> Large, heart-shaped, dark purplish fruit; firm, juicy, sweet, very dark-red flesh; quality very high; ripens mid to late July. Excellent fresh or canned. Dwarf, compact tree, growing only 7 to 10 feet tall. Suitable for growing in containers or where space is limited. E84, F88G, I49M, J61M, K88T

**Compact Stella:**<sup>1 2</sup> Large, heart-shaped fruit; skin black; flesh black, medium firm, relatively coarse; ripens mid-June to early July. Tree semi-dwarf, 40 to 60% of standard size, natural spur growth reduces height to under 15 feet at maturity; self-fertile, will also pollinize all other cherries. Sets fruit when young, with heavy, consistent crops. C54, D37, D76, E84, F88G, H65, I61M{SC}, K88T, M22, M99G, O81

**Early Buriat:** (Bigarreau Hatif de Buriat) Fruit large; skin red to dark purplish-red; flesh sweet, medium firm, more so than Black Tartarian but not as firm as Bing; semi-fiestone; ripens early, 4 to 7 days before Black Tartarian; susceptible to cracking after rain. Tree moderately vigorous; resistant to buckskin disease. Good pollinator for Bing and Mona. Originated in Morocco. BROOKS 1972, STEBBINS; B71M, C34, D18, E4, J61M, K88T, P59M

**Early Purple Gean:** (Early Purple) Large, heart-shaped fruit; skin thin, tender, purplish-black; of very good quality, ripens very early. Flesh sweet, soft, tender, juicy; of the type the French call Guigne, as contrasted to the hard, crisp-fleshed type known as Bigarreau. Tree large, upright-spreading; vigorous; very productive. Introduced about 1688. HEDRICK 1915; K88T

**Early Rivers:** Large to very large, heart-shaped fruit; skin glosly, dark purplish-red, almost black; flesh deep red, soft, melting; juice abundant, colored; quality very good when ripe; stone small; ripens in mid-June Very popular commercial cultivar in England. Tree vigorous; tends to grow too tall and weeping. Originated as a seed-

ling of Early Purple Gean by Thomas Rivers, about 1872. SIMMONS 1978; K88T, P59M, Q30{SC}

**Early Ruby:**<sup>3</sup> Small to medium-sized, dark red fruit, resembles Black Tartarian; matures 5 days after Black Tartarian. Medium-sized, upright tree. Produces regular crops of fruit in the hot, dry climate of California's San Joaquin Valley. Relatively low chilling requirement, about 500 hours. BROOKS 1997; A63, C54, D81{PO}

**Garden Bing:**<sup>12</sup> Dark reddish-black fruit, closely resembles the standard Bii<sup>^</sup>; ripens in midseason. Tree highly ornamental; a genetic dwarf, approximately 6 feet tall at maturity with a spread of 4 feet; self-fertile. Excellent for patio containers, where the height can be kept to 3 feet. STEBBINS; 174

**Giant:** Large, very dark-red, glossy fruit; flesh dark blood-red, very juicy, sweet, with a fine rich flavor; ripens in California about June 20th. Tree rapid in growth, with large and heavy foliage. First grown by Luther Burbank in 1900 and regarded by him as one of his best creations. HEDRICK 1915; F91T{SC}

**Gil Peck:** Large fruit; skin dark purplish-black; flesh firm, juicy, sweet, richly flavored; may occasionally crack, but less than Royal Ann; resembles Giant in shape and quality; ripens in late midseason. Royal Ann x Giant. Originated in Geneva, New York by Richard Wellington. Introduced in 1936. BROOKS 1972; K88T

**Hardy Giant:** (Starking Hardy Giant) Fruit large; skin dark red, attractive; flesh firm, sweet, of high quality; resembles Schmidt's Bigarreau; ripens early to midseason. Tree large, upright-spreading; vigorous; extremely hardy; a reliable and heavy bearer. Good pollinator for other sweet cherries, especially Lambert. BROOKS 1972, STEBBINS; B83, C34, F91T{SC}, J61M, K88T, M39M, Q30{SC}

**Hedelfingen:** (Hedelfingen Risenkirsche) Medium to large, roundish-oval fruit; skin glosly, deep mahogany red, almost black when ripe; flesh dark red, tender yet firm, aromatic; juice abundant, very red; quality good; ripens in mid-July. Tree tall, vigorous; productive; susceptible to bacterial canker. Originated in Hedelfingen, Germaiy in the 18th century. A5, A91, A91{SC}, B53, B83, C45M, C76M, E38, E84, F53, G16, H49, L33, M11M{PR}, M39M, etc.

**Hudson:** Medium to large fruit; skin very dark-red; flesh very firm, sweet, of good quality; resistant to cracking, even under extreme conditions; ripens very late, after Lambert, extending the cherry harvest about 10 days; best in its season. Tree very large; open-spreading; resistant to southwest trunk injury. BROOKS 1972; A5, B53, C76M, F53, H90M{SC}, K36, M11M{PR}

**Jubilee:** Large heart-shaped fruit, averages 1 inch in diameter or more; skin glosly, red to dark red; flesh red to dark red, fine-textured, moderately juicy, moderately firm to firm; flavor ranges from very sweet and mild to sweet and mildly tart; ripens 6 days before Bing. Tree similar to Bing in growth and appearance; effectively cross-pollinated by Bing, Lambert, Royal Ann, etc. BROOKS 1972; K88T

**Kristin:** Large, heart-shaped fruit, about 1 inch in diameter; skin tender, glossy, dark purplish-black; flesh sweet, firm, meaty, juicy; crack-resistant; ripens in mid-July in the Finger Lakes region of New York. Tree productive; very winter-hardy, tested for 12 years in Norway. Recommended for roadside stands or pick-your-own operations. A5, A91, B53, B74, C27T{SC}, C34, D37, D76, H65, H90M{SC}, I49M, I49P, J61M, K36, K88T, etc.

**Lambert:** Large, roundish heart-shaped fruit; skin reddish-purple, thin; flesh dark red, with scant dark red juice, meaty, firm, sweet, of pleasant flavor; quality very good; subject to cracking; ripens late. Tree vigorous and productive; resistant to doubling in hot climates; often difficult to train and prune. Originated in Milwaukee, Oregon about 1848. HEDRICK 1915, STEBBINS; B53, B83, C41M, D81M{PO}, E4, F53, K73M, LI, M39M, M63M{PD}, N20

Lapins:<sup>2</sup> (Cherokee) Van x Stella. Large, firm, sweet dark-red fruits with very good flavor; resistant to cracking. Resembles Lambert, but larger, firmer and ripens 2 days later. Upright, self-fertile tree, precocious, bears heavy crops annually. Originated in Summerland, British Columbia. A5, A91{SC}, B74, B83, C34, D65, D81M{PO}, F53, F88G, G23, G65M, H49, I49M, I68, J61M, K73M, L12, M39M, etc.

Lyons: (Early Lyons) Large, heart-shaped fruit; skin thin, rather tender, very dark red, attractive; flesh reddish, meaty, sprightly, sweet, of very good quality; stone large, semi-clinging; matures very early. Tree vigorous, upright-spreading; a somewhat shy bearer when young, becoming productive with age. Originated near Lyons, France, about 1822. HEDRICK 1915; F91T{SC}, K88T

Merton Bigarreau: Large, round fruit; skin deep mahogany red; flesh dark red, tender, meaty, flavor extremely rich; ripens in mid-season. Tree bears heavily and regularly; vigorous; very spreading; self-unfruitful, being pollinated by Black Tartarian, Black Republican and Van. Highly recommended for the home garden by Mr. J.M.S. Potter, Director of the National Fruit Trials in England. BROOKS 1972; F91T{SC}, K88T

Merton Heart: Very large, heart-shaped fruit; skin dark mahogany to nearly black, fairly glossy; flesh dark red, fairly firm, juicy, sweet, flavor excellent; stone large; ripens just after Early Rivers. Tree very vigorous, at first upright but spreading with age; productive; resistant to bacterial canker and blossom wilt. SIMMONS 1978; Q30{SC}

Mona: Large, symmetrical, heart-shaped fruit; skin glossy red to dark red, tender; flesh red to dark red, tender to moderately firm, juice red; flavor sweet, mild, considered to be superior to Black Tartarian but less tart; ripens with Black Tartarian. Tree vigorous; very productive; pollinated by Bing, Black Tartarian, Black Republican, etc. BROOKS 1972; C54, K88T, L47

Sam: Medium to large fruit; skin black; flesh firm, black, of fair to good quality; ripens about 1 week earlier than Bing; highly resistant to cracking. Tree vigorous; very hardy; productive; self-unfruitful. Widely planted as a pollinator for Bing, Lambert and Van. BROOKS 1972; B53, B74, C76M, E84, F53, F88G, I49M, I49P, J61M, K88T, M11M{PR}, N20

Schmidt's Bigarreau: (Schmidt) Very large, heart-shaped fruit; skin deep purplish-black; flesh purplish-red, very meaty, crisp, tender but firm, sweet; juice abundant, dark-colored; quality good; ripens in midseason. Tree large, upright-spreading; vigorous; slow to come into bearing. Originated in Germany about 1841. HEDRICK 1915; A5, B53, C45M, F53, G79M, H65, K88T, M11M{PR}, M39M, M99G

Starkrimson:<sup>2</sup> (Dandeecher) New self-fertile dessert cherry of exceptional fruiting qualities Yellow-amber skin, flushed with red, turning deep red as the fruit matures; ripens in midseason. Crisp, juicy flesh of excellent flavor. Tree semi-dwarf, round headed, compact; reliably productive; does not require a pollinator. High commercial potential; ideal for home gardens. L33, 097, P59M

Stella:<sup>2</sup> The first good-quality, self-fertile black sweet cherry. Large, heart-shaped fruit, resembles Lambert; skin black, fairly susceptible to cracking in rain; flesh black, medium firm, relatively coarse; ripens with Hedelfingen. Tree upright-spreading; productive; tender to winter cold; self-fertile, also a good pollinator for other sweet cherries. BROOKS 1972; A63, B53, C54, C75M, E4, E84, E97, F53, G79M, H65, K73M, LI, L47, M39M

Sweetheart:<sup>2</sup> Medium to large, very firm, bright red fruit with good flavor; susceptible to cracking. Ripens very late, about 5 days after Lapins. Upright, very precocious tree, bears heavy crops annually; self-fertile. Originated in British Columbia, Canada. B83, C41M, C45M, E4, F53, I61M{SC}, L12, M39M

Ulster: Fruit large, resembles Schmidt's Bigarreau; skin very dark red; flesh firm, juicy, sweet, crisp; quality good; highly resistant to

cracking; ripens in midseason, a few days before Schmidt's Bigarreau. Good for roadside markets. Tree more productive than Schmidt's Bigarreau. Originated in Geneva, Nov York. Introduced in 1964. BROOKS 1972; A5, B53, D37, F53, K73M, K88T, M11M{PR}, M39M, M99G

Utah Giant: Large, attractive fruit, often sets in large clusters, does not double; skin purple-black; flesh firm, more flavorful than Bing or Lambert; stone medium-sized, partially freestone. Excellent for canning since it retains its firmness, color and flavor after processing. Tree productive; hardy, but susceptible to spring frosts; resistant to western x disease. Released by Utah State Agricultural Experiment Station in 1981. A88M, C54, E4, G8, K73M, K88T, LI, M39M, N20

Van: Fruit similar to Bing, but somewhat smaller due to over-bearing; skin black, very glossy; flesh slightly firmer and equal to Bing in quality; somewhat resistant to cracking; ripens with Bing. Tree vigorous, upright; hardier than Bing; good pollinator for Bing and Lambert. BROOKS 1972; A5, B53, B83, C34, C54, D81{PO}, D81M{PO}, E4, E84, F53, F88G, K73M, L33, L47, M39M, etc.

Venus: Large, heart-shaped fruit; skin dark purplish-red, glossy; flesh red to black, of high quality, not as firm as Lambert and therefore less subject to cracking; ripens about 5 days after Black Tartarian. Tree has a slight tendency to overset in heavy-crop years, resulting in reduced fruit size. Originated in Vineland Station, Ontario, Canada. BROOKS 1972; F88G, F91T{SC}, K88T

Vic: Fruit sweet; quality good; ripens with Windsor but is larger and darker in color; satisfactory for freezing and *maraschino cherries*; superior to Windsor in canning tests; sizes well in heavy-crop years. Tree large; consistently heavy bearing. Released as a replacement for Windsor. BROOKS 1972; A5, F88G, F91T{SC}, K88T, M11M{PR}

Windsor: Fruit slightly oblong to conical; skin dark-red, almost black when mature; flesh light red, with reddish juice, tender, meaty, crisp; flavor mild and sweet; quality good to very good; stone semi-free; ripens late mid-season. Tree large, upright-spreading; vigorous; very productive. Originated in Windsor, Ontario, Canada around 1881. HEDRICK 1915; F53, G79M, H65, K88T, M11M{PR}, M22

#### WHITE-SKINNED

Coe's Transparent: (Coe) An old white-fleshed cultivar highly recommended by members of the California Rare Fruit Growers. Small, roundish-cordate fruit; delicate, comely appearance; creamy-white skin blushed with pink; tender, melting, translucent flesh; copious, sugary sweet juice. Large, vigorous, upright-spreading tree; very productive. Originated with Curtis Coe of Middletown, Connecticut, early in the 19th Century. HEDRICK 1915, MARIANI 1994; T49M{SC}

Rainbow Stripe: Very distinctive fruit; white with a narrow blood-red stripe from stem to tip, extending through the flesh; most nearly resembles Lambert. Bud mutation of Lambert; discovered in 1925. Originated in Yakima, Washington. Introduced commercially in 1930. BROOKS 1952; U7G{SC}

Vega: Fruit large; skin white with a red blush, smooth, very attractive; flesh white, slightly tart, firm; pit small, easily removed; ripens 5 to 8 days before Royal Ann. Recommended for brining, *maraschino cherries* and canning, too tart for dessert purposes until very ripe. Tree upright; vigorous; hardy; very productive. BROOKS 1972; F91T{SC}, K88T

#### YELLOW-SKINNED

Bada: Large, symmetrical, heart-shaped fruit; skin smooth, glossy, cream colored with a medium to high red blush; flesh cream colored, tender, meaty, moderately juicy; flavor mild, being less tart than Royal Ann; resistant to cracking; ripens 4 days before Royal Ann. Tree precocious; productive to very productive; interfertile with

Bing, Royal Ann, Van and Mona. BROOKS 1972; C27T{SC}, E84, F91T{SC}, H90M{SC}

Corum: Long heart-shaped fruit; skin yellow with an attractive red blush; flesh white with a yellow tinge, tender, meaty, crisp, flavor mild; ripens about 6 days before Royal Ann; moderately resistant to cracking. Tree fairly vigorous; as hardy as Royal Ann; free of known virus diseases; tolerant to bacterial canker. BROOKS 1972; E84, F91T{SC}, K88T

Elton: (Elton Heart) Large, very pointed, cordate fruit; skin pale golden-yellow with a faint red blush, glossy; flesh pale yellow, very tender, juicy, sweet, flavor very good; stone large; somewhat susceptible to splitting; ripens the first half of July. Tree erect, of fair size, lacking in vigor; bears fairly well but irregularly; susceptible to bacterial canker. Originated in England about 1806. SIMMONS 1978; Q30{SC}

Emperor Francis: Large, roundish heart-shaped fruit; skin yellowish-white blushed with reddish mahogany, fairly glossy; flesh very pale yellow, firm, sweet, rich; juice uncolored, abundant; quality good; sometimes splits badly. Tree small and compact, suitable for the garden. Introduced prior to 1876. HEDRICK 1915, SIMMONS 1978; A5, B53, B83, C45M, C76M, D37, F53, H65, H90M{SC}, J61M, K88T, M11M{PR}, M39M, M99G

Gold: Small, very firm, clear golden-yellow fruit; quality very good; ripens late, about 10 days after Hedelfingen. Suitable for fresh market, and widely used for *maraschino cherries*. Vigorous, very productive tree, one of the hardiest of all sweet cherries. An excellent pollinator, will pollinate most sweet cherry varieties. A5, A91, A91{SC}, B53, C27T{SC}, B83, D37, F53, K36, M11M{PR}, M39M, M99G

Governor Wood: Large, roundish heart-shaped fruit; skin yellowish-white with a crimson blush; flesh whitish, with abundant colorless juice, tender, meaty; flavor sweet, mild; quality very good; cracks badly in wet weather; ripens in early midseason. Tree vigorous, upright-spreading; productive. First raised in 1842 by Professor Jaied P. Kirtland at Cleveland, Ohio. HEDRICK 1915; A82, E84, G65M, M25M, Q30{SC}

Merton Late: Medium to large, roundish fruit; skin orange-yellow, blushed with dark crimson; very firm, juicy, orange-yellow flesh, flavor rich and sprightly; colorless juice; quality excellent. Ripens very late, in early September. Large, spreading tree; susceptible to bacterial canker. Originated in England. Q30{SC}

Rainier: Large, slightly obovate fruit, similar to Bing; skin attractive, yellow, highly blushed with rose-red; flesh very firm, juice colorless, of very high quality; ripens 3 to 7 days before Royal Ann; has exceptional holding ability after harvest. Sold for very high prices at specialty food stores. Tree vigorous; very productive; comes into bearing very early. BROOKS 1972; B83, C27T{SC}, C29{DF}, C29{PD}, C29{PR}, C34, C41M, D81{PO}, D81M{PO}, E4, E84, F15{PR}, F53, H69{PR}, I23M{m}\ LI, L15M{DF}, M39M, etc.

Royal Ann: (Napoleon) Long heart-shaped fruit; skin color varying shades of bright red over a yellowish background, distinctly mottled; flesh whitish, with a faint yellow tinge, meaty, tender, crisp, sweet; flavor mild, improving as the season advances; quality good to very good; ripens in midseason. Tree highly susceptible to bacterial canker. Widely used for canning and *maraschino cherries*. A very old cultivar of unknown origin. GRUBB, HEDRICK 1915; A91, A91{SC}, B83, C41M, E4, E84, E97, F53, H65, L47, M39M

Saylor: Skin pure, clear bright yellow; flesh crisp, juicy, of exceptional sweetness with a distinctive aftertaste. Ripens late. One of the best pure yellow cultivars. From the late Dr. Reid M. Brooks' collection at Davis, California. Origin unknown. F91T{SC}

Sparkle: Medium to small, attractive fruit; skin with a bright luster; flesh white, firm, flavor sweet and sprightly; fairly resistant to cracking; resembles Royal Ann but rounder and less conical,

matures 1 week earlier. Tree vigorous, upright; pollinates Bing, Lambert, Royal Ann and Van. Originated in Summerland, British Columbia by A.J. Mann. BROOKS 1972; F91T{SC}, I61M{SC}, K88T

Sue: Fruit medium-sized, roundish-conic, resembles Royal Ann in general appearance; skin yellow with an attractive bright red blush; juice colorless; flesh nearly as firm as Royal Ann, exceedingly sweet, rich and vinous; of high quality; highly resistant to cracking; ripens slightly earlier than Royal Ann. Tree bears very heavily; pollinated by Bing, Lambert, Van and Royal Ann. BROOKS 1972; B53, D37, I61M{SC}, K88T

Yellow Glass: Medium to large, roundish heart-shaped fruit; skin thin, tough, light lemon in color, attractive; flesh firm, yellow, meaty, sweet, with colorless juice; quality good; stone large, round, clinging; ripens in mid-July. Tree large, upright; very hardy; productive. Introduced about 1892. HEDRICK 1915; F91T{SC}, K88T

Yellow Spanish: Large, heart-shaped fruit; skin bright amber-yellow with a reddish blush, more attractive than Royal Ann; flesh whitish, with colorless juice, tender, meaty, crisp, aromatic; flavor sweet, very good to best in quality; ripens in midseason. Tree very large and vigorous; productive. One of the oldest known cherries, believed to have been described by Pliny and called Graffion by the early English writers. HEDRICK 1915; J16

#### CODES FOR SPECIAL TYPES

1. Genetic Dwarf
2. Self-Fertile
3. Low-Chill

## CHERRY PLUM {GR}

### PRUNUS XSP.

Alace: Medium-sized, dark purplish fruit with greenish flesh. Ripens in midseason. Low, spreading, bushy plant; vigorous and hardy. Seedling of Opata, which it resembles. Originated in Brooks, Alberta, Canada by the Canada Department of Agriculture. Introduced in 1942. F91T{SC}

Beta: Slightly oval fruit; skin thin, reddish-blue; flesh greenish, moderately firm, very mildly acid, quality good, freestone; resembles Opata. Open pollinated seedling of Opata. Introduced in 1960 for home gardens. Originated in Saskatoon, Saskatchewan, Canada, by C.F. Patterson. G54

Compass: (*P. besseyi* x *P. hortulana*) Small to medium-sized, oval fruit; skin thick, tough, dark purplish-red; flesh yellow, rather firm, cling-stone; flavor somewhat sour, quality fair to good. Eaten fresh or cooled. Very good pollinator for other cultivars. Bush-like growth habit; grows to 8 feet; bears the second year after planting. Originated by H. Knudson, Springfield, Minnesota. Introduced in 1897. WAUGH; A74, B4, D65, D69, I49G, I49G{SC}, K64, L27M, L70

Convoy: Small, roundish fruit, somewhat larger than Compass; skin scarlet red, moderately tender; flesh yellowish, tender, juicy, nearly sweet; quality good for dessert or canning; ripens during the end of August. Tree very vigorous, upright, narrow; very hardy and productive; an excellent pollinator for other cherry plums. Introduced in 1941 by Boughen Nurseries. ANDERSEN, BROOKS 1972; A65, B47, F91T{SC}, N24M

Deep Purple: (*P. besseyi* x *P. salicina*) Large, oval-conic fruit, 1 1/2 inches long; skin deep purple to black; flesh dark rich purple, firm, meaty, moderately juicy; pit small, nearly free; flavor sweet, pleasant; ripens in mid-August, hangs well on tree for up to 2 weeks. Useful mostly for processing; compares favorably with Sapa for jam; more productive than Sapa. Tree vigorous, develops naturally

into a wide-spreading bush; bears heavy crops annually; requires a pollinator, such as Compass. BROOKS 1972; F91T{SC}

**Dura:** Medium to large, oblong fruit; skin dark green, mottled with purple; flesh maroon-purple, crisp, tender, meaty, sweeter and less clingstone than Sapa; quality very good as dessert or canned; season late August to October. Bush low, spreading; very hardy; productive. Originated in Morden, Manitoba, Canada. BROOKS 1972; F91T{SC}, N24M

**Hiawatha:** Fruit fairly large, round; skin thin, mottled purple; flesh medium firm, juicy, fairly sweet, semi-freestone; usually ripens during mid-August. Rated first in its class in taste tests, being very good for culinary uses, especially jam. Bush fairly vigorous, spreading; like Sapa it suffers severe winter injury in some seasons, but makes a good recovery. F91T{SC}, N33

**Kappa:** Medium to large, spherical fruit; skin bluish-black; flesh dark red, sweet, processing quality excellent; ripens in midseason. Originated in Saskatoon, Saskatchewan, Canada by CF. Patterson. Released in 1960 for home gardens. Derived from Sapa and Oka. BROOKS 1972; N24M

**Manor:** Medium-sized, roundish fruit; skin dull, dark reddish-purplish; flesh deep red to dark purple, meaty, tender, juicy, sweet; dessert quality very good, fair for canning; ripens in mid-August. Bush hardier and more upright than Sapa; very productive; particularly adapted to northern prairies. Originated in Morden, Manitoba, Canada. Introduced in 1945. ANDERSEN, BROOKS 1972; A65, B47, F91T{SC}, G54, H85, J89M, N24M

**Mansan:** (*P. besseyi* x *P. hortulana*) Small, oval fruit; skin dark carmine with a heavy bloom; flesh greenish-yellow, firm, mildly subacid, pleasant; quality good for canning; ripens in early September. Tree resembles Compass but hardier; blooms late; to be productive requires a late-blooming cultivar for cross-pollination. BROOKS 1972; F91T{SC}

**Oka:** Medium-sized fruit, about 1 inch in diameter; skin tough, thick, deep purplish-red; flesh dark red, juicy, firm, quality good. Season from mid-August to early September. Dries naturally into a sweet prune-like fruit; later can be cooked into an excellent sweet sauce. Tree hardy; dwarf, height 4 to 6 feet; bears well. Plant with Sapa for cross-pollination. Originated in Brookings, South Dakota, by N.E. Hansen. Introduced in 1924. BROOKS 1972, HANSEN; B47, D76, E97, F91T{SC}, I49G{SC}, N24M

**Oyata:** (*P. besseyi* x *P. salicina*) Medium to large fruit; skin dark reddish-purple with blue bloom, thin; flesh yellowish-greenish, firm, flavor very pleasant; stone very small; ripens in late August. Excellent for eating fresh or for jams, jellies, and pies. Vigorous, bush-like growth habit; hardy; bears heavily. Originated in Brookings, South Dakota. Introduced in 1908. Oyata is Sioux for "bouquet". HANSEN, RONALD; A16, A65, B47, C58, F91T{SC}, G54, H85, N24M

**Red Diamond:** Fruit large, averaging up to 1 1/2 inches in diameter, maroon when ripe; flesh firm, ruby-red, smooth-textured, high in sugar; pit small and free-stone. Eaten fresh or preserved. Dwarf bush, maximum height 6 feet; bears second year after transplanting, cross-pollination commended. Very hardy and disease resistant. A74, D65, D69, I49G, I49G{SC}

**Red Orna:** Small, red fruit; flesh red, juicy, sweet. Bush very hardy; an attractive ornamental with brilliant red foliage, and delicate red-pink blossoms; grows well in a variety of soils although sandier, lighter soils are preferred. Insects sometimes have trouble pollinating the small, delicate flowers. N24M

**Sapa:** (*P. besseyi* x *P. salicina*) Small to medium-sized fruit; skin purple-black with a bluish bloom; flesh dark purple, sweet, juicy, clingstone; excellent for canning and jam; ripens very early. Bush-like, compact growth habit, can be pruned to a small tree. Bears on 1 year old wood. Needs a pollinator for best production, Compass recommended. Hardy and productive. Introduced in 1908.

CREASY 1982, HANSEN, RONALD; A65, B47, C54, C58, H85, I49G{SC}, J89M, N24M

**Sapalta:** Medium-sized fruit; skin red-purple; flesh almost black; similar to Sapa but sweeter and with a tendency toward a freestone condition. Ripens the end of July. Good in pies and preserves. Plant with Compass as a pollinator. Originated in Brooks, Alberta, Canada, by the Canadian Pacific Railway. Introduced in 1941. Probably a seedling of Sapa. A74, B4, D65, D69, I49G, I49GISC}, K64, L27M, L70, N24M

**Skinner's Favorite:** (*P. besseyi* x *P. salicina*) Medium-sized, oblong fruit; skin yellow with a purple-red cheek; flesh greenish-yellow; quality good for dessert, excellent for jam. Tree bushy, upright, averages 5 to 6 feet in height. Originated in Dropmore, Manitoba, Canada. BROOKS 1972; F91T{SC}

**St. Anthoiy:** (*P. besstyi* x *P. salicina*) Large, round fruit, slightly flattened at the base; skin dull purplish-red, medium thick; flesh dark rich red to very deep purple, fine-grained, very juicy, tender, medium firm, subacid; quality fair to good, especially fine for culinary use; ripens in midseason; resembles Sapa. Tree medium to small, upright-spreading, vigorous; bears early and prolifically; hardy. ANDERSEN, BROOKS 1972; F91T{SC}

**Wessex:** Good quality fruit; dries like a prune. Bush extremely hardy; highly productive; blooms late, escaping spring frosts. Originated in Moose Range, Saskatchewan, Canada by Percy H. Wright. Introduced in 1964. BROOKS 1972; N24M

**Winered:** (*P. besseyi* x *P. salicina*) Medium-sized, round fruit; flesh dark purple, lacks the astringency of native American plums; good cooked and for dessert purposes, resembling Damson when cooked. Tree upright, to 5 feet tall; yields well. Originated in Dropmore, Manitoba, Canada. BROOKS 1972; F91T{SC}

## CHESTNUT {GR}

CASTANEA SPP.

### AMERICAN HYBRID CHESTNUTS

A group of cultivars that show a combination of the American and Chinese chestnut characteristics. Most have large, sweet, easily peeled nuts, blight resistance, upright tree form, ornamental foliage, and are highly productive. Many were developed by noted plant breeders Dr. Robert Dunstan of Greensboro, North Carolina and Earl Douglass of Red Creek, Nov York. (*C. x sp.*)

**Alachua:** Large, sweet, easy to peel nuts. Vigorous, upright, widely adapted tree; begins to bear in 2 to 4 years. Completely immune to chestnut blight. A mature orchard will produce from 1 to 2 tons per acre. Newly released Dunstan hybrid. Very similar to Carolina. C25, I49M, J15M

**Appalachia:** Large, sweet, easy to peel nuts. Large, vigorous, upright tree; begins to bear in 2 to 4 years. Completely immune to chestnut blight. Excellent for orcharding, backyard nut production, and landscaping. Newly released Dunstan hybrid. Very similar to Carolina. C25

**Carolina:** Large, very sweet, dark glossy chocolate-brown nuts; 24 to 28 per pound. Large, spreading, very productive tree. Completely immune to chestnut blight. Excellent for orcharding, backyard nut production, and landscaping. Good pollinator for Revival. A Dunstan hybrid. C25, I49M, J15M

**Carpentier:** Large, spreading tree. Heavy production of large, very sweet, dark brown nuts. Completely immune to chestnut blight. Excellent for orcharding, backyard nut production, and landscaping. Named for James Carpentier of Salem, Ohio who sent budwood of a blight resistant American chestnut to noted breeder Dr. Robert Dunstan, in the early 1950's. C25, J15M

Douglass: A cross between the Manchurian strain of Chinese chestnut and blight resistant American chestnuts. They show occasional blight resistance, are quite hardy, and are more vigorous than either parent. Most are upright in growth habit. Excellent flavor. Hardy to -28° F. A91{PL}, B99{PL}, E62{PL}, E62{DF}, E62{SC}, E91M{PL}

Douglass #1: Medium sized nut with very good flavor. Kernels fill well. Good bearing qualities. Haidy. Similar to Douglas #1A, but with slightly smaller nuts. A selection from open pollinated American and Manchurian crosses. Originated in Red Creek, New York by Earl Douglass. E62{DF}, E62{SC}, I60{PL}

Douglass #1A: Large sized nut with a very good, sweet flavor. Early ripening. Good bearing qualities. Very haidy. Good overall blight resistance but not as much as other cultivars. A selection from open pollinated American and Manchurian crosses. E62{DF}, E62{SC}, E91M, I60{PL}

Heritage: Tall, vigorous tree, very straight timber-type bole. Bears light crops of medium-sized, elongated, sweet nuts; 45 per pound. Completely immune to chestnut blight. Recommended for timber production, woodlot, and landscape plantings. A Dunstan hybrid. C25

Revival: Produces heavy, yearly crops of very large and sweet-tasting nuts. Nuts average 24 to 32 nuts per pound, compared to Chinese nuts (40 to 100 per pound) and American nuts (75 to 150 per pound). Pellicles are easily removed. Completely immune to chestnut blight. A Dunstan hybrid. The first chestnut ever to receive a U.S. plant patent. C25, L33

Sweet Hart: A cross between Dr. Ray Cather's West Virginia sweet chestnut and the Hawk Chinese blight resistant chestnut. Nuts have the sweet taste and high quality of the American chestnut. Found growing in an orchard in Ohio several years ago, the original tree is 40 years old without any signs of blight. Introduced by Boyd Nursery Co. B52{PL}, E97, H4, H49, I53M

Willamette: Extremely large (18 to 22 per pound), sweet, easy-to-peel, reddish-brown nuts. Medium-sized, upright spreading tree; bears very heavy crops. Completely immune to chestnut blight. One of the best cultivars for commercial orcharding. A Dunstan hybrid. C25, J15M

#### CHINESE CHESTNUTS

Valued as a blight-resistant chestnut, the Chinese chestnut is resistant but not immune to the chestnut blight fungus and seedling trees vary in susceptibility. The nuts are generally considered less sweet than American or European chestnuts. Nuts do not store well. Mostly C. mollissima.

Abundance: Nut attractive; cleans well; sweet; larger and more prolific than Honan, which it resembles. Originated in Eagle Creek, Oregon by Carroll D. Bush. Introduced in 1941. BROOKS 1972; B99{PL}

Armstrong: Large nut, averages 30 to 35 per pound; kernel very sweet, of excellent quality. Possibly a hybrid of Chinese chestnut and American chestnut. Tree may show timber type growth. Originated in Kentucky. Introduced in 1980. 140

Campbell #1: Large, sweet nut; falls free of the burr at the same time as Layeroka. Tree hardy; a consistent producer yet does not over produce as Layeroka sometimes does, reducing the nut size. Seedling of Layeroka selected by Doug Campbell of Ontario, Canada. A91, A91{PL}

Ching Chow: Originated in Swarthmore, Pennsylvania by J. Russell Smith. Introduced about 1950. Seedlings of the Chinese chestnut, from seed originally brought from Nanking, China. Most trees are blight resistant. BROOKS 1972; J16{PL}

Crane: Nut averages about 32 per pound; shell dark-cherry red, nearly completely smooth; quality excellent; keeps exceptionally well. Tree blooms in midseason, with Nanking; both cultivars will

cross-pollinate with one another; slightly protandrous; precocious bearer, producing a crop the second year after planting; blight resistant. Adapted to the middle and southern chestnut growing areas. BROOKS 1972; 140

Eaton: Nut averages 30 to 40 per pound; texture, flavor and sweetness are among the very best; matures 3 to 7 days ahead of most Chinese seedlings and as much as 2 weeks ahead of Nanking, Orrin, and Crane. Tree precocious. Selected for its attractive, glossy foliage and ability to produce annual heavy crops of sweet, high quality nuts. Highly recommended for northern chestnut-growing areas. JAYNES; 140

Ford's Sweet: Small, sweet kernel that resembles American chestnut. Tree a heavy bearer; begins bearing in 3 to 4 years. Timber type growth. Good wildlife food. Complex hybrid of American, Japanese and Chinese chestnuts. Originated in Indiana. Introduced in 1980. 140

Hemming: Large, sweet nuts with very good flavor. Vigorous, fast growing tree, grows to 25 feet tall; resistant to chestnut blight disease. Begins bearing after 7 or 8 years. Self-fertile, but 2 or more trees recommended for best production. Hardy from Zone 4 to Zone 8. E62{PL}, E62{DF}, E62{SC}, E91M, 14

Killing: Nut averages 35 to 40 per pound; drops free from burr; matures in midseason; keeping quality very good. Tree medium large; moderately upright; vigorous; shoot growth slightly willowy. Originated in Philema, Georgia by the USDA. Introduced in 1949. BROOKS 1972; T41M

Layeroka: Medium to large, attractive nut; falls free from the burr when ripe; kernel sweet; ripens in early October. Tree precocious; a reliable and heavy bearer; resistant to blight; very hardy; produces up to 4 burrs per cluster; erect timber type; male bloom sterile, will not pollinate other chestnuts. Originated in Westbank, British Columbia by J.U. Gellatly. A91{PL}, B74, B74{PL}, B99{PL}, E62{PL}, E62{DF}, E62{SC}, E91M, I49M{PL}, I74{PL}, N24M

Manoka: Large nut, averaging 1 3/8 inches in diameter; shell dark brown; kernel yellow, well flavored, quality good; husk small, thin. Tree hardy, timber type. Originated in Westbank, British Columbia, Canada by J.U. Gellatly. BROOKS 1972; A91{PL}, I74{PL}

Meiling: Nut averages 35 to 40 per pound; drops free from burr; ripens midseason; good keeping quality. Tree vigorous; upright; shoot growth fairly stocky; early and heavy bearing. Originated in Philema, Georgia by the USDA. Introduced in 1949. BROOKS 1972; 140

Mossbarger: Haidy Chinese selection. Very large, sweet nuts. Properly cured nuts peel easily and store very well. Vigorous, very productive tree, quite precocious in the southern states. Originated in Glendale, Kentucky. Introduced in 1983. 140

Myoka: Nut large, averaging 1 3/8 inches in diameter; most fall free from the burr; flavor good; peels well; resembles Manoka; ripens slightly later than Layeroka. Tree large, vigorous; erect timber type; blight resistant; a good pollinator. Originated in Westbank, British Columbia by J.U. Gellatly. Introduced in 1950. BROOKS 1972; B74, NO

Nanking: Nut averages 30 to 43 per pound; shape uniform; dark tan in color; few with split shells; harvest season medium late. Tree vigorous; precocious, grafted trees frequently bearing in their second year; heavy bearer of annual crops, often producing a bushel or more of nuts at 10 years of age; midseason pollination. BROOKS 1972, JAYNES; 140, 160{PL}

Orrin: Large nut, averages 32 per pound; shell attractive, with a dark-mahogany sheen, smooth but with a slightly hairy tip; middle nut of 3 in a burr uniformly thick and not wedge-shaped; keeping quality excellent; matures before Crane and Nanking. Tree blight resistant; upright; a precocious bearer; blooms slightly later than other cultivars. BROOKS 1972; A91{PL}, B99{PL}, 140

Schrader: European hybrid of outstanding quality. Medium to large, sweet nuts with very good flavor. Nuts fall from the tree within the husk, protecting them from squirrels. Large, spreading tree, grows to 40 feet tall; very productive. A good pollinizer for Skioka. J61M, NO

Skioka: Large nut, averaging 1 5/8 inches in diameter and 35 nuts per pound; shell dark brown; not quite as free of the burr as Layeroka; kernel white, free from indentures, quality high; ripens 7 to 10 days after Layeroka. Tree hardy; produces up to 4 burrs per cluster and up to 3 nuts per burr; blooms late, the latter part of June or early July; timber type. Originated by J.U. Gellatly. BROOKS 1972; A91, A91{PL}, B74, B74{PL}, I74{PL}, J61M

Skookum: Nut attractive, glos<sup>^</sup>, of good size; falls free from the burr; kernel of good flavor; ripens early. Tree vigorous and productive; hardy to Zone 5; sheds its leaves early in the winter; erect timber form. Selected from a population of Gellatly seedlings as a superior cultivar. Tested for over 20 years. A91, A91{PL}, B74, B74{PL}

Sleeping Giant: Large, shiny, attractive nut; averages about 40 per pound; burr often slightly conical. Tree somewhat spreading; a consistent, heavy bearer; blight free; hardy; leaves large, wide, buff-colored beneath, very glossy above. Complex hybrid of Chinese, Japanese, and American chestnuts. Originated in New Haven, Connecticut by Arthur H. Graves. Introduced in 1960. BROOKS 1972, JAYNES; A91{PL}, 140

#### EUROPEAN CHESTNUTS

Produces large, sweet nuts, the kind most often found in supermarkets. Susceptible to the chestnut blight fungus, but planted trees survive outside the natural range of the American chestnut in the Midwest and western United States where they usually escape infestation. More heat tolerant than other chestnuts. Mostly *C. sativa*.

Colossal: Nut very large, with the larger ones averaging 11 per pound; skin rather thick, but easy to peel; drops free from the burr; kernel texture fine, very sweet; dries and stores well; ripens late September and early October. Tree vigorous; bears heavily. Originated in Nevada City, California by C.E. Parsons, Felix Gillet Nursery. Introduced in 1925. BROOKS 1972; A88M, A91, B74, B74{PL}, B93M{PL}, E4, E4{PL}, I49M{PL}, /49P{PL}, I83M, I83M{PL}, J15M, J61M, J61M{PL}, L1{PL}, NO, N20, etc.

Linden: Medium sized nut with good flavor; harvested in early to mid-October. Selected for use in grafted Silverleaf orchards in the Pacific Northwest. Has proven to work well as a pollinizer for Silverleaf. Possibly a Japanese x European hybrid. E4, E4{PL}

Marron de Lyon: (Lyon) Large, roundish, light-colored nuts of excellent flavor. Large, decorative tree with wide spreading limbs; bears at an early age. Originated in France and was introduced into California before 1880. One of the best European cultivars. P59M

Marron du Var: High quality marron type Very large nuts that are easily peeled. Ripens late in the season. Tree apparently pollen sterile, not very productive. Originated in France. B74

Nevada: Excellent pollinizer for Colossal due to its profuse catkin bloom that coincides with Colossal female flower receptivity. Also a good producer of medium-sized, very sweet nuts with dark brown shells. Ripen in early October. Vigorous, upright tree, will pollinize 8 to 10 Colossal trees. A88M, B74, E4, E4{PL}, J15M, L1{PL}, N20

Prolific: Large, spreading tree; produces medium to large nuts annually in great abundance. Not blight resistant. Not recommended for blight susceptible areas such as die eastern United States. B74

Silverleaf: Large, very dark brown nut, slightly smaller than Colossal; easy to peel; excellent, sweet flavor; ripens in October. Tree a consistent and annual bearer. As the crop matures, the underside of the leaves turn an attractive silver-gray. Susceptible to chestnut blight. Of French parentage, possibly a hybrid. E4, E4{PL}

## CHICORY {S}

### CICHORIUM INTYBUS

#### HEADING CHICORY

These form large, conical heads, not unlike a cos lettuce in appearance. The inner leaves are naturally blanched through lack of exposure to light and are therefore sweeter than the outer leaves, though the "sweetness" is only relative. LARKCOM 1984.

Bianca di Milano:<sup>1</sup> A Sugarloaf type chicory. Forms a crisp, dense, elongated head with dark-green outer leaves and a creamy-white heart; nearly self-blanching. Harvested in autumn and winter from a late spring to early summer sowing. Can also be used as a cut-and-come-again crop, being cut when about 2 inches tall. Relatively cold hardy. B8, L89, Q34, S77, S55

Crystal Hat: Long oval heads, similar to cos or romaine lettuce in appearance. High yielding and of easy culture. Can be sown as early as the soil can be prepared and every few weeks until August. Withstands summer heat and fall frosts. Rinsing in warm water removes all traces of bitterness and reveals a sweet, tangy flavor. 139

Dolce Bianca: (Dolce Bianca a Cuore Pieno dTnegnoli) 85 days. Bianca di Milano type. Large, broad, romaine-like head with a full, crisp, golden heart and an attractive flavor. Similar to Sugarloaf, but with broader heads and a deeper, fuller heart. Very early, being ready for harvest by the end of summer. N84, Q11M

Jupiter:(Fj) Hybrid Sugar Loaf type. Produces large, barrel-shaped heads up to 2 1/4 pounds in weight. Excellent flavor. Stands well in the field. Very uniform. Can be sown from the end of May onwards. N81, S75M

Poncho: (Pain de Sucre Race Poncho) Large, cylindrical, compact heads; thick, crisp outer leaves; tender inner leaves naturally blanch to a whitish-green color. Exceptionally good flavor. Height 12 to 14 inches. Excellent eaten cooked or in salads, like endive. N81, N84, Q11M

Snowflake: (Winter Fare) 75 days. Produces 2 to 3 pound, crisp, tight heads in late autumn and winter from a June or July sowing. Easy to grow, no forcing or blanching needed. Very cold resistant and will keep for a full 3 months. L91M

Sugarloaf: (Pan di Zucchero, Pain de Sucre) 90 days. Large, upright, slightly twisted, romaine-like head; 18 to 20 inches tall; self-blanching. Thick, crunchy, medium-green outer leaves; translucent inner leaves that form a crisp, tender heart with a very mild flavor. Normally harvested in autumn and winter. Use in salads, for wrapping meats, or in other vegetable combinations. B8, B49, C53, DIT; D11M, D68, F70, F80, J9M, K49M, N7G, Q11M, Q34, R32, S55, etc.

#### LOOSE-LEAF CHICORY

CATALOGNA Also known as *asparagus chicory*, *dandelion chicory*, or *radichetta*. Distinguished by their tall, dandelion-like leaves, long, relatively thick leaf stalks, and in some cultivars enlarged asparagus-like flower stalks called *puntarelle* or *puntini*. GRAY, P. [Cui, Re]; A87M, B71G{ER}, C44, DIT, D11M, F70, F80, G71, G93M, 139,167M, J97M, K49M, K73, L42, etc.

Catalogna Frastagliata: Long, narrow-bladed, irregularly lobed, medium-green leaves. Long, relatively thin and narrow, greenish-white leaf stalks. Tall, erect plant; spreads 8 to 10 inches across. Strongly bitter flavor. Used in mixed salads, as a cooked green or in stuffings. B8,118M, 177, L89C, N84, Q11M, S17

Catalogna Larga: Long, relatively broad, medium-green leaf blades; deeply and irregularly serrated, the lower parts with long, narrow teeth. Broad, fleshy, pure-white, celery-like leaf stalks. Tall,

upright growth habit. Excellent for winter crops, being sown from March to October. N84, Q11M

Del Yeneto: Upright growing plant with entire, medium-green leaves. Sown in early mid-summer for an autumn through winter crop. Originally from the Veneto region of northeastern Italy. Q34, S17

Dentarella: Distinct type of catalogna chicory that produces a crop of thick, succulent flowering stems or *puntarelle*. Similar to Puntarella but with a straighter stem. The dandelion-like leaves are also used. C53

Galatina: (Di Galatina, Abruzzese) 55-65 days. Grown mostly for its thick, twisted flowering shoots or *puntarelle*, which are harvested when young and tender in late winter and early spring. Delicious either raw or cooked. Dark-green, very fringed leaves with thin stalks that form vigorous bunches. May be harvested when young for use in salads. B8, L3J, N84, Q11M, S17

Giant Chioggia: Upright growing plant with deeply divided, medium-green leaves with strong white ribs. Sown in early mid-summer for an autumn through winter crop. Originally from the Chioggia region of Italy, near Venice. Q34

Pugliese: Long, narrow, dark green leaves; lobed and indented, with pronounced white midribs. Large, broad leaf-stalks, straight and elongated. Utilized for the leaves and stalks in autumn and winter, and for the twisted, flowering shoots or *puntarelle* in the spring. 060

Puntarella: (Puntarelle a Pigna) Grown primarily for the chunky, twisted *puntarelle* or flowering shoots which develop in spring and have a much-prized flavor, raw or cooked. Harvested about the same time as asparagus. Often plunged in ice water to make them curl, then dressed with oil, vinegar and anchovies. Young leaves can be used in salads. Grows 12 to 18 inches tall. DE VITA [Re], LARKCOM 1984, PLOTKIN; C53, G53M, 177, Q34, S17

Red-Ribbed: Unique red-stalked catalogna. Dark-green, serrated, dandelion-like leaves; bright scarlet leafstalks. Very distinctive and attractive. Excellent in salad and braising mixes. Tall, vigorous, upright plant. Recommended for home gardens and specialty markets. G6,177

San Pasquale: (All Seasons) 70 days. Very early strain of Catalogna chicory. Large, vigorous, very productive plant; up to 22 inches across; quickly forms large, compact rosettes that blanch in the center. Broad, light green, deeply cut, dandelion-like leaves; very thick and meaty, yet tender. Grown for early spring greens. Will occasionally produce flowering shoots. AI, DIT, D12, G6, G57M, G71, G79, G82, H49, H54, K49M, K73, M29, N84

Small Rooted: 65 days. Similar to the typical Catalogna, except the plant has slightly notched, light-green leaves, and a small taproot. The young leaves make excellent "greens" and are very desirable for use as a salad. G93M

Special: 55 days. Long, deep-green, slender, deeply cut leaves with white midribs. Can be harvested "baby size" 3 or 4 weeks after transplanting, or left to grow into heavy 18 inch tall bunches. Slow bolting. G6, N84

#### o t h e r s

Barbe de Capucin: (Barba di Capuccino, Barbi, Italian Rooted) Long, deeply-cut, dandelion-like leaves. Very little improved or identical to the wild chicory. Young leaves are shredded and used as "greens". Can also be treated in much the same way as witloof, but must be forced in soil. G68

Biondissima di Trieste:<sup>1</sup> (Di Trieste, Bionda di Triestino, Triestino da Taglio) A green cutting chicory very popular in late summer and fall in northern Italy. The smooth, rounded leaves are harvested when very young and tender, only 3 or 4 inches long. Regrows rapidly. Ideal for mesclun or other salad mixes. If thinned

to 6 inches, small heads will form in early winter. LARKCOM 1984; B8, C53, N84, Q11M, Q34, Si7, S55

Grumolo Biondo: Very cold hardy chicory from the Piedmont region of Italy. Similar to Grumolo Verde types in cultivation and usage, but with light yellowish-green leaves. Well adapted to cut-and-come-again growing techniques. B8, Q34, S17

Grumolo Verde: (Grumolo, Ceriolo^ Ceriolo Verde) A rugged chicory from the Piedmont region of Italy; will withstand poor soil conditions and extremely low temperatures. Sow from June to October for a seedling crop. If cutting stops in late summer, very early the next spring the plant will form jade-green, ground-hugging rosettes of perfectly shaped leaves. Rather bitter, but blends well in salad mixes. LARKCOM 1984 [Cu]; B8, C53, 139, N7G, N84, Q11M, R32, S55

Grumolo Verde Scuro: (Grumolo Dark Green) Semi-heading type, with a compact, upright center. Forms attractive rosettes (grumolos) of deep green, rounded leaves with white ribs and veining. Harvested like lettuce for use in salads. Popular in Italy; not often grown in the United States. 060, Q34, S17

Selvatica da Campo: Long, deeply cut, dandelion-like leaves; very similar to Barba di Capuccino. Strong bitter taste. Mature plants are usually blanched to develop a milder flavor. Also grown for spring greens or as part of a mesclun mix. In Italy, roots from mature plants are harvested, planted indoors in wet, sandy soil and placed in a dark room where they produce tender, crisp white stalks in three weeks. N84, Q11M, S17

Spadona:<sup>1</sup> (Spadona da Taglio, Lingua di Cane, Dog's Tongue Chicory) Vigorous growing, cutting type chicory. Smooth, narrow-bladed, pale green leaves; lightly and irregularly toothed; fairly bitter. Best harvested when 4 to 6 inches tall. Extremely cold hardy and widely adapted. Plant in spring or fall. B8, C53, G53M, N84, Q11M, Q34, S17

#### RADICCHIO

Also called *red chicory* or red-leaved chicory. The deep-burgundy forms such as Rossa di Verona are often called radicchio rosso, radicchio being the generic Italian name for chicory. Very popular and expensive specialty market item. Can be substituted for Witloof or endive in most recipes. Sometimes eaten with small pieces of the root. CUSUMANO [Cul, Ife], HAWKES, SCHNEIDER 1986 [Pre, Re]; D3M{PR}

**FORCING** These cultivars can be forced indoors, in the dark, like Witloof chicory. In extremely cold areas this may be the only means of obtaining a winter crop, as the plants would be killed if left outside. Forcing also produces more attractive heads with better flavor and eating qualities.

Castelfranco: (Variegata di Castelfranco) Large, crinkled outer leaves; green blotched with red. Inner leaves loose, marbled red and yellowish-white. Heads are looser than Verona types, but less likely to bolt. Developed in the 18th century in the Castelfranco region of northern Italy, probably from strains of Treviso and an escarole. B8, C53,177, L89C, N7G, N84, Q11M, Q34, S17, S55

Rossa di Treviso:<sup>2</sup> (Treviso, Red Treviso, Rouge de Treviso) Initially green and bitter during hot weather, it is cut back and its second growth produces attractive bright red, cone-shaped heads with pure-white central ribbing and leaf veins. Roots can be forced to produce pale pink chicons. Slightly less hardy than Rossa di Verona. Historically the first red chicory was a Treviso type, developed in the 16th century. B8, C53, E24, E63D, F80, G68, 139,167M, J9M, K49M, N7G, Q11M, R32

Rossa di Treviso Precoce: (Early Treviso) Selected from Treviso for more precocious growth. Can be seeded in mid-July, after the days have begun to shorten noticeably, and is therefore less likely to bolt. If heads do not form by Labor Day, it should be cut back to an inch above the crown at the beginning of cool weather. C53, G6, N7G, N84, P59M, Q34, R47



Rossa di Verona: (Verona Red, Rouge de Verone) Produces bright red, very tight heads with prominent white midribs and veins. Very cold hardy; forms during winter without protection. Also suitable for forcing and can be grown as a seedling crop. The best known of all the radicchios, and perhaps the most difficult to grow successfully. Recommended for northern areas. B49, C44, C53, G68, G93M, 139,167M, J9M, M46, N7G, Q11M, Q34, R32

**NON-FORCING** Generally not adapted to indoor forcing. Some of the newer types will also form full-sized heads outdoors without cutting back.

Augusto: 70 days. Medium-sized, round, deep burgundy-red head; slightly larger than Giulio. One of the most frost tolerant cultivars. Also has good bolting and heat resistance. Produces 85% fully formed heads from a spring sowing compared to only 30 to 40% for Verona types. Can also be planted mid to late summer for a fall harvest. D11M, D68, F70

Cesare: 90-100 days An early Verona type with a high degree of uniformity. Produces small, medium round heads with deep burgundy leaves and white midribs. Tender-crisp texture and mildly bitter flavor. Should be planted later than Giulio, in July, for harvesting in September and October. C20M, G71, K50, S55

Chioggia: (Variegata di Chioggia) A red and white variegated, heading type developed from Castelfranco lines. Forms a tighter head than Castelfranco. Foliage is green in summer, becoming variegated in cold weather. Not suitable for forcing. Plant in late summer for a fall and early winter crop. Grows well in sandy coastal soils. B8, C20M, I67M, Si 7, S55

Giulio: 80 days. An early strain, selected from the Verona type. Produces very uniform, compact, round heads with attractive burgundy leaves and pure-white midribs. Easier to grow than other radicchios; will form full-sized heads without cutting back. Can be succession planted throughout the summer but performs best when seeded in late spring for a mid-summer harvest. Bolt resistant. C53, E24, F44,191, K23, K66, N7G, S55

Marina: (Chioggia Race Marina) 100 days. Large, compact, solid, bright-red heads variegated with white; weight 8 to 12 ounces each. Good sharp flavor. Easily grown. Sow May through June for a fall harvest; plants may bolt if sown too early. J97M

Milan: 75 days. New refined, easily grown cultivar. Round, burgundy-red heads, 5 1/2 to 6 inches in diameter; very compact, with well folded leaves; attractive white veins. Excellent flavor. Vigorous plant with even growth, 18 to 30 inches tall; reliably produces heads from spring, summer and fall sowings. C92, FI, G16, G71, G87,139, M49

Palla Rossa: An earlier Verona type, suitable for spring planting. Produces dark green outer leaves which protect the red interior head. Pure white midribs. Larger, looser heads than Giulio; paler in color. Can also be planted anytime during the summer, but protect from intense heat. A good alternative to Rossa di Verona. A2, B8, DIT, D76, J9M, K23{PL}, L89, N84, Q34, S17

Palla Rossa Precoce: (Palla Rossa Zorzi Precoce) Semi-compact, solid heart, turning red at maturity. An early strain of Palla Rossa with large heads. Red Verona type. Suitable for spring planting, and can also be planted during the summer months if protected from intense heat. B8,118M, K49T, N81

Radicchio di Treviso: 90 days. Distinct from Rossa di Treviso because it does not require forcing to produce heads. Forms an elongated bunch weighing about 10 ounces. It is necessary to tie up the head 15 to 20 days before harvesting. Sown in June for harvesting in the fall. Not resistant to frost. Q11M

Silla: A newer cultivar, adapted for early spring planting under row covers. A high percentage will head up without bolting even during a late spring hot spell. Produces deep red heads the size of tennis balls with pure-white midribs and leaf veins. Small, green outer leaves. Compact growth habit permits very close spacing. J20

Sottomarina: (Variegata di Sottomarina) An unusual and very attractive radicchio. Forms large, loose heads that become red speckled with white when mature. Outer leaves are variegated with green and red. Use individual leaves or entire heads. Plant in early spring or late summer. An old cultivar named after the coastal town just south of Venice. B8, S55

#### ROOT CHICORY

Also called *radicchio amaro*, the bitter but pleasant-flavored roots are a popular winter vegetable in Italy where they are boiled until tender, then sauteed and served or dressed with olive oil and lemon juice to accompany grilled pork. BIANCHINI, GRAY, P. [Cul]

Chiavari: (Di Chiavari) Grown primarily for its root, although the leaves are also used and have a good flavor. The root is thick-colored, creamy white and uniform. Grows over a long season, from early spring until late fall. To prepare, scrape and boil the root until tender. Slice thinly and serve with vinaigrette, or it can be rolled in bread crumbs, deep fried and served with lemon and parsley. S17

Magdeburg: (Large Rooted Magdeburg, Cicoria Siciliana) 120 days. Large, thick, tapered root; 12 to 14 inches long, 2 inches in diameter below the neck; can be cooked like carrots at about 65 days. Mature roots are dried and employed for the manufacture of *coffee chicory*; also used for forcing like Barbe de Capucin. Erect, undivided leaves can be harvested for "greens" at about 65 days. VILMORIN; A2, A7{DF}, C17M{PD}, C44, D26G, E38M{DF}, F80, G93M, I8M{DF}, J82, J82{DF}, K49M, L42, Q34

Soncino: (Radison) Long, narrow roots with creamy white skin and flesh; rather bitter. May be harvested anytime from autumn until the following spring. Popular in Italy where it is considered very healthful and is cooked and eaten in many ways. B8, N84, Q11M

#### WITLOOF

Also known as *Belgian endive*, *French endive* or *chicons*. These are grown for their blanched shoots which develop after the root is forced. They are tender and crisp with a typical bitter, aromatic taste. Popular specialty market item. A45{PD}, C85M, E7M, E13G{PR}, G71, H49, J20, J73, K49M, N40{PR}, R47

#### hybrid

Bea: A Zoom type, with improved ease of utilization. Produces a high percentage of very fine quality chicons. Recommended for forcing without soil or cover from mid-September to mid-April, in particular for a harvest in November-December and February to April. One of the most popular cultivars in France. S95M

Flash: An early to midseason cultivar, usually sown mid-May to mid-June and harvested from early September to November. Roots are forced from December to April, at temperatures ranging from 60 to 68° F. Flash produces uniform, well-closed chicons of excellent quality. D11M, F70, G6,177, S95M

Magnum: An improved hybrid witloof cultivar that is a real breakthrough in growing ease. For forcing between November and April, with or without cover. Remarkable for its shape, firmness and productivity. Developed in Germany as a replacement for Mitado. 139, P59M

Roelof:<sup>2</sup> Unique, reddish-colored witloof. For forcing between October and February, with or without a covering of soil. Nice, firm chicons. Very attractive red and white coloring. Developed in Europe. P59M

Samba: Yields beautiful, very firm, globular chicons—in the traditional manner, as well as without a covering of earth. For forcing between November and April. Very reliable. Developed in Europe. P59M

Sigma: Very uniform type, with a high percentage of superior quality chicons. Shorter than Bea, therefore better suited for packing. High yield per acre. Resistant to diseases and brown axes. Sown in the field in early May, the roots being gathered from October 20th

onward; chicons are harvested at the end of November. Developed by INRA of France. *S95M*

Toner: 130 days. Easy to grow and force, by either the traditional method or without soil and cover. Rather short, firm, well-closed chicons of the highest quality. Tested as being the least fussy cultivar for home production. Very early. May be sown mid-April to mid-May for forcing the end of August to the end of September at temperatures of 68 to 75° F. *C20M*

Turbo: 110 days. Produces a refined chicon for the European restaurant trade. Uniform, well-finished heads, 6 to 6 1/4 inches tall. Very vigorous, it is preferable to force only well calibrated roots, 1 1/2 to 2 inches in diameter. Can be forced without cover, such as in hydroponic culture. Roots can be placed in soil, moist perlite or water, using trays or pails. Tolerant to brown axes. Developed by INRA of France. *C85M, D74B, E63D, L42, S95M*

Zoom: 110 days. Developed in France for forcing without being covered. The roots only need to be placed in a cool, dark place for sprouting to begin. Can be set in soil, moist perlite, or water, using trays or pails. Produces small, thick, firm, well-closed chicons of excellent quality. Approximately 21 days from the start of forcing to harvest. Productive and uniform. *C53, P59M, S55*

#### OPEN-POLLINATED

Alba: Produces large quantities of thick, attractive chicons. Good for forcing during cold weather; not suitable for warm weather forcing, the maximum temperature being about 62° F. Not recommended for forcing outside of soil or without cover. An excellent cultivar for home gardeners. *N84*

Red C:<sup>2</sup> 80 days. Unique, reddish witloof. Produces broad, tender shoots with good flavor. Excellent in salads or the individual leaves can be used as "spoons" for dipping. Grown through the summer for a fall harvest. Roots can later be dug for forcing in sand in a dark cellar at 40-60° F. *C92, K49M*

Robin:<sup>2</sup> Produces shoots that are a reddish-pink color after forcing, the first pink Belgian endive. Very good quality. Has good potential as a specialty market item. Suitable for forcing without soil or cover from October to January. Optimal temperature about 55° F. *C53, E13G{PR}, N40{PR}*

Witloof Improved: 110 days. An outstanding strain that may be used for commercial forcing in home gardens. Heads are similar in appearance to cos lettuce but much shorter. When forced for winter it produces very uniform heads, about 5 to 6 inches in length. *L42*

#### CODES FOR SPECIAL TYPES

1. Cutting
2. Pink Chicons

## CHINESE CABBAGE {S}

### BRASSICA RAPA PEKINENSIS GROUP

#### HEADING

**MICHIHLI TYPE** The head is in the form of an upright cylinder, 18 to 24 inches in height with the leaves held erect, not noticeably overlapping at the apex. In China, heads are commonly tied to encourage blanching of the heart.

#### Hybrid

Green Rocket: 50 days. Vigorous and extremely uniform; 4 to 5 pound heads are 18 inches tall, cylindrical and tightly folded, with deep-green leaves and an appealing white interior. Tolerant to most diseases. Sweet, crisp and tender; perfect in salads and stir-fried dishes. Excellent for spring or fall gardens. *C20M, G13M, K10, N81, N84, Q11M, R32, S55, S63M*

Jade Pagoda: 68 days. Cylindrical heads average 16 inches tall by 6 inches in diameter with medium-green, crisp outer leaves and a creamy yellow heart; weight 6.6 pounds. Upright in habit; suitable for close planting. Vigorous and slow to bolt. Resistant to bacterial soft rot and virus. Michihli type that is earlier in maturity and lower in plant height, with more uniformity. *Al, F13, G82, H54, H85M, 191, J84, K10, K16M, K73, L42, M29, N84*

Monument: 75 days. Michihli type, Taller and much later than Jade Pagoda; slower to bolt. Glossy green outer leaves; excellent uniformity. Plants average 17 inches high and 8 inches in diameter with firm, well-folded heads. Leaves and ribs have some tolerance to specking. Heavy yields. Mild flavor. *Al, C20M, D26D, G93M, K10, K50, K73, L42, M29, S63M*

#### Open-Pollinated

Chihli: 75 days. Tall, cylindrical, very solid heads; height up to 22 inches, width 5 inches. Broad, dark-green, well fringed outer leaves with white midribs; quality very good. Popular on the East Coast. Can be trimmed for market, still leaving a long, cylindrical head. Upright growth permits closer planting. *D27, K27M*

Michihli: 80 days. Tall, cylindrical heads average 18 inches high and 4 inches in width; long and slightly tapering to a point; crisp, tender, and tightly folded. Outer leaves are dark green with white ribs. Very good flavor. Heads blanch well, but do not store for long periods like the hybrid types. Standard commercial cultivar. *B75M, B78, C44, C69, D55, G16, G27M, G57M, G71M, H85M, K10, L59, M95M, N16*

**NAPA TYPE** The head is round and compact with the leaves usually overlapping at the apex. Some have a flat top, similar to a drumhead cabbage, others have a more or less pointed head. *E13G{PR}*

#### Hybrid

Blues: 50 days. An attractive early cultivar with disease resistance. Matures with Nagoda #50, is more vigorous, and has stronger bolt resistance. Firm, well-wrapped heads; good quality. Resists downy mildew, alternaria, soft rot, and some viruses. Sow early spring through July. *Al, C20M, D68, E24, G6, G13M, K10, K50, K73, L42, L79G, L91M, M29, N52, S63M, etc.*

China Express: 64 days. Medium to large, solid, barrel-shaped heads; average weight 5 pounds; medium light-green leaves. Slow to bolt. Suitable for spring sowing in temperate climates. May also be grown in a greenhouse in northern areas. Earlier, slightly smaller version of China Pride with more tip-burn tolerance. *Al, A87M, C20M, D26D, E75{PL}, F13, J84, K16M, K50, L79G, L89, M46, N81*

China Pride: 68 days. Large, blocky barrel-shaped heads, average weight 5 1/2 pounds; bright green leaves. Tolerant to many types of diseases including downy mildew, bacterial soft rot, and tip burn. Semi bolt-resistant. An excellent main crop Napa type for summer and fall production in cool areas. *Al, A87M, C20M, G13M, K10, K16M, K50, K73, L42, L79G, M29, 053M, Q11M*

Kasumi: 65 days. Popular new cultivar that has the best tolerance to bolting of any Napa type. Upright, barrel-shaped heads, slightly smaller than China Pride or about 5 pounds. Medium green leaves with bright white midribs. Sweet, mild flavor. Suitable for early or late sowings. *A79M, L42, M49, N81, Q28, RUM, S61M, S75M, TIM*

Kokasanto:<sup>1</sup> 90 days. Large, cylindrical, open-topped head weighing over 9 pounds, resembles romaine lettuce; good head formation; interior blanches to a distinct golden-yellow color. High quality and sweet taste. Excellent for salads or pickling. Resistant to disease and frost. *Q28*

Nagoda #50: 50 days. Versatile, early cultivar; tolerant of cool spring weather and summer heat. Medium-sized, 3 to 4 pound heads

are of the preferred barrel shape. Leaves pale yellowish-green, very tender and crisp; quality good. Sow April through July. D82

Nerva: 46 days. Remarkable earliness and strong bolt resistance combined. Rectangular, 10 inch well closed heads are very heavy for their size. Densely packed, with thick, juicy leaves preferred for stir-fried dishes and pickling. Sow early spring through May. L89, S61M

Orange Queen:<sup>2</sup> 75 days. Unique orange-hearted Chinese cabbage. Deep-green heads with a very attractive internal orange color when fully mature. Changes from light yellow to light orange when cut and exposed to sunlight. Has twice the nutrition of common light yellow forms. Excellent eaten raw in salads. Susceptible to bolting. Good potential for specialty markets. L42, L91M, N84, Q34, S55, S63M

Tropical Pride: 55 days. Vigorous, uniform grower. Very firm, oval-shaped heads, about 10 inches tall; average weight 3 to 4 pounds; medium green leaves; ideal for salads and sandwiches. Resistant to heat. Grows well during the winter in tropical and sub-tropical areas. L59, L79G

Two Seasons: (Burpee's Two Seasons) 62 days. Very large, oval heads 10 inches tall by 7 1/2 inches wide. Crisp, tender, tightly crinkled leaves and thick, succulent midribs with a sweet, tangy flavor. Holds up well in warm weather; resists bolting. Especially recommended for spring sowing; equally good for fall. Very resistant to soft rot. Keeps well. B6, B75, E97, K50, Q34

#### *Open-Pollinated*

Aichi: (Aichi Hakusai, Shantung Heading) Medium to large, round heads; weight 10 to 12 pounds; blanch easily. Thick, smooth, light green leaves. Good resistance to bolting. Sow July through August. A popular early cultivar introduced into Japan in 1875 from Shantung Province, China. The Aichi group of cultivars was derived from the Santo type. G33

Kogane:<sup>1</sup> 80 days. Leading variety of fluffy top or lettuce type Chinese cabbage. Tall, open heads resembling Romaine lettuce or Sugarloaf chicory; weight about 9 pounds; medium-green outer leaves, crumpled and frilled at the edge; creamy yellow core; excellent flavor. Suitable for pickling. Very popular in China and Japan. S70

Kyoto No. 3: (Kaga) 70 days. Very large, globular head; 12 inches high and 8 to 9 inches in diameter; weighs 14 to 16 pounds. Well blanched; crisp and tender; outer leaves medium-green colored. Winter hardy and tolerant of virus diseases. Sow in late summer or early spring. C85M, G33, Q11M

Lettuce Type:<sup>1</sup> 45 days. A tall, open-topped Chinese cabbage resembling a large romaine lettuce. The cylindrical heads reach 11 to 12 inches and about 3 pounds very early, with a ruffly appearance and a creamy yellow blanched interior. Leaves are thin, crisp, and of excellent salad quality. Potential specialty market item. Sow May through late summer. G6, L77D, N7G, N84, R47

Market Pride: 70 days. The standard Japanese autumn market type with light green, well-crinkled outer leaves and pure white hearts. Heads are cylindrical and weigh about 4 pounds. Sow in July for late fall harvest, or it can be sown in early spring. K49T

Matsushima: 80 days. Very dark green outer leaves enclose a round head of light-colored folded over leaves, shaped more like a European cabbage than a typical Chinese cabbage; weight 5 pounds. Excellent quality for cooking, salads, or pickling. Quick growing. Sow late June to early July. G33, E83T

Nozaki Early: 60 days. Light green, compact, barrel-shaped heads; weight 3 to 4 pounds. One of the earliest and most dependable open-pollinated cultivars, suited to earlier sowing than most. Usually does not make as dense a head as hybrids. Bolt resistant. Sow mid-June through July. A2, J9M

Orient Express: 43 days. Small, solid, oblong heads; 6 inches long, 4 1/2 inches in diameter; average weight 22 ounces; well-blanched leaves with a crisp texture and a pleasant, slightly pungent flavor. Very early and heat resistant; holds extremely well in hot weather. B75

Shantung: 60 days. Early, semi-heading cultivar of spreading habit. Heads weigh 4 to 5 pounds, have dense interior leaves that blanch well, and are upright when mature. Outer leaves are light green, smooth and tender. Sow in summer. F73D, L59

South China Earliest: 45 days. Very tender, compact head; 10 to 11 inches tall and about 4 1/2 inches wide at the upper portion; somewhat pointed at the base; weighs about 14 ounces, creamy white colored overall. Resistant to severe summer heat and well tolerant of stormy weather. Sow July to September. R47

#### NON-HEADING

Green Seoul: 35 days. Tall, upright-growing loose-leaf type with long white ribs. Very slow bolting; can be planted in spring, summer and fall. Disease tolerant. Outer leaves can be harvested after 30 days. When mature, it weighs up to 2 pounds. Used in soup, kimchi and as a raw or cooked green. Very popular for short-term kimchee making. Developed in Korea as a selection from the oldest and most important cultivar Gaeseong. D55, F73D, M65, N40M, N84, Q3

Hiroshimana: 75 days. A popular old cultivar of Hiroshima Prefecture, Japan. Leaves are smooth, very wide and rounded, dark-green in color with bluish-white midribs and nearly parallel veins. Succulent, with a unique mild flavor for which it is highly prized. Mostly used for winter cropping and for pickling. D55, E83T, N84

Kireba Santo: Very tall, upright, semi-heading plant. Light green outer leaves, toothed at the edges. Produces blanched inner leaves in a similar manner to Ohgon. Grows best in warm summer weather. Thinnings can be eaten after 3 or 4 weeks. E83T

Maruba Santo: 50 days. Fast growing loose heads of smooth, round, light-green leaves with wide crisp white ribs. Leaf blades are very thin, crisp and tender. Can be picked at any stage giving a continual harvest like Swiss chard. Suitable for planting all year round, being especially adapted to tropical and sub-tropical climates. D68, Q34, S70

Minato Santo: Easy to grow non-heading Chinese cabbage. Loose, 12 to 15 inch heads, bright chartreuse green; tender and mild flavored. Hilly, white-ribbed leaves. Suitable for stir-frying, salads or steaming. Vigorous and cold resistant, can be grown year round in temperate regions. 139

Ohgon: 70 days. Upright, semi-heading plant, to 15 inches tall; weight 3 to 4 pounds. Light green outer leaves, slightly ruffled at the edges. Produces blanched inner leaves with a rich yellowish-cream color. Can be sown all season long. E83T

Round-Leaved Santo: (Round-Leaved Santung) 50 days. Large, erect, fast-maturing plants are non-heading, cold resistant and very easy to grow. The leaves are broad and smooth, medium-green in color, and have white ribs. Quality is very high, either raw or cooked. Sow in spring or fall. One of the most popular vegetables in Taiwan. C20M, D55, L59, L79G, S63M, TIM

San-Feng: Vigorous, fast growing variety suitable for year-round planting. Can be harvested within 3 weeks of sowing. Light green leaves with white midribs, soft and tender. Good for stir-frying or adding to soups. High-yielding plant; weight about 1 pound. Tolerant of heat as well as cold; will not bolt in hot weather. Q39

Santo: (Santoh) 60 days. Smooth, serrated, bright green leaves with white ribs. Grows 14 to 16 inches high. Plant where warmth and plenty of moisture can be provided. Sensitive to hot summer sun; sow in spring or fall in most locations. Very old cultivar, introduced into Japan from Shantung Province, China. C20M, G33, N84

Shirona: Improved Santoh type. Light green leaves. Has a broad leafstalk similar to Swiss Chard, which may be eaten separately from the rest of the leaf. Very tender with a delicate but rich flavor. Excellent for stir-frying or pickling. Fast growing vegetable good for catch cropping. Grown extensively in Japan. D55, J73, N84

Tokyo Bekana: 30 days. Japanese Santoh type Very fast growing, to 12 inches high; tender, yellowish-green leaves with frilled edges; flat, white petioles. Excellent for stir-frying or adding to soups. Does well when planted spring through fall. Cold resistant. Very popular in Japan and Taiwan. D55, F73D, Q34, S70

#### CODES FOR SPECIAL TYPES

1. Lettuce-Leaved
2. Orange-Hearted

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## COLLARD {S}

### BRASSICA OLERACEA ACEPTALA GROUP

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#### HYBRID

Blue Max: 68 days. Deep blue-green leaves; slightly crinkled for a unique appearance; larger, denser and more attractive than conventional collards; very good flavor. Very uniform and disease tolerant; widely adapted. Up to 30% higher yielding than Vates. Suitable for fresh markets, home gardens and processing. Introduced in 1982 by Abbott and Cobb. *AI, M29*

Flash: 75-80 days. Hybrid, refined, early Vates type. Smooth, flat, broad dark blue-green leaves. Tall, upright plant, height 18 to 26 inches; vigorous and productive; very slow to bolt; very uniform when ready for harvest. Recommended for fresh market or processing. *AI, A87M, C28, G1M, G82, H54, H61, J84, K10, K50, K73, L42, N52*

Hevi-Crop: 65 days. A tybrid Vates type with superior vigor and performance. The large, smooth, medium blue-green leaves are closely spaced on the stem and carry more leaf surface down the petioles. Early, very uniform plants are more disease tolerant and recover faster when cut. Up to 30% higher yielding than Vates. Bolt resistance comparable to Champion. *AI, A87M, K10, K50, K71, K73, M46, S63M*

Hi-Crop: 68 days. Very uniform, slightly crinkled, blue-green leaves; hold their color better than other types; good texture, even in hot weather; mild, sweet flavor. Vigorous, heavy-yielding, upright plants; height 15 inches; clean growth habit; closely spaced internodes. Highly resistant to bolting. Replacing Vates as die standard collard. *Q34, S63M*

Top Bunch: 71 days. Tall, semi-erect plant; broad, deep-green, slightly wavy leaves. Highly productive, excellent for both home garden and local market sales. Vigorous, rapid regrowth. Generally earlier, more uniform and less susceptible to bolting than open pollinated types. *AI, A87M, C20M, C28, G1M, G27M, H61, 191, J84, K10, K16M, K50, K73, L42, M29, etc.*

#### OPEN-POLLINATED

Cabbage: 70 days. A heading collard with cabbage-like characteristics. Produces very hard, compact, dark-green heads on short stems; height 24 to 28 inches; light-green midribs and leaf veins. Combines die flavors of collards and cabbage. Hardier than cabbage. Very slow bolting, will stand 3 weeks longer than Georgia. *D12, G1M, L10*

Carolina: 70 days. Extremely uniform, dark-green leaves. Upright plant; height 28 to 32 inches; bolting resistance similar to Georgia; very wind and cold tolerant; resistant to one or more races of downy mildew. Released in 1980 by the South Carolina Coastal Experiment Station in Charleston. *B1M*

Champion: 78 days. Longer standing Vates type released by the Virginia Truck Experiment Station in 1976. Selected to hold longer in the field without bolting. Somewhat taller than the regular strain, to 34 inches. Uniform, vigorous, blue-green leaves; close internodes; good flavor; high yield potential. Adapted wherever collards are grown. *A27M, A87M, F13, G1M, G6, H54, J14{PL}, J84, K10, K73, L42, L89, M29, M95M, R47, etc.*

Georgia: (Georgia Southern, Southern) 70 days. Large, moderately crumpled, blue-green leaves; grow back well after being harvested; mild, cabbage-like flavor is improved by frost. Vigorous, upright spreading plant; height 4 feet or more; produces well in poor soils and under adverse weather conditions. Popular traditional cultivar, introduced prior to 1885. *A75, D82, G71, G68, H61, 191, K49M, L10, N16*

Georgia Blue Stem: 60 days. A popular old cultivar. Very tall, attractive, long-stemmed plants with leaves growing on widely separated internodes. The leaves can be harvested continuously as the plant quickly forms new ones. *C92*

Green Glaze: (Greasy) 73 days. A unique heirloom cultivar that many southerners refer to as Greasy Collards. Bears a loose cluster of smooth, slightly crumpled leaves that have a bright green sheen, giving the surface a "greasy" appearance. Upright plant; height 30 to 34 inches; slow bolting; resistant to cabbage worm. *C28, F73D, G57M, K71, L7M*

Morris Heading: (Morris Improved Heading) 80 days. The outer wrapper leaves close together more tightly than others, forming a large, round, very firm rosette which can be harvested for its tender, succulent growth. Dark-green, slightly crinkled leaves. Slow-bolting plants grow 18 to 24 inches tall. An old favorite with excellent flavor. *A75, C28, D12, G1M, G27M, G57M, H54, K49M, K71, L7M, Li0, M95M*

Vates: (Blue Stem) 75 days. Broad, thick, dark-green, coarsely crumpled leaves free of purpling; excellent flavor and quality. Upright spreading, heavy-bearing plants; height 24 to 30 inches; fairly resistant to bolting; winter handy. Very popular standard cultivar. Developed by the Virginia Truck Experiment Station. *A75, A87M, C44, C85M, F82, G71, H61, K73, L7M, N16*

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## CORN {S}

### ZEAMAYS

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#### DENT CORN

The kernels of this type have an indentation or depression on the top of the grain. This occurs when the soft, floury core in the middle part of the endosperm shrinks more than the hard, corneous portion. The most widely grown economic race of corn in the United States, it is milled into the yellow commeal of the grocery trade. *M67{DF}*

#### BLUE/PWPLE-KERNELEP

Blue Clarage: (Ohio Blue Clarage, Blue Claredge) 100 days. Highly uniform, semi-dent corn. Distinctive, medium-sized, solid-blue ears. Higher sugar content than most dent corns; may be used as a table com in the milk stage. Mills easily; makes a speckled blue and white commeal with a sweet, nutty flavor; a white meal may be obtained by sifting out the bran. Developed west of the Appalachian Mountains in the Ohio-West Virginia area between 1830 and 1850. *L7M*

McCormack's Blue Giant: 85-100 days. Large ears, 7 to 8 1/2 inches long; large, wide, smoky blue kernels. Produces a light blue flour. Well suited for making blue tortillas and blue corn chips. Also excellent for roasting. Very tall stalks, 10 to 12 feet high; 1 or 2 ears per stalk. Adapted to clay soils and drought prone areas of the Eastern States. Developed by Jeff McCormack. *L7M*

Peruvian Morado: Very attractive purple corn, darker purple than others of this type. Short, plump ears, 2 1/2 to 6 inches long; 8 to 12 rows, slightly dented. Round, deep violet kernels. Deep purple cobs. Grown primarily for growing *chicha*, a traditional alcoholic corn beverage. F80, N84

#### GREEN-KERNELEP

Oaxaca Green: 85 days. Stout ears, 6 to 8 inches long, dented with smooth, emerald green kernels. Deep, rich flavor. Grown for centuries by the Zapotec Indians of southern Mexico for making green flour tamales. Stalks grow 5 to 6 feet tall. Often grown with squash and beans which twine up the corn stalks. A2, F73D, K20M, K49T, L3J

#### MULTI-COLORED

Hickory King Composite: 95-110 days. Ears 8 to 10 rowed, cob small; large white and yellow kernels (1 to 5% blue). Excellent for roasting in early stages; also fine for commel and hominy. Contains a range of genetic diversity; selections can be made that are adapted to local regions. C59M

Mayo Batchi: A desert staple of Sonora's Mayo River heartland. Short fat ears, with mixed clear, white and yellow kernels. Red cobs. For *elote*, tamales, tortillas and corn beer. Dry farmed in the low hot desert. In temperate climates, plant in spring when danger of frost is past and the soil is warm. 116, N84

Mexican June: (Blue and White) 110 days. Long, plump ears; 8 to 9 inches long, 2 to 2 1/4 inches in diameter; rows 12 to 16, very crowded around the cob and in the row. Blue and white kernels; mostly white at roasting ear stage. Good for roasting ears. Medium heavy stalks; 7 1/2 to 8 1/2 feet tall; often 2 ears per stalk; resistant to heat and drought. Introduced about 1896. TAPLEY 1934; *DIT*, E5T, 181, K49M, N84

#### RED-KERNELED

Beasley's Red Dent: 105 days. Originally a yellow dent which was selected for red color, but still produces a small percentage of yellow and orange ears. Ears 9 to 12 inches long, containing 16 to 20 rows of red kernels. Stalks average 9 feet tall. Excellent resistance to blight and drought. An heirloom discovered in Whitley County, Indiana. K20M

Bloody Butcher: 120 days. Ears 10 to 12 inches long; 12 to 14 rows per ear; kernels cherry-red striped with darker red. Fine flavor. Very good for flour, cornmeal, or corn-on-the-cob when young. Cobs pink or red. Stalks grow 10 to 12 feet tall; 2 to 6 ears per stalk. An old-time cultivar, grown in the United States since 1845. B8M, C59M, D56M, D76, D92M, E5T, *F63*, *G13M*, G82, H49, H85M, J20, K10, K49M, K71, K73, L7M, M65, etc.

Northwestern Red: 100 days. Attractive small to medium-sized, tapered ears, 6 to 8 inches in length with 12 to 16 rows of kernels; kernels red with white tips. Sturdy stalks, 5 to 6 feet tall. Rare heirloom from the Midwest. K20M, L7M

#### WHITE-KERNELED

Boone County White: 120 days. Nearly round ears, 9 1/2 to 11 inches long; 16 to 22 medium spaced rows. Thick, blocky kernels, medium to wide and very deep. Cob white, large and heavy. Good for roasting and hominy. Heavy stalks, 9 1/2 feet tall. Originated in Indiana about 1876. D26D, K71

Hickory King White: 115 days. Medium-long ears, 7 to 8 inches in length, small cob; kernels very wide, thin and deep. Excellent for hominy, the skin of the kernel being easily removed by soaking. Also good for roasting, grits, cornmeal and flour. Heavy stalks, 7 1/2 to 8 feet tall. Popular in the South. Introduced prior to 1888. ANONYMOUS 1888, TAPLEY 1934; D26D, F73D, G27M, H49, H85M, *I64*, K27M, K49M, K71, *K94*, L7M, M95M

Pencil Cob: 100 days. Medium-sized ears; surrounded by a thick, tight shuck; very deep kernels, plump and sweet. Unusual, very

slender "pencil-sized" cob. Flavorful roasting ears in 76 days. Stalks grow 5 to 6 feet tall; 2 to 3 ears per stalk. Tolerates dry weather well. F80, K49M, N16

Posole: 100 days. Large, plump ears. Very wide, thick kernels. The traditional cultivar of dry dent corn for making *posole*, a soup-like dish that is one of the finest meals of Southwestern cuisine. The hominy of the Southwest. Vigorous, drought-tolerant plants. I63T{DF}, J25M

Silver King: (Wisconsin No. 7) 100-110 days. Ears 8 to 9 inches long, with 16 slightly wavy rows. Cob glistening white. Kernels creamy white, very wide, of medium depth and thickness. Good for roasting ears. Popular in the northern part of the Corn Belt. Originated by A.J. Goddard of Ft. Atkinson, Iowa in 1862. D26D, K71

Silver Mine: 97-110 days. Ears rounded, tapering at the tip, 11 to 12 inches long. Kernel creamy white, of medium depth and width. Cob small, white. Popular for roasting ears in Florida, Georgia, Alabama and Mississippi. Adapted to a wide range of climates and soils; does well on poor soils. Good resistance to earworm. Originated by J.A. Beagley of Sibley, Illinois, in 1890. C59M, D26D, G27M, K71

Tait's White: An heirloom white dent, now rare, originally developed and introduced by Tait Seed Company of Norfolk, Virginia. Produces 1 or 2 ears, 8 to 10 inches long, on 6 foot tall stalks. Traditionally used for roasting ears. Adapted from Virginia southward. K71

Tennessee Red Cob: Large deep-grained ears, up to 12 inches long, 12 to 16 rows. Red cobs. Good for roasting ears or cornmeal. Tall stalks, to 13 1/2 feet. Famous field com, very popular in Tennessee and other sections of the upper South. *K94*, L7M

Texas Gourdseed: 120 days. Large ears containing 18 to 22 rows of narrow, creamy-white kernels. Very easily shelled, almost with the flick of a finger. Grows about 8 feet tall; 2 ears per stalk. Locally considered the best com for making tortilla flour. Originally brought to south Texas by German farmers who migrated from Virginia, Kentucky and Tennessee during the late 19th Century. L7M

Trucker's Favorite White: (Trucker's White) 95 days. Ears 8 to 10 inches long, 6 to 6 1/2 inches in diameter with 14 to 18 rows. Kernels large and deep, nearly rectangular in shape, creamy white. Excellent for roasting ears. Stalks 8 to 8 1/2 feet, tall and heavy. Particularly popular in the Cotton Belt and all parts of the South. D26D, G1M, G27M, G57M, H85M, *I64*, K49M, K71, M95M, N16

#### YELLOW-KERNELED

Hickory King Yellow: 115 days. Medium to long ears, 8 to 9 inches in length, small cob; dark-yellow kernels, very wide, thin and deep. Excellent for hominy, the skin of the kernel being easily removed by soaking. Also very good for roasting, grits, cornmeal and flour. Heavy stalks, 8 to 10 feet tall, often produce 2 ears. E5T, F73D, *K94*

Lancaster Surecrop: (Welschkorn) One of the three parent lines used for developing modern hybrid field corns. Developed by Mennonite farmer Isaac Hershey of Lancaster, Pennsylvania. Considered to be Lancaster County's most important contribution to American agriculture. C59M, D26D, F24G, G57M, K71

Nothstine Dent: 100 days. Medium-sized ears, 7 to 8 inches long; glossy yellow kernels with white caps. Makes a sweet, flavorful cornmeal for baking and cereal. Single stalks, to 7 feet tall. Not high-yielding but of excellent quality. Successful in short season areas. A northern Michigan heirloom. A2, G6

Reid's Yellow Dent: 110 days. Most popular yellow dent corn in the United States. Ears 9 to 10 inches long, with 16 to 22 closely spaced rows. Kernels very deep and narrow, deep yellow with a lighter cap, often tinged with red. Good for roasting ears, hominy, grits and cornmeal. Tall, heavy stalks. Very productive; widely

adapted. Originated by Robert Reid of Illinois in 1847. Prize winner at the 1893 World's Fair. D26D, G57M, H85M, 164, 197{DF}, 197{ED}, J21P, K71, L7M

Trucker's Favorite Yellow: (Trucker's Yellow) 77 days Yellow strain of Trucker's Favorite White, with a red cob. Ears 8 to 12 inches long, with 12 to 14 rows. Used for a quick early crop or for late planting. Popular throughout the South and Midwest. D26D, E5T, G57M, H85M, K71

#### FLINT CORN

The kernels of flint corn are very hard and as in popcorn, nearly all the starch in the endosperm is corneous. When milled into flour it remains as small granules, not as a powdery mass. Before the development of Com Belt dent, it was the most widely distributed com in the Northeastern states. C73P{DF}

#### MULTI-COLORED

Indian Flint: (Squaw) 105 days. A hard flint com, unsurpassed for grinding into cornmeal. Despite the multi-colored ears, the ground cornmeal shows little or no trace of color. 139

Little Indian:<sup>1</sup> 75 days. Produces up to 40 pinkie-size ears per plant that are perfect for harvesting at the silking stage for "baby" corn. If left to mature, will produce very small ornamental ears, 2 1/2 to 3 inches long. Ears will be larger when well fertilized or pollinated by other corn. Widely adapted. J9M, L79

Tarahumara Maiz Caliente: "Hot corn" or summer cultivar. Onaveno Race. Small kernels, mixed white, yellow and salmon. Fast growing. For subtropical and low desert areas. In temperate climates, plant in late May or early June. From the Tarahumara Indians of Mexico. 116

Tarahumara Serape: Attractive, long slender ears. Pearly red and white striped kernels. Similar to Havasupai Chin Mark flour com. Cristalino de Chihuahua land race. Planted in early July in desert areas. Irrigated. In temperate areas plant in spring when danger of frost is past and the soil is warm. 116, N84

Tepehuan Maiz Colorado: Medium-sized ears. Long, yellow-striped red kernels with beaks on tips. Red cobs. Planted in early July in desert areas. Irrigated. In temperate areas, plant in spring. From Mexico. 116, N84

#### PINK/RED-KERNELED

Tarahumara Apachito: One of the favorite races grown by the Tarahumara of Mexico. Small pink to red kernels on long ears with numerous rows. Adapted to the high desert, above 3,500 feet elevation. 116, N84

Tarahumara Maiz Color de Rosa: 90 days. Medium-sized pink ears. Has somewhat the texture of flour corn and some pointed kernels. Planted with the summer rains in desert areas. In temperate climates, plant in late May or early June. 116, N84

#### WHITE-KERNELED

Rhode Island White Cap: 115 days. An authentic, 8-rowed white flint corn of the Narragansett Indians. Ears slightly larger than Garland, 6 to 7 inches long. Ivory-white kernels. Used for the famous Rhode Island *jonnycake* meal, Indian pudding and New England brown bread. Stalks grow 6 to 7 feet tall. Recommended for northern gardeners where seasons permit. Still grown commercially near Little Compton, Rhode Island. GUNST [Re]; E67{PD}, H86{DF}, H86{PD}

Saskatoon White Flint: 75-80 days. Traditional northern flint corn. One of the fastest maturing white dry corns suitable for grits, corn meal or flour. Produces one ear per plant, about 7 inches long and with 8 rows of kernels. Grows to about 4 feet tall when mature. J9M

#### YELLOW-KERNELED

Garland Flint: 110 days Very early Northern flint corn. Most ears are bright yellow, the balance solid, deep red; 7 to 8 inches long, 8-rowed. Used for cornmeal. Stalk grows 7 to 8 feet tall. Selected by George Garland, one of the last old-time producers of fine traditional New England com. G6

Longfellow's: 117 days. The standard 8-row Northern flint. Ears 12 to 16 inches long, well-filled to the extreme end of the cob. Kernels large and broad, rich glossy orange. Makes a sweet, rich cornmeal. Stalks 8 to 10 feet tall; extremely productive, often produces 3 full-sized ears per stalk. ANONYMOUS 1888; D29P, F46, L3J

Vermont Yellow: 95-100 days. A very early hard yellow com of fine lineage. Ears 8 inches long, straight, 8-rowed. Good for cornmeal. Stalk grows 6 to 8 feet tall. Matures well in short season areas. D29P

#### FLOUR CORN

Kernels of flour corn have an endosperm that consists entirely of very soft, white, opaque starch. It is easier to grind than flint or dent com, milling easily to a fine flour. Grown primarily in the Southwest and the Northern Plains. The Southwestern form is very distinct, with small kernels and large cobs.

#### BLUE/PURPLE-KERNELED

Alamo-Navajo Blue: (Navajo Blue) 90 days. Large, full ears of dark bluish-purple to almost black kernels. Popular for grinding into cornmeal for Southwestern blue com tortillas and *piki* bread. Can also be picked young and eaten fresh. Very vigorous plant; resistant to drought and disease. Also a good ornamental. From Magdalena, New Mexico. D26G, D56M, G6, G68, 116, 116{DE}, J25M, K49Z, N84

Hopi Blue: 80 days. Popular dark-blue com that makes a sweet blue cornmeal. Widely grown in the Southwest and used in a variety of traditional foods. Precursors of modern strains have been raised continuously for 800 years on the Hopi Indian mesas of northern Arizona, never under mechanized agriculture. Thrives in sandy soils, without irrigation when necessary. Most widely adapted of Hopi corns for other regions. COX [Be], KAVENA [Re]; A2, C95, D74B, F73D, G13M, 116, J20, J73, K10, K49M, K49M{£D}, Q34

Hopi Purple: Amethyst colored ears, 8 inches long, with 10 rows of kernels. Makes a flavorful and rich-tasting flour. Stalks have large foliage; grow 3 to 5 feet tall. An ancient strain, crossed and selected by Indian ancestors for seasonal stability with uncertain moisture. F73D, J73, K49T, N84

Hopi Turquoise: 80 days. According to legend, the original cultivar given to the Hopis for their migrations. Ears 7 to 8 inches long, with 12 rows of kernels. Pale blue kernels make delicious flour. Bushy plant; height 3 to 5 feet. Very adaptable. A2, N84

Magenta:<sup>3</sup> 110 days. Long, narrow ears, about 8 inches in length. Purplish kernels. The only parching corn that doesn't fade when parched. Grows to 5 feet tall. Developed by Carol Deppe and Alan Kapuler working for the Seeds of Change corn breeding program. K49T

Parching Lavender:<sup>3</sup> 85 days. Identified by Carol Deppe as a true parching com. Produces 1 or 2 ears, 6 to 8 inches long. Highly ornamental kernels in various shades of pearly lavender-purple. Makes delicious parched or roasted corn. Grows 4 1/2 to 5 feet tall. A2

Taos Blue: 110 days. A strain recovered from 50 years' storage in Taos Pueblo, New Mexico Very long ears with 12 to 18 rows of dark-blue, nearly black seed. Grown at high elevations at Taos Pueblo, by traditional methods. Prolific when irrigated. Successfully grown in all 50 states. PASCALE [Re]; A2, B75, J73, L11, N84

MULTI-COLORED

Flor del Rio: Rainbow corn with red, yellow, blue and some white and chinmark kernels. Spanish family heirloom from Velarde, New Mexico. Adapted to the high desert, above 3,500 feet elevation. Flour/flint type. Ears have a mix of hard, flint kernels and soft, floury kernels. 116, N84

Guadalajara All Purpose: 100 days. Produces 2 to 3 multi-colored ears per stalk. Excellent for roasting and grinding. Very tall stalks, to 12 feet high. Originally from Mexico. Has grown well in eastern Washington. A2

Hopi Supai:<sup>3</sup> (Havasupai Chin Mark) Medium-sized ears, 8 to 9 inches long with 12 rows of kernels; striking yellow-white kernels variegated brown and red. Good for flour or parching. Stalks grow 6 feet tall, yield 2 to 3 ears per stalk. Very adaptable. Also called Calico or Chin Mark in reference to its resemblance to traditional Havasupai facial decorations. 116, N84

Mandan Bride: 98 days. An early maturing corn that is ornamental as well as useful. Ears 8 inches long, 8 to 12 rowed; come in a striking array of colors including purple, white, variegated, red, yellow, speckled and some with translucent and rosy effects. Yields a white corn flour with multi-color flecks. Also good for hominy. Originally from the Mandan Indians of what is now North Dakota. A2, A66, D68, E24, F73D, G6, J26M, N34{PD}

Santo Domingo Rainbow: Attractive mix of red, blue, yellow, orange, purple, pink, pearl and chinmark flour kernels on ears up to 10 inches long. Adapted to the high desert, above 3,500 feet elevation. From the Santo Domingo Pueblo in northern New Mexico. 116, N84

Supai Red:<sup>3</sup> 110 days. Highly recommended parching corn. Kernels white, overlaid with striking blaze and starburst patterns of intense red. Grows 6 to 7 feet tall, with 1 or 2 large ears per stalk. Developed by Carol Deppe and Alan Kapuler from Hopi red flour comstock. K49T

RED/PINK-KERNELED

Aztec Red:<sup>3</sup> 160 days, Very large red kernels used for making the traditional Native American corn soup. Also excellent for parching. Large, foot-long ears with 10 to 12 rows of kernels. Tall plants, 9 to 10 feet in height. F73D, J73, N84, PIG

Hernandez Red: Not a pure strain; has a wide range of color characteristics. Some ears are pure red, others are white, blue, chinmark or yellow. Good for flour or decorative use. Originally from 5,500 feet elevation in Hernandez, New Mexico. Flour/flint type. Ears have a mix of hard, flint kernels and soft, floury kernels. 116, N84

Hopi Pink: 70 days. Medium-sized ears, 8 inches long with 12 to 14 rows of kernels; pink-capped white kernels, some red and white variations. Often matures earlier than other Hopi flour corns. Bushy plants, 4 to 4 1/2 feet tall. Does consistently best in all drought tolerance tests due in part to a long embryonic taproot. A2, F73D, 116, 199M, K23, K49T, L3J, N84

Parching Red Mandan:<sup>3</sup> 80 days. Ornamental as well as useful. Orange to deep red ears, 6 inches long. Very good green, parched or roasted. Occasionally produces some yellow ears. Green and purple stalks, 4 1/2 to 5 feet tall. One of the earliest dry corns. Identified by Carol Deppe as a true parching com. A2

WHITE-KERNELED

Hopi White: (Hopi White Hominy) 80 days. Large ears, 6 to 8 inches long; white kernels. Height 4 to 5 feet. Makes a fine flour and *goodposole* (com soup). Sand dune grown in the high desert. In temperate climates, plant in spring when danger of frost is past and the soil is warm. A2, C95, 116, J73, N84

Mayo Maiz Blando: Large, white floury kernels are traditionally ground into flour and used for baking. Collected at the Mayo village of Las Capomas in Sinaloa, Mexico. Adapted to both the high and low deserts. 116, N84

Rio Lucio Concho: Pearl white kernels that are traditionally used for chicos, posole or flour. Grown at 8,000 feet in the Spanish village of Rio Lucio, New Mexico. Flour/flint type. Ears have a mix of hard, flint kernels and soft, floury kernels. 116, N84

Tarahumara Blando de Sonora: One of the mainstays of Tarahumara corn production. Traditionally used for making tamales when in the milk stage, or ground into flour. Large ears with large white kernels. Adapted to both the high and low deserts. 116, N84

YELLOW-KERNELED

Hopi Yellow: 90-95 days. Medium-sized, straight rowed ears, 8 inches long with 10 rows; bright yellow, soft textured kernels. Excellent flavor for tortillas and tamales. Height 4 feet. Planted in July in the high desert. In temperate areas, plant in spring when danger of frost is past and the soil is warm. A2, C95, 116, J73, L3J, N84

Papago: 80 days. Small, slender, cream-colored ears. Ground into flour for tamales. Drought tolerant; adapted to the extremely arid homeland of the Papago Indians of southern Arizona. Excellent for harsh, dry sites. In wetter climates, or with irrigation, the plants are larger. J25M

Texas Shoepeg: Long, bright yellow kernels with dented beaks. Short red cobs have up to 26 rows. Sweet at the milk stage. Excellent for meal or boiling. From Cranesfill Gap, Texas. 116, N84

POPCORN

Considered the most primitive of corns, the endosperm of popcorn has starch that is almost entirely the hard, corneous, and translucent type. When heated the kernels burst and the soft, palatable inner endosperm is everted. They can also be used for sprouting, and are the class of corn used for the various *puffed corn* products. Popcorn flour can be made from unpopped kernels or from popped kernels that have been ground in a blender or food processor. KUSCHE [Pre, Re].

BLACK/BLUE-KERNELED*Hybrid*

Blue Sapphire: Gourmet type selected specifically for flavor and texture. Small, attractive, deep-blue kernels with thin hulls. Pops up primarily white with subtle hints of purple, very light and tender. Sweet and rich, may not need extra condiments such as butter and salt. An 8 ounce bag will yield approximately 6 quarts. B20{DF}

Purple Amethyst: Connoisseur type selected specifically for flavor and texture, unlike most commercial popcorn which is grown for popping ratio and size. Attractive, lustrous dark-purple kernels. Pops up snow-white, firm and crunchy, with a sweet and nutty flavor. An 8 ounce bag pops approximately 6 quarts. B20{DF}

Shaman's Blue: (Kiowa Black) 105 days. The first dark blue hybrid popcorn. Glossy, dark lavender kernels on white endosperm; pops white with high expansion rate of 43.0; tender flakes with a subtle sweetness and savory flavor; quality excellent. Large ears, 8 inches in length. Stalk quality and yield potential comparable to the best mid-season hybrids. Developed by Jim Iverson of Crookham Co. A73M{DF}, C68M, K10

*Open-Pollinated*

Black: (Blue) 100 days. Larger ears and kernels than standard popcorn. Deep blue to black kernels that pop snow-white with a tinge of bluish-black at the base. Rich, distinctive flavor. Not as vigorous as yellow or white strains, grown for flavor and visual effect. A2, C95, G68, H1M{DF}, H1M{DF}, J11M{DF}, J39, L7M, N34{DF}, 089

Black Jewell: {DF} A modern, hullless dark-blue popping corn developed in Illinois by Merle Litherland, from seed originally obtained in Germai. Pops snow white with a grayish-blue hue. Very thin hull, shatters when it pops; tender, yet crunchy texture; excellent natural flavor. Patented, no planting seed available at this time. A52M, B19M, C64, F86T, H15T

Schroeder's Black: (Black Tie) Large, bluish-black kernels. Pops into large, snow-white flakes with a bluish tint; excellent, crunchy texture; distinctive, nutty flavor. Gourmet quality. Originated in Buhl, Idaho by Elmer Schroeder. K37T, K37T{DF}

#### BROWN-KERNELED

Chapalote: *Pinole* maize. Used popped; also toasted and ground into a sweet meal. One of the four most ancient corns. Slender ears; small brown, white or yellow kernels. A long season corn from Mexico, grown in the low hot desert. In temperate areas, plant in spring when danger of frost is passed and the soil is warm. 116

Chocolate Cherry: 120 days. Dark cherry colored ears. Developed from Chocolate Pop. Selected for more uniform color and a deep reddish, cherry brown color. Introduced by Southern Exposure Seed Exchange. L7M

Chocolate Pop: 135 days. Ears average 6 inches long, with 16 to 18 rows of kernels. Kernels chocolate-colored, in several shades of brown. Bright pink silks. Pops and tastes like a well-flavored yellow popcorn, but the hulls are more tender. Very unusual and attractive. Stalks average 5 1/2 to 6 feet tall; produce 2 ears per stalk under good conditions. Good resistance to drought and earworms. L7M

#### MULTI-COLORED

Calico: 100 days. Old-fashioned popcorn that is ornamental as well as tasty. Small, uniform ears, 6 to 8 inches long; densely packed with kernels. Striped and patterned kernels of red, yellow, mahogany, brown, white, purple and blue. Plants grow 5 to 7 feet tall, produce multiple stalks. A15Z, C82, D68, D76, G13M, G93M, H49, K66, L7M, L42, L89, N24M, N34{DF}

Cutie Pops: 100 days. A unique, multi-colored, miniature popcorn. Ears 4 inches long; tiny, rainbow colored kernels. Pops white. Can be used as a "baby" Indian com for dried bouquets, or harvested for miniature white popcorn. A15Z, L42, L94

Gold 'n' Pearl: Unique multicolor popcorn of gourmet quality. Gold and white kernels, extremely tender and hullless. The only certified organic popcorn grown especially for hot air poppers. Developed and grown exclusively by Ballico Bill Reichle of Iron Horse Popcorn Co. N34{DF}

Seneca Mini Indian: 100 days. Attractive, slender ears, 4 to 6 inches long; striking multi-colored kernels in bright red, yellow, brown, black, purple, blue, solid, and variegated. Ornamental as well as excellent for popping. Bears 2 to 3 ears per stalk. Should be planted about 6 inches apart to ensure fully miniature ears. B75M, C20M, D26D, F63, G1M, G13M, G71, G93M, H85M, 139,167M, K10, K27M, L10, M95M, N16, etc.

#### RED-KERNELEP

##### *Hybrid*

Robust Ruby Red: (Indian Red, Apache Red) 100 days. Elongated, glossy, deep burgundy-red kernels. Pops into small, crispy, bright white flakes with a hint of red at the center. Has a subtle, nut-like flavor of gourmet quality. Seven inch ears with a red cob. Sturdy, single talk plants. A modern early season hybrid developed from Strawberry popcorn by Jim Iverson of Crookham Co. A73M{DF}, C68M, F63, G13M, 164, K10, K50

##### *Open-Pollinated*

Strawberry: 100 days. Short, conical ear; 2 inches long; resembles a red-ripe strawberry in shape and color. Small, dark-red kernels. Pops white. Primarily used for decorating, but can also be used for

popping. Stalk grows 5 feet tall; produces 2 to 4 ears. B73M, B78, C82, F80, G16, G71, G79, 164, J11M{DF}, K10, K73, M46, N34{DF}, N40{DF}

#### white-kernelep

##### *Hybrid*

Peppy: (Burpee's Peppy Hybrid) 90 days. Small ears; 4 inches long. Deep, pointed, hullless kernels; large and tender when popped. Excellent popping expansion and flavor. Stalk grows 5 to 6 feet tall; high yielding, 2 or 3 ears per stalk. Does well in short summer areas. B75

Robust 21-82W: 106 days. Well-filled ears, slightly longer than White Cloud. Deep, pointed, pure white kernels; high expansion rate of 42.0; crisp, tender flakes of excellent flavor and quality. Vigorous stalks, resistant to lodging; high yielding. Early maturing; does well in northern regions. Dent sterile: will not accept pollen from dent corns. B75M, C68M, F63,164, K10, L42

Snow Puff: 90 days. Small ears; 5 inches long. Small, completely hullless kernels with no hard center. Excellent quality, flavor and tenderness. High popping volume for a white cultivar. Stalks grow 5 to 6 feet tall; produce 3 or more ears per stalk. B1, B6, B73M, D26D, G79, /59M, J97M, K10, K27M, K71, M46

White Cloud: (White Cloud Hullless) 95 days. Small plump ears, about 4 inches long; well-filled. Deep, pointed, thin-skinned kernels. Excellent popping expansion; tender, fluffy and hullless; of excellent flavor and quality. Vigorous, sturdy stalks; high yielding. Does well in northern areas. A15Z, C85M, D11M, D27, D68, F13, F70, G13M, G16, G79, H33M, H95,167M, K10, K50, K73, etc.

##### *Open-Pollinated*

Baby Rice: (Baby Hullless, Paiute Pearl) 70 days. Japanese Hullless type. Small, white kernels. Pops up snow white with virtually no hulls. Very tender and flavorful. High yielding plant, well adapted to short season growing conditions. An old Wisconsin heirloom that's been grown for over 100 years. A73M{DF}, G16, G79, K49M

Bearpaw: 95 days. Heirloom strain from New England. Ears somewhat flattened and "paw" shaped at the silk end, hence the name. Large white kernels. Stalk grows 5 feet tall; often produces 2 ears. Grown commercially in Vermont in the early 1900's. By the 1970's there remained only one farmer in Dummeiston, Vermont who maintained the seed. A2, J39, K49M

Japanese Hullless:<sup>1</sup> (Japanese White Hullless, White Hullless) 100 days. Short ears, about 4 inches long. Small white kernels; irregularly set on the cob. Pops snow-white; very tender, with no hard centers, of excellent quality. Stalk 4 1/2 to 5 feet tall; very productive, 3 to 6 ears per stalk. Very popular, old standard cultivar. Also commonly grown in Asia for canned "baby" corn. A75, B1, B6, D68, D76, E97, G13M, H49,139, K10, K27M, K49M, K71

Pennsylvania Butter-Flavored: 100 days. An heirloom popcorn maintained by the Pennsylvania Dutch since 1885 or earlier. Ears 4 to 6 inches long. Small creamy-white kernels; very tender and delicious. Stalk grows 8 feet tall; produces 2 or 3 ears. Very drought resistant; will grow in poor soils. F24G, L7M

#### YELLOW-KERNELED

##### *Hybrid*

Crema-Puff: 105 days. Medium-sized ears. Tender, puffy, high quality golden-yellow kernels with a delicious flavor. Excellent popping expansion. Stalks grow 8 to 8 1/2 feet tall; high yielding, often produces 2 ears per stalk. B6, D26D, G57M, 159M, K10, K27M, L10

Iopop 12: 100 days. Large, slender, orange-yellow ears; 7 to 8 inches long. Small, deep and rounded kernels, nearly as free of hulls



as Japanese White Hulless. Excellent popping volume of 38.0; 15% mushroom shape. Pops to large, tender, flavorful flakes. Strong, erect, high yielding plant; widely adapted. A15Z, C20M, D26D, G13M, G79, H33M, K10

Petite Princess Amber: Gourmet type selected specifically for flavor and texture. Small ears, only 2 to 3 inches long. Tiiy, yellow kernels with ultra-thin hulls. Produces creamy-yellow, light, very tender popcorn with excellent flavor. An 8 ounce bag pops approximately 8 quarts. Small, busy plant. Very difficult and costly to grow, having a low per acre yield. B20{DF}

Purdue 410: 110 days. An improved South American type. Tapered ears, 7 to 8 inches long. Unusually large, plump yellow kernels. Excellent popping expansion; produces large, fluffy, nearly hullless popcorn with 40% mushroom shape. Sturdy stalks, 6 feet tall; high yielding. Widely used for commercial popcorn, especially caramel com. *Al, Bl, C92, D26D, F6J, G13M, H85M, H95, K10, K71, K73, M95M*

Robust 10-84: 98 days. Large ear size. Large yellow kernels, 52 per 10 grams with popping volume of 38.0 Metric Weight to Volume Test (MWVT). Pops into very large flakes that are excellent for candied popcorn. Very vigorous plant with high earing potential. Can tolerate more adverse conditions than most hybrids. Does well in short season areas. L42

South American Yellow: (South American Giant, T.N.T.) 100 days. Hybrid version of South American. Large, well-filled ears. Tender, golden-yellow, flavorful kernels that pop perfectly white. Excellent popping expansion. Very productive. G71

#### *Open-Pollinated*

Lady Finger: Short, slender ears, 3 to 5 inches in length. Very small, deep yellow kernels. Pops well, leaving few unpopped. Flakes are tiiy, tender and delicate with excellent flavor. Too tender to microwave. Also good in dried arrangements. Short, stocky plants bear multiple ears. Heirloom cultivar grown in the Amish communities of Ohio, Indiana and Iowa. B6, F80, N84

Reventador: Old-fashioned *pinole* corn with translucent kernels. *Maiz reventador* is a generic term for the small-grained pearl popcorns of western Mexico, where they are preferred over other types for making pinole. Forms of Reventador com have been grown in Sonora, Mexico for at least 200 years. ANDERSON, E.; 116, N84

South American: (South American Yellow) 105 days. Long, slender, tapered ears; 7 to 8 inches long; 14 to 16 rows of kernels. Medium-sized, golden-yellow kernels. Stalk grows 76 inches high. Resistant to bacterial wilt. A75, D26D, G1M, G13M, G83M, /59M, K10, M95M

South American Dynamite: (South American Giant) 100 days. Very large ears, 9 inches long. Kernels large, nearly round, orange-yellow. Creamy white when popped, mushroom-shaped, with a buttery flavor. Expansion rate 20 to 30 times volume. High yielding; 2 to 3 ears per stalk. *Bl, H54, K71, M32*

Tom Thumb:<sup>2</sup> 85 days. Small ears, 3 to 4 inches long. Small, smooth, golden-yellow kernels. Pops very well. Dwarf stalks, only 3 1/2 feet tall, will not shade other garden vegetables; 1 or 2 ears per pod. Very early; matures well in far northern areas. Refined from a genuine New Hampshire heirloom by Professor E.M. Meader, and Johnny's Selected Seeds. B75, D82, E24, F46, G6, J9M, J39, K10, K49M, L89

#### SWEET CORN

Kernels of sweet corn are easily recognized by their wrinkled exterior. Their sweetness is the result of a genetic defect in metabolism which prevents the sugars in the kernel from being completely transformed into starch. They require more favorable growing conditions than other types of corn. Mostly used as corn on the cob, they can also be allowed to mature on the plant, cooked, and used as "dried corn", or the dried seeds can be sprouted.

#### BI-COLOR

##### *Normal Sugary (F.)*

The standard sweet corns, they have moderate but varying degrees of sugar due to one or more of the sugary-1 (*su*) genes, depending on the cultivar. They are best used immediately after harvest, as their sugars convert to starch rapidly. Isolation is not required.

Bi-Queen: 92 days. Ears reach 8 to 9 inches long, with 14 to 16 rows of sweet, tender kernels; quality resembles Silver Queen. Attractive dark-green husks and long flag leaves. Plant grows 6 1/2 to 7 feet tall; tolerates Stewart's wilt and northern and southern corn leaf blights. Requires 60° F. soil temperature for germination. Silver Queen x Golden Queen. C20M, F6J, G71, G79, /59M, J97M, K10, K50, K71, L70, M29, M46, M95M

Burgundy Delight: 80 days. Ears average 7 to 8 inches long, with 12 to 14 rows of kernels; well-filled to the tip. Good yellow and white kernel pattern. Sweet and tender, even when past its prime. Burgundy stalks and husks. Stalk grows 7 feet tall, often with 2 good ears. Very popular mid-season cultivar. For home gardens, roadside stands and pick-your-own operations. D68, J20, K50

Butter and Sugar: 75 days. Medium-sized, tightly wrapped ears; 7 to 8 inches long, with 12 to 14 rows. Broad kernels; good yellow and white pattern; very sweet and tender, of good quality and flavor. Snaps easily. Dark green husk. Stalk grows 7 feet tall. Excellent cold tolerance and seedling vigor; good resistance to Stewart's wilt. A25, B6, C44, D65, F6J, G16, H21, H49, /59M, 184, J97M, K10, K50, M95M

Calypso: 82 days. Large, well-filled ears; 8 to 8 1/2 inches long, with 18 to 20 rows of kernels. Narrow, deep yellow and white kernels with excellent eating quality and fine appearance. Sturdy plant grows 7 to 8 feet tall; produces a high percentage of doubles. Becoming a standard for bi-colors, with quality rivaling Jubilee. *Al, C20M, F63, G13M, M29, M95M*

Harmony: 73 days. Medium-large ears, 7 to 7 1/2 inches long, well-filled to the tip with 12 to 14 rows of kernels. Narrow yellow and white kernels; tender and sweet with high quality. Deep green husks with plentiful flag leaves. Strong, upright plants with few tillers; show good seedling vigor. Developed for the second-early season. F13, M49

Honey and Cream: 78 days. Ears 6 1/2 to 7 1/2 inches long, with 12 to 14 rows of kernels. Bright kernels of white and yellow, very sweet and tender, of excellent quality. Long, tight husks provide good protection from earworms. Stalk grows 5 to 6 feet tall. Popular home garden cultivar. A25, B75, E97, G57M, G82, H33M, H49, H85M, J20, K10, N16

Honeymoon: 78 days. Large ears, 7 1/2 to 8 inches long, well-filled with 14 to 16 rows of kernels. Medium-sized, deep, yellow and white kernels; tender and sweet. Butter and Sugar quality on a larger, more attractive ear. Uniform plant height of 6 feet. Excellent germination and seedling vigor. Tolerant to maize dwarf mosaic virus and Stewart's wilt. B6, F65, K50

Sugar and Gold: 66 days. Medium-sized ears, 6 1/2 inches long; well-filled with 10 to 12 rows of tender, sweet kernels. Good for freezing. Plant grows 4 to 5 feet tall with few tillers; tolerates southern corn leaf blight. Performs well in cooler growing areas. Developed in 1942 by Agway and still popular in New England. A25, C44, D65, E97, K50

##### *Sugary Enhanced (F.)*

Also called Everlasting Heritage corns, these contain the sugary enhanced (*se*) gene which modifies the normal sugary (*su*) gene. The result is increased tenderness and, to a varying degree, sweetness. Conversion of sugar to starch is slowed. No isolation from "normal sweet corn is necessary to maintain quality.

Ambrosia: 75 days. High quality bicolor Bodacious type. Ears average 8 inches long with 16 rows of kernels. Exceptionally tender, flavorful, yellow and white kernels. Dark green husks, easy to pick. Homozygous type, 100% of the kernels on each ear being sugary enhanced. Good spring vigor. Somewhat tolerant of rust and smut. *Al*, A15Z, B6, C68M, F63, G13M, G82, H61, 191, J97M, K10, K50, K71, L42, M29, M46, M95M, N16, etc.

D'Artagnan: 64 days. One of the earliest maturing sugary enhanced bi-colors. Ears grow 7 1/2 to 8 inches long, with 14 to 16 rows of kernels. Narrow yellow and white kernels; tender and sweet with good holding ability. Superior quality for an early corn. Tight, dark green husks give good protection. Plant grows 5 to 5 1/2 feet tall. *Al*, B1M, C68M, D11M, F70, G13M, G82, 164, K10, K50

Delectable: 80-85 days. High quality bicolor Incredible type. Large, bulky, well-filled ears, 8 to 9 inches long; 16 to 18 rows of small kernels. Very sweet and tender. Homozygous type, 100% of the kernels on each ear being sugary enhanced. Dark green husk. Widely adapted, tiller-free plant. Good home garden variety. *Al*, A15Z, C68M, D26D, E97, F13, F63, G6, G13M, G82, H61, J97M, K10, K27M, K50, K73, L42, M29, etc.

Gold-N-Pearl: (Seneca Gold-N-Pearl) 68 days. Medium-sized ears, 7 to 7 1/2 inches long, with 12 to 14 rows of kernels; excellent tip cover. Attractive yellow and white kernels; very sweet, tender and flavorful. Homozygous type, 100% of the kernels on each ear being sugary enhanced. Dark green husks; provides better husk protection than others when stressed. Very good cold soil tolerance. Not tolerant to Stewart's wilt. B3M, TIM

Peaches & Cream: 68 days. Ears 7 to 7 1/2 inches long, with 14 to 16 rows. Kernels average 80% golden yellow, 20% white; very sweet, tender and flavorful. Remains sweet up to 14 days after maturity. Stalk grows 6 1/2 feet tall, produces 2 ears. Does well in short season areas. B73M, C85M, C92, D11M, D27, D76, F70, F92, G87, H54, H61, H85M, K10, K27M, M46, M95M, etc.

Quickie: 62-65 days Very early, good quality bicolor. Medium-small ears 7 to 7 1/2 inches long with 12 to 14 rows of kernels. Large, sweet, tender kernels. Heterozygous type, 25% of the kernels on each ear being sugary enhanced. Dark green ears with short flags. Short, sturdy plant, 4 1/2 to 5 feet tall. Good vigor in early, cool soil plantings. C68M, D11M, D68, E24, E97, F63, F70, G6, G13M, G57M, G82, H61, 184, K10, K50, M49, etc.

#### *Xtra Sweet* (F)

Also called Super Sweet, or Shrunken corn due to the effect of the shrunken-2 gene (*sh<sub>2</sub>*) on the appearance of the dry kernel. Its presence creates greatly heightened sweetness and very slow conversion to starch after harvest. Must be isolated from Normal Sugary or Sugary Enhanced corns, or both types will have tough, starchy kernels. M67{DF}

Candy Store: 80 days. High quality supersweet developed by Harris Seeds. Rated best in taste, appearance, yield and uniformity in a comparison test conducted by Organic Gardening magazine. Very good flavor and aroma; very pronounced sweetness. Good for freezing. Also rated better at the end of one week storage. Grows about 5 feet tall. F13, G93M, N52

Honey 'N Pearl: 82 days. Large, well-formed ear, 8 1/2 to 9 inches long; with 16 to 18 straight rows of kernels; excellent tip fill. Deep, glossy yellow and white kernels. Extra sweet and flavorful; rated high in All America taste trials. Excellent holdiqg ability. Sturdy, medium-tall plant. All America Selections winner in 1988. *Al*, B6, B75, F86, G27M, G82, H33M, H42, H49, H85M, H95, 191, K10, K71, M46, M95M, etc.

Ivoiy 'N Gold: 76 days. Large ear, 8 1/2 inches long, 1 3/4 inches in diameter; with 16 well-ordered rows of kernels; fair tip cover under stress. Especially attractive husked appearance. Bright kernels of ivory white and golden-yellow; extra sweet and tender. Tight,

medium green husks provide good earworm protection. Very similar to Honey 'n Pearl. F63, K10, M46

Seneca Appaloosa: 73 days. Refined ears with good tip fill, 8 to 8 1/2 inches long with 14 to 16 rows of kernels. Very sweet and tender, eating quality very good. Dark green husks with excellent, attractive flags. Good cold germination and seedling vigor. Stocky, tiller-free plants. Recommended for home gardens and fresh markets. *Al*, D26D, D65, F63, G13M, H61, 164, K10, K50, K73, L42, L89, L91M, M29, M49, etc.

Twice-As-Nice: 78 days. Large ears, about 8 inches long, well-filled to the tip with 14 to 16 rows of kernels. Bright yellow and white kernels; tender, extra sweet. Holds for an exceptionally long period, on or off the stalk. Tight, dark green husks. Plant grows 7 1/2 to 8 inches tall with few tillers; tolerates Stewart's wilt and southern corn leaf blight. F63, K50

#### *Open-Pollinated*

Double Standard: First open-pollinated bi-color sweet com. Somewhat variable ears, 7 inches long, with 12 to 14 rows of yellow and white kernels; some ears with yellow kernels only. Better than average flavor and tenderness. Early maturing, with unusually good germination in cool soil. Developed by Johnny's Selected Seeds for northern home gardeners, especially seed saving enthusiasts. E59Z, G6, M32

#### ***BimimACErsmim***

Black Aztec: (Aztec) 75 days. Medium-sized ears, 7 to 8 inches long, with 8 to 10 rows of kernels. Kernels bluish-black when mature. Used as corn-on-the-cob or roasting ears in the white-kernel stage. Ground into a sweet, bluish-black cornmeal when dry. Stalk grows 5 1/2 to 6 feet tall, produces 2 ears. Reportedly grown by the Aztecs 2,000 years ago. A2, B49, C20M, C82, D26G, D56M, I99M, J73, K23, K46T, K49T, K49Z, L3J, M65

Black Mexican: 85 days. Slightly tapered ear, 7 to 8 inches long, with 8 rows. Kernels white at milk stage, changing to bluish-black in the late edible and dry stages; tender, very sweet and flavorful. Medium-tall plant; height 5 1/2 to 6 feet; often bears 2 ears per stalk. Very hardy and weather tolerant. Introduced prior to 1865. TAPLEY 1934; B75, K20M, K71, L7M

Hooker's Sweet Indian: 75- 85 days. Long, thin ears, 5 to 7 inches in length. Fine flavor in white-kernel stage, either fresh or frozen. Kernels bluish-black when mature. Makes a very sweet cornmeal. Stalk grows 4 to 4 1/2 feet tall, produces 2 to 3 ears. Originally obtained by Ira Hooker, over 50 years ago near Olympia, Washington. A2, F73D, K49T, L11, L13M, L89

Midnight Snack: 81 days. Ears 7 to 7 1/2 inches long, with 14 to 16 rows. Kernels wide; ivory white and sweet at milk stage, bluish-black when dry. Makes an excellent sweet cornmeal. Sturdy plant; height 5 1/2 feet. Developed by Professor E.M. Meader at the University of New Hampshire; selected from Black Aztec. A2

#### **MULTI-C.OLORED**

Bronze-Orange: 90 days. A combination of the old traditional American Indian cultivars Tarahumara Sweet, Guaymas Orange and Faro Chilean. Yellow, orange and red kernels. Short plants, 3 to 4 feet tall, with 3 to 5 ears per stalk. Bears well under variable conditions. Very rare. C95

Rainbow Inca: 85 days. Rare sweet corn with visually attractive cobs and multicolored seeds. Purple, red, yellow, white and blue kernels, paler in the fresh eating stage. Good as fresh com, either raw or cooked. Stout, robust stalks, 8 to 10 feet tall. Developed by Alan Kapuler from crosses of a large, white flat-seeded Peruvian Indian chokelo variety, multicolor Southwest Indian corns, and heirloom sweet corn A2, B49, C95, D29P, I99M, K23, K46T, K49T, L3J, L11, L55J, L77D, N84

Triple Play: 70-80 days. Unique, short-season sweet corn that produces tri-colored multiple ears—white, yellow and blue. Good, sweet flavor. Medium-sized stalks, to 6 feet tall. Grows well early in the season. Tolerates cool soil. Developed by John Sundquist of River's Tim Farm. K49T

#### RED-KERNELED

Guarjio Red: 90-120 days. Slender ears with red kernels. Very unusual. Grown only in summer in low hot desert areas. Sown with the summer rains. In temperate regions, sow in late May or early June. F73D, 116, N84

Mandan Red Nuetta: 85 days. Short ears, 5 to 6 inches long, with 10 rows of kernels. Kernels reddish-brown with yellow at the crown; hard when mature. More often used as a roasting corn rather than a fresh green corn. Easily ground into flour; the fur traders dried this variety for winter provisions. Very short stalk, 2 1/2 to 4 feet tall. A primitive, genetically variable, low yielding corn. Originated in the 19th century or earlier. C95, F73D, IIG{OR}, LI 1

#### WHITE-KERNELED

##### *Normal Sugary (F<sub>1</sub>)*

Baby:<sup>1</sup> (Miniature) Tiry, finger-like ears; tender and delicately flavored. Best when harvested within 5 days of the appearance of silks. The husked and desilked ear, cob and all, is used in stir-fry dishes, vegetable salads and as pickles. Commonly found canned in Oriental and specialty markets, occasionally available fresh. C82, D55, E97, H49, N40{PR}

Baby Asian:<sup>1</sup> Medium-sized plant; bears 2 or 3 ears per stalk if plants are thinned to 12 inches apart. Grown as ordinary corn, but harvested 2 or 3 days before or after silk emergence, usually when 4 inches long and about 1/2 inch in diameter. Lower ears are commonly harvested for "baby corn", while the top ear can be left to mature for corn-on-the-cob. C20M, Q34

Quicksilver: 75 days. Medium-sized ears, 7 to 7 1/2 inches long, filled to the tip with 14 to 16 rows of kernels. Small, tight, pearl-white kernels; tender and sweet with very good flavor. Quality similar to Silver Queen, but matures 2 weeks earlier. Sturdy, erect, high yielding plants. Strong germination and seedling vigor in cold soil. G1M, H85M

Silver Queen: 88 days. Ears 8 to 9 inches long, with 14 to 16 rows of straight kernels; good tip cover. Kernels snow-white, very sweet and tender. Holds for several days without losing quality. Stalk grows 7 1/2 to 8 feet tall. Widely adapted. Tolerant to bacterial wilt and northern and southern leaf blights. Most popular white sweet corn in the United States. A25, C44, G6, G71, G79, H21, H61, 164, J97M, K10, K50, K66, K73, L10, M46, etc.

Silver Treat: 85 days. Ears reach 8 to 8 1/2 inches long, with 16 rows of kernels. Small, deep kernels of excellent eating quality that closely resembles that of Silver Queen. Medium green husks with short flag leaves. Vigorous plants, 7 to 8 feet tall with few tillers; produce a high percentage of 2 marketable ears per stalk. Good seedling vigor in cold soils. Resistant to Stewart's wilt and southern corn leaf blight. F63, J97M

Stardust: 70 days. Very attractive ears, 7 to 7 1/2 inches long, with 14 to 16 rows of kernels. Small, pearl-white kernels with a high luster; tender and sweet with excellent eating quality. Dark green, clasping husks. Sturdy plants, 5 to 6 feet tall, with moderate tillering. Resistant to Stewart's wilt and southern corn leaf blight, susceptible to drought. Excellent germination and seedling vigor in cold soils. F63, 191, K50

White Sunglow: 68 days. Medium-sized, moderately tapered ears, 7 to 7 1/2 inches long; well-filled to the tip. Sweet, tender, snow white kernels of excellent quality. Vigorous, productive plants, 8 to 9 feet tall. One of the earliest white corns. Recommended for short season areas, or as a first crop corn in more temperate regions. B75

##### *Sugary Enhanced (F<sub>2</sub>)*

Argent: 86 days. High quality white version of Incredible. Large, uniform ears, 8 1/2 to 9 inches long with 14 to 16 rows of kernels. Very sweet and tender; excellent old-fashioned corn flavor. Heterozygous type, 25% of the kernels on each ear being sugary enhanced. Good cold soil vigor and superior husk protection. Tolerant to Stewart's wilt. *Al*, A15Z, C68M, G6, G13M, G82, H49, H61, H85M, J97M, K10, K27M, K50, K73, L42, M29, M95M, N16, etc.

Platinum Lady: 80 days. Ears average 7 1/2 to 8 1/2 inches long, with 14 to 16 rows of kernels; good tip fill. Narrow, deep, white kernels; very sweet and tender, good flavor, of high quality. Heterozygous type, 25% of the kernels on each ear being sugary enhanced. Green husks, attractively tipped with buigundy. Ships well. Sturdy plant, to 6 1/2 feet tall. Good tolerance to rust, northern corn leaf blight and drooght. Very popular. B75, B75M, C44, E24, G93M, 139, J20, K71, M46

Silver King: 80 days. Improved sugary enhanced version of Silver Queen. Large, uniform ears, 8 to 8 1/2 inches long; 16 to 18 rows of snow-white kernels. Tender and sweet with good corn flavor. Homozygous type, 100% of the kernels on each ear being sugary enhanced. Good tip fill and husk protection. Widely adapted plant with multiple disease tolerance. C85M, D26D, F63, G13M, G57M, H61, H95, 191, J84, J97M, K10, K50, K73, L42, M46, M95M, etc.

Silverado: 79 days. Slightly tapered ears, 7 to 8 inches long, with 16 rows of kernels. Snow-white kernels; very sweet and tender with excellent flavor. Good for freezing. Very good husk appearance. Vigorous plant; height 6 to 7 feet; tolerant to Stewart's wilt. Excellent cold soil germination. C20M, D26D, F13, G1M, G93M, J97M, N52

White Knight: (Seneca White Knight) 74 days. Large, well-filled ears; 8 to 8 1/2 inches long, with 14 to 16 rows of kernels. Tender, very sweet kernels that hold their quality longer than other sugary enhanced types. Tight husks with excellent dark green flag leaves. Vigorous plant with one tiller; grows 7 1/2 feet tall; partially resistant to Stewart's wilt. *Al*, F65, G16, G79, G83M, H61, M29

##### *Xtra Sweet (F<sub>2</sub>)*

How Sweet It Is: 87 days. Slightly tapered ear, 8 inches long, containing 18 to 22 rows of kernels. Kernels pearl-white; tender, crisp, exceptionally sweet. Excellent holding ability, both on the stalk and in storage. Good for all purposes. Widely adapted plant, to 6 1/2 feet tall; produces 2 ears per stalk. Tolerant to Stewart's wilt. All America Selections winner in 1986. D74B, G71, G82, H61, H85M, H95, 139, J97M, K10, M46, M95M, N16

Snowbird: 75 days. Medium-large ears, 7 to 8 inches long, with 16 rows of kernels. Tender, juicy white kernels, extra sweet. Very good dark-green husk color, flags and tip fill. Sturdy, very vigorous plant, about 6 feet tall. Popular, widely adapted cultivar. Recommended for home garden, roadside markets or shipping. F63, G1M, G71M, H61, K10, K50, K73, L42, M29

##### *Open-Pollinated*

Adams Early: 70 days. Large, heavy ears, 6 to 7 inches long with 12 to 14 rows of kernels. Large, deep, white kernels that lack the sweetness of true sweet corns; quality good when harvested at the correct stage of maturity. Husks very tightly wrapped, difficult to remove. Vigorous, productive plants; height 5 1/2 to 6 feet; tillers entirely absent. Introduced prior to 1848. BURR, TAPLEY 1934; G57M, K49M

Art Verrell's: 60 days. Very tender white ears, about 6 1/2 inches long. Selected for over 30 years by Art Verrell of Oregon for cold-soil germination, earliness, uniformity and fine eating quality. Grows to about 4 1/2 feet tall. Discovered and introduced by Peters Seed & Research. E24, J9M, K49M

Country Gentleman: (Shoe Peg) 95 days. Medium-sized, tapered ear, 8 to 9 inches long, with irregularly spaced kernels. Kernels white, deep, very long and narrow; sweet, tender, milky, of good quality. Good fresh, frozen and canned; popular for cream-style corn. Moderately heavy stalk, 7 to 7 1/2 feet tall, often produces 2 ears. Originated in Orange, Connecticut by Frank C Woodruff. Introduced in 1890. TAPLEY 1934; A2, B49, B75, D26D, F24M, F73D, G57M, H85M, 164, J73, K49M, K71, L7M, L10

Early Pearl: 84 days. Moderately short, nearly cylindrical ears, 5 to 7 inches long with 10 to 12 rows of kernels. Small, shallow kernels; very sweet and tender, of good quality. Husks loosely wrapped and easily removed. Very productive plant with numerous tillers; height 5 1/2 to 6 1/2 feet. Introduced in 1932 by Charles C. Hart Co. TAPLEY 1934; U14

Evergreen Early: 96 days. Very old traditional cultivar, selected for earliness from Stowell's Evergreen. Ears 7 to 8 inches long, with 16 to 18 rows of kernels. Deep, medium-broad white kernels; tender, sweet and rich. Good for home gardens, local markets and canning. Heavy stalk, 8 to 9 feet tall; tillers few. TAPLEY 1934; K20M

Howling Mob: 80-85 days. Ears 7 to 9 inches long with 12 to 14 rows of kernels. Thin-skinned, tender white kernels, juicy, very sweet and rich. Extremely thick husks are excellent for wrapping dumplings and com bread. Named after the crowd of customers who clamored for the ears when the originator brought them to market. Originated by C.D. Keller of Toledo, Ohio. Introduced in 1905 by W. Atlee Burpee. TAPLEY 1934, WEAVER 1997; E5T, K71

Luther Hill: 75-80 days. Stalk grows 5 to 5 1/2 feet tall; produces 2 to 3 ears, 3 to 6 inches long. Excellent, extra sweet, old-fashioned flavor. Fresh ears sell for \$3 per dozen in New Jersey. One of the parents of Silver Queen; used by breeders to impart exceptional flavor to hybrid sweet corn. Can be grown as far north as Ontario. Very weak vigor; not recommended as a main crop com. Originated in Andover, New Jersey in 1902. C95, D68, E5T, G44M, F73D, J39, K20M, K46T, L11, L13M, L88J, N24M

Norfolk Market: (Tait's Norfolk Market) 74 days Very large ears, 9 to 10 inches long, with 12 to 14 rows of pearly white kernels that have excellent quality. Plant grows 6 to 7 feet tall; usually produces 2 ears. Largely grown by home and market gardeners from Norfolk to Florida. Introduced by Tait Seed Company of Norfolk, Virginia. K71

Six Shooter: 80 days. Novelty corn. Slender ear, with 10 rows of kernels. Small white kernels; solid, meaty and tender, of good flavor. Excellent for freezing. Dried kernels can be used for hominy and commeal. Tall, vigorous plant; produces as many as 6 good ears per stalk. D76, E5T, E97, K20M, K71

Stowell's Evergreen: 90 days. Slightly tapered ear, 8 to 9 inches long, with 16 to 18 rows. Kernels silver-white at milk stage, sweet and tender. Retains its fresh quality for an extended time. Ripens over a long period. Popular for home gardens, local markets and canning. Stalk grows 7 1/2 to 8 feet tall, produces 1 or 2 ears. One of the oldest sweet corns still in existence. Originated in Burlington, New Jersey prior to 1848. BURR, TAPLEY 1934; B49, B75, D26D, E97, F73D, G57M, H85M, I99M, J73, K27M, K49M, L7M, L10

True Platinum: 80 days. Long slender ears, 8 to 9 inches in length, wrapped with attractive burgundy-purple husks. Sweet, tender very flavorful kernels, in 10 to 14 rows. Medium-sized stalks, 5 to 7 feet tall, produce 2 ears per stalk. Fairly resistant to blight, rust and drought. Open-pollinated strain of Platinum Lady. Developed by Alan Kapuler. Introduced by Seeds of Change. K46T, K49T, L3J, L94

White Sugar: 80 days. The first open-pollinated super sweet corn. Produces 1 or 2 plump ears, 7 to 8 inches long. Germinates well in cool soils. Widely adapted. Contains the shrunken-2 gene (*sh<sub>2</sub>*),

therefore needs to be isolated from regular sweet corns. Developed for home gardeners by Tim Peters. J9M

### YELLOW-KERNELEP

#### *Normal Sugary (F)*

Earlivee: 55 days. Medium-sized ear, 6 1/2 to 7 inches long, with 12 to 14 straight rows; good tip fill. Large, golden-yellow kernels, of good flavor. Medium green husks. Short plant; height 5 feet; produces very few tillers. Very popular early maturing cultivar for the northern United States and Canada. D11M, D65, E24, F70, F92, G6, G82, H95, K10, K50, L42, L79, M49

Early Sunglow: 63 days. Attractive ears, 6 to 7 inches long, with 12 rows of kernels. Deep, medium-yellow kernels; sweet and tender. Green husks, lightly streaked with purple. Stalk grows 5 to 6 feet tall; often produces 2 ears; tolerant to bacterial wilt. Good seedling vigor in cold weather. B75, D65, D82, F82, G83M, H49, 139,191, K10, K50, K71, M46

Golden Beauty: (Early Giant Golden Bantam) 65 days. Slightly tapered ear, 7 to 8 inches long, with 14 rows of kernels; good tip fill under stress. Kernels of medium width and depth, sweet and tender. Dark green husks. Stalk grows 5 to 6 feet tall; resists wilt. Recommended for home gardens and early markets. All America Selections winner in 1955. A15Z, B75M, C69, D65, G79, G87, H95,184, K10, K27M

Golden Cross Bantam: 85 days. Uniform ears, 7 1/2 to 8 inches long, with 10 to 14 rows. Large, deep, rich yellow kernels of good quality. Excellent for market growers and well adapted to freezing and canning. Sturdy stalk; height 6 feet; very prolific. Highly resistant to bacterial wilt. 475, B3M, B73M, B75, F82, G79, G83M, K10, L10, M46, N16

Golden Queen: 88 days. Yellow version of Silver Queen. Uniform ears, 7 to 9 inches long, with 14 to 16 rows; excellent tip fill. Golden yellow kernels, very sweet and tender, of *high* quality. Very dark green husks and flag leaves. Stalk grows 7 to 9 feet tall. Tolerant to northern and southern leaf blights. Especially suited for the South. D65, G27M, G71, G79, G93M, H54,191, J97M, K10, K50, K71, L10, M95M

Iochief: 89 days. Ears 9 to 10 inches long, with 14 to 18 rows. Uniform, deep, golden-yellow kernels; good "real corn" flavor. Excellent fresh, frozen or canned. Sturdy stalk; height 6 to 7 feet; produces 2 ears. Drought resistant. All America Selections winner for 1951. Rated highest overall in a reader poll conducted by Organic Gardening magazine. A15Z, 475, B6, B73M, D65, D76, G82, H33M, H85M, H95, K10, K50, K71, M46, M95M, etc.

Jubilee: (Golden Jubilee) 83 days. Large ears, 8 to 9 inches long, with 16 to 20 rows. Deep, narrow kernels; sweet, tender, flavorful, of *hgh* quality. Holds quality well, both on the stalk and after picking. Excellent fresh or for processing. White inner silk. Strong, sturdy stalks; height 7 to 7 1/2 feet. Extremely popular and very widely adapted. A25, B73M, D65, D74B, F82, G16, G79, H95, 164, K10, L13M, L89, M46, N52

Merit: 80 days. Large, heavy ears, 8 to 9 inches long; with 16 to 18 rows of kernels and well-filled tips. Kernels bright yellow, deep and narrow, tender and sweet with good flavor. Vigorous, productive, widely adapted plants; height 7 feet. Rapidly becoming the favorite yellow corn in the South. A27M, G57M, G79, H61, H85M, 191, J97M, K10, K50, K71, M46, M95M, N16

N.K. 199: 80-85 days. Large ears, 8 inches long and with 18 to 20 rows. Deep, tender, very flavorful, golden-yellow kernels. Excellent fresh, canned or frozen. Strong, easy to pick plants, 6 to 7 feet tall. Versatile, very popular standard cultivar. Good for home gardens, roadside stands or shipping. Developed by Northrup King. A15Z, C20M, F63, G13M, G57M, G79, H85M, H95, /59M, K10, K50, M95M

**Polarvee:** 53-58 days Very early, cold weather corn. Recommended for northern regions where other varieties have difficulty maturing. Can also be used in other areas for extra early crops. Small, well-filled ears, 5 1/2 to 6 1/2 inches long; 12 rows of tender kernels. Good flavor for an early variety. Good cold soil emergence and seedling vigor. C97, DI 1M, D26D, D27, D76, E24, E97, F70, H42, M49

**Seneca Horizon:** 65 days. Large ears, 9 to 10 inches long, with 16 to 18 rows; good tip fill. Bright yellow kernels, tender and sweet. Superior eating quality compared to other early cultivars. Good seedling vigor and cold tolerance. Rapid-growing stalks; height 5 to 5 1/2 feet. Suitable for home garden, roadside and commercial use. Excellent for short-season areas. A16, A25, B75M, E24, FI, G16, G82, H85M, K10, K50, L89, M49, N16

#### *Sugary Enhanced (FJ)*

**Bodacious:** 75 days. Ears average 8 inches in length, with 16 rows of kernels well filled to the tip. Deep, golden-yellow kernels; very sweet and exceptionally tender. Homozygous type, 100% of the kernels on each ear being sugary enhanced. Flavor and tenderness hold well after harvest. Excellent for roadside stands and shipping. A1, B6, B1M, C68M, G13M, G82, G87, H85M, J84, J97M, K10, K50, K73, L89, M46, N16, N52, etc.

**Incredible:** 85 days. An improved Miracle type, with taller plants and higher yields. Ears average 8 inches in length, with 20 rows of kernels and well-filled tips. Exceptionally tender, very sweet kernels with real com flavor. Homozygous, 100% of the kernels on each ear being sugary enhanced. Good husk protection and better tip fill than Miracle. Stalks grow 6 1/2 to 7 1/2 feet tall. Has multiple disease resistance. A1, B6, C68M, F63, G13M, G82, G93M, H49, H61, H85M, J20, J84, J97M, K10, K50, K73, M95M, N52, etc.

**Kandy King:** 73 days. Very early, high quality Kandy Korn type. Large, uniform, well-filled ears; 7 1/2 to 8 1/2 inches long, with 16 to 18 rows of kernels. Extra sweet and tender, golden-yellow kernels. Homozygous, 100% of the kernels on each ear being sugary enhanced. Dark green husks with pink silks. Grows 6 to 7 feet tall. B6, C85M, D26D, D68, D76, E24, E97, G13M, G16, G71, H61, J97M, K10, K71, K73, M46, M95M, etc.

**Kandy Korn:** 89 days. Very uniform ears, 8 inches long, with 16 to 18 rows. Golden yellow kernels; tender, extremely sweet. Holds sweetness for 10 to 14 days after harvest. Heterozygous type, 25% of the kernels on each ear being sugary enhanced. Excellent for freezing and canning. Attractive purple-striped husks; burgundy red stalks. Height 8 to 9 feet. Very good seedling vigor. Adapted to a wide range of climates. A27M, B73M, B75M, D68, D82, F82, G16, H61, J97M, K10, K66, L89, M46, N16

**Miracle:** 84 days. Large well-filled ears, 8 1/2 to 9 1/2 inches long, 16 to 20 rows of kernels. Large, light golden-yellow kernels; very sweet and tender. Retains sweetness up to 2 weeks after reaching maturity. Homozygous type, 100% of the kernels on each ear being sugary enhanced. For home gardens, local markets, shipping and processing. White silks. Height 6 to 6 1/2 feet. Good tolerance to rust. B6, B75, C68M, D65, E63D, G82, G93M, H61, H85M, H95, I39, K10, L89

**Sugar Buns:** 70 days. Ears 7 to 7 1/2 inches long, with 14 rows of kernels. Relatively narrow, deep, medium-yellow kernels, very sweet and tender. Remains tender for up to 2 weeks in the field. Homozygous type, 100% of the kernels on each ear being sugary enhanced. Tight, dark green husk; good flag leaves. Short, sturdy plant. Recommended for home gardens, roadside stands and short-distance shipping. A1, B6, C44, D68, E24, G6, G79, G82, H61, H95, J84, K10, K73, L89, N16

**Tendertreat:** 95 days Well-filled ears, 9 inches long, with 16 to 18 rows. Light golden-yellow kernels; sweet, tender and flavorful. Long-lasting sweetness allows for a longer harvest period. Suitable for home gardens and local markets. Attractive purple stalks; purple

and green husks. Good seedling vigor. Large plants; height 9 to 10 feet. D26D, D76, F63, G13M, H33M, H85M, I64, K10, M29

#### *Xtra Sweet (FJ)*

**Crisp 'n Sweet:** 87 days. Large ears, 9 to 9 1/2 inches long, with 18 to 20 rows of yellow kernels. Has twice the sugar content of regular sweet com. Holds its quality for up to 2 weeks, on or off the stalk. Height 7 feet. Resistant to northern leaf blight; tolerant of Stewart's wilt. B75M, C20M, C68M, D12, F63, G1M, G79, N16

**Early Xtra-Sweet:** 71 days. Same high quality as Illini Xtra-Sweet, but about 2 weeks earlier. Uniform ears, 7 to 9 inches long, with 12 to 16 rows of kernels. Small golden-yellow kernels, extra sweet and tender. Vigorous plant; height 5 to 6 feet; produces few suckers. All America Selections winner in 1971. B6, B75, D11M, D65, D76, E63D, F70, G16, H33M, H49, I59M, K10, K27M, K71, M46, etc.

**Florida Staysweet:** 84 days. Uniform well-filled ears, 7 to 8 inches long, with 14 to 18 rows of kernels. Refined golden-yellow kernels, tender and extremely sweet. Good husk protection and appearance. Very good seedling germination and vigor. Does well in northern areas. Widely used for commercial shipping and freezing. D1T, D12, F86, G27M, K71, M46, TIM

**Frosted Gold:** (Xtra-Sweet 82) 72 days. Large, uniform ears, 9 inches long. Narrow, golden-yellow kernels; tender and extra sweet with very good flavor. Long holding ability. Superior husk cover ensures minimum insect damage. Excellent germination and seedling vigor. Developed by Illinois Foundation Seeds as an early maturing companion to Illini Xtra Sweet. F63, F86, G13M, G79, G82, H85M, I64, M95M

**Illini Xtra-Sweet:** (Illinichief Xtra-Sweet) 85 days. The original Xtra-Sweet hybrid. Twice as sweet as other hybrids at harvest time, four times as sweet 48 hours later. Large ears, 8 inches long, with 14 to 18 rows. Rich golden-yellow kernels, extra sweet and tender. Excellent fresh, frozen or canned. Height 7 feet. B1, B6, B75, D65, F86, G82, G93M, H33M, H49, H61, I59M, K10, K71, M46, M95M, etc.

**Minor:<sup>1</sup>** 64 days. Extra sweet variety specially bred for the production of "baby" com. Begins bearing in mid-summer when plants are only 20 inches tall, each plant producing 4 to 6 cobs. Best picked when 2 1/2 to 3 inches long, before the grains begin to swell. Very popular in Chinese restaurants and gourmet cuisine. L91M

**Northern Xtra-Sweet:** (Northern Supersweet) 67 days. Earliest maturing yellow Xtra-Sweet hybrid. Large ears, 8 to 9 inches long, with 16 rows of extra sweet kernels. Attractive unhusked appearance, with dark green husks and long flag leaves. Good seedling emergence and vigor under cool, wet soil conditions. Short, sturdy plant; height 5 feet. D1T, D27, D65, F86, G6, G16, H42, I67M, K10, L42, L79, M46

**Sugar Loaf:** 83 days. Ears 8 inches long, with 16 rows of kernels. Deep, narrow kernels, very sweet and tender. White silk. Relatively strong seedling vigor. Stalk 6 feet tall, produces 2 ears; few suckers. Resistant to rust; tolerant to northern leaf blight and maize dwarf mosaic. For home gardens, fresh market and processing. B6, C20M, F63, G13M, G79, G87, G93M, H85M, H95, N16

**Super Sweet Jubilee:** 83 days. Supersweet version of the popular Jubilee cultivar. Combines the ear shape and eating quality of Jubilee with extra sweetness. Large, attractive ears, 8 to 9 inches long and with 16 to 18 rows of kernels. Refined, smooth, tender kernels. Rated very highly for flavor. Holds well on and off the plant. Sturdy, 8 foot plants. C20M, D76, G13M, G16, G93M, H61, I39, L89, N52

#### *Open-Pollinated*

**Ashworth:** 75 days. Selected from a composite of numerous early cultivars. Ears 6 to 7 inches long, well-filled with 12 rows of kernels. Kernels bright-yellow, of excellent flavor. Matures with early

hybrids. Stalk grows about 5 feet tall. Developed by Rob Johnston Jr. of Johnny's Selected Seeds. A2, D68, E24, F46, F73D, G6, I39M, J25M, J39, K20M, K49M, L7M, M27

Early Golden Bantam: (Extra Early Golden Bantam) 70 days. Very uniform ears, 6 to 7 inches long, with 8 rows. Kernels bright golden-yellow, sweet and flavorful, of very good quality. Short, vigorous high-yielding plants; height 5 to 6 feet. A25, A75, B78, C69, C85M, D27, F44, G16, G87, I64

Fisher's Earliest: 60 days. One of the earliest open-pollinated sweet corns. Ears 5 to 6 inches long, with 8 to 12 rows of kernels, thin cob. Golden-yellow kernels, very sweet, tender, flavorful. Good for freezing and canning. Short, vigorous plant; height 5 feet; tolerates frost. Developed by Fisher's Garden Store. D82, F44, L3J

Golden Bantam: (Golden Bantam 8 Row) 75 days. Slender ears, 6 to 7 inches long, with 8 uniformly straight rows. Large, broad kernels; sweet, tender, very flavorful. Stalk slender, 5 to 5 1/2 feet tall, often produces 2 ears. Still the most popular open-pollinated yellow sweet corn. Introduced by W. Atlee Burpee Company in 1902. TAPLEY 1934; B49, B75, B75M, E59Z, F80, F92, G57M, G71, H33M, K49T, L7M, L13M, Q18, R47

Golden Early Market: (Gill's Early Golden Market, Golden Market) 68 days. Slightly tapered ear, 6 to 7 inches long, with 10 to 12 rows. Kernels golden-yellow, moderately deep, of good flavor. Slender stalk, 4 1/2 to 5 feet tall; occasionally produces 2 ears. Originated in Portland, Oregon by Gill Brothers Seed Company. Introduced in 1925. TAPLEY 1934; G87

Golden Midget:<sup>2</sup> 68 days. Tiny ears, about 4 inches long, with 8 rows of kernels. Golden-yellow kernels; sweet, tender, flavorful. Very good fresh; ideal for packing in freezer containers. Dwarf plant; height 2 1/2 to 3 feet; produces 3 to 5 ears per stalk. Well-suited to small gardens. A2, F73D, G68, J25M, K49M, K49T, K71, M46

Golden Sunshine: (Sunshine) 68 days. Slightly tapered ear, 7 to 8 inches long, with 10 to 12 rows of kernels. Light yellow kernels, moderately broad and medium deep; tender and sweet. Stalk 5 to 5 1/2 feet tall. Originated by A.F. Yeager of the North Dakota College of Agriculture. Introduced in 1926. TAPLEY 1934; U14

Hawaiian Supersweet #9: 80 days. Bred in Hawaii specifically for warmer climates. Has tighter husks to resist borer entrance and is resistant to corn stripe mosaic. Retains its sweetness for 7 to 10 days after harvest without refrigeration. M32M

Improved Golden Bantam: (Golden Bantam 12 Row) 75 days. Medium-sized, slightly tapered ear; 6 to 7 inches long, with 10 to 14 rows. Kernels deep, light yellow; tender and sweet. Stalk slender, 4 1/2 to 5 feet tall, often produces 2 ears; tillers numerous. Introduced in 1922 by the Everett B. Clark Seed Company. TAPLEY 1934; A2, G57M, H85M, H95, I64, K20M

Lorrie: 68-70 days. Open pollinated super sweet corn. Uniform yellow ears, 7 inches long, with 14 rows of tender kernels. Contains the shrunken-2 gene (*sh<sub>2</sub>*), therefore needs to be isolated from regular sweet corns. Grows 5 to 5 1/2 feet tall. Developed for home gardeners by Tim Peters. J9M

Montana Bantam: 65 days. An extra early strain of Golden Bantam developed by Fisher's Garden Store. Ears 6 to 7 inches long, with 8 rows of deep golden kernels of very good flavor and quality. D82

Orchard Baby: 60-65 days. Heirloom sweet corn that matures as early as any hybrid. Small golden ears, 4 to 6 inches long, well filled with juicy kernels. Fine, sweet flavor. Small plants, 3 to 5 feet tall; 1 to 3 ears per plant. Excellent germination and production under cool weather conditions. Introduced by the old Oscar Will Seed Co. B49, K20M

True Gold: 80 days. Large, plump ears, 8 to 8 1/2 inches long. Golden-yellow kernels with excellent flavor. Maintains its sweet-

ness well. Productive medium-tall plant, to 6 or 7 feet, resists lodging. Dependable new cultivar introduced by Seeds of Change. Developed by Alan Kapuler. A2, 199M, K46T, K49T

#### CODES FOR SPECIAL TYPES

1. Baby
2. Dwarf
3. Parching

## CORN SALAD {S}

### VALERIANELLA LOCUSTA

A Grosse Graine: (Large-Seeded Round, Ronde a Grosse Graine) 45 days. A strong-growing type, differing from common com salad in the greater size of the plant, and also of the seed, which is nearly twice as large as other kinds. Large, comparatively narrow, grayish-green leaves; thin and very tender. Early maturing. Grows better in warmer weather than small-seeded types. Widely grown in Europe. Introduced prior to 1865. BURR, VILMORIN; E63D, G68, I77, J20, J73, K49M, N84, S95M

Coquille de Louviers:<sup>1</sup> (Scallop of Louviers) 40-45 days. Small, attractive, spoon-shaped, glossy-green leaves. Very fine flavor. An autumn and winter grower; plant in September for harvesting December through March. May be harvested sooner for "baby mache". Unique cupped leaves catch the dressing when fixed up in a salad. C53, E63D, N81, N84

Elan:<sup>1</sup> Small, glossy, smooth, very attractive leaves. Small, upright plant habit makes it one of the best choices for "baby mache". Resistant to mildew, making it ideal for fall and winter crops where conditions are cold and wet. C53, N81

Gala: 70-80 days. Improved Verte d'Cambrai type. Now the most widely marketed cultivar in France due to its greater vigor, earliness and cold tolerance. Attractive, oval, deep-green leaves, 4 to 5 inches long; delicate, buttery texture and rich flavor. Good resistance to mildew. Usually sown in late fall for overwintering. K66, P59M

Grote Noordhollandse: (Large Seeded Dutch, Large Dutch) 50 days. Large, rounded, lush, dark-green leaves. Very early and productive. Most suited for warm winter areas as it cannot tolerate frost; normally planted no later than mid-August for harvesting in October and November. Will germinate under warmer temperatures than other sorts. An old heirloom European strain. G68, I39, P59M

Large Round Leaved: Leaves larger, of a deeper green color, thicker, and more succulent than those of common corn salad. The leaves are most tender, and should be cut for use while young and small. Introduced prior to 1865. BURR; C85M, D68, K71, R32, S55

Ronde Maraichere: (Round-Leaved) An heirloom French cultivar which has very distinct short, oval, almost rounded clear-green leaves. Growth is half-erect, instead of spreading, making harvest easier during wet weather. Productive and of rapid growth. Widely grown by market gardeners around Paris. VILMORIN; C20M, G68

Topaze: Late maturing type with very attractive, rounded, blonde-colored leaves. Excellent resistance to cold winter temperatures. Very heavy yielding. Relatively new cultivar developed in Europe. P59M

Valgros: 45 days. Refined, large-leaved type. Large, elongated medium-green leaves. Vigorous and productive. Often sown in early September for harvesting in winter and spring. Can also be used as a green manure. Originated in the Netherlands where it is sometimes grown as a greenhouse crop. D11M, F70, L89, Q11M, R11M, S95M

Verte a Coeur Plein: (Green Full Heart, Dark Green Full Heart, Cabbaging) 40-45 days. A very distinct type with short, roundish, smooth, half-erect, stiff and intensely green leaves. Forms a compact rosette, the heart of which is full and firm. Very agreeable flavor. Holds its quality well when shipped. Very winter hardy. Introduced prior to 1885. VILMORIN; P59M

Verte d'Cambrai:<sup>1</sup> (Green Cambrai) 60 days. Compact plant. Small, round to oval, flat, dark-green leaves; 3 to 4 inches long; tender and mild in flavor. High yielding and pest-resistant. Very cold tolerant; best planted in October and harvested February through March. May be harvested sooner for "baby mache". Standard cultivar in France and Germany. A2, B49, D68, E24, E63D, F44, G68, I39, J20, K49M, L42, Q34, R32, S55, S95M

Verte d'Etampes: (D'Etampes) Rosette somewhat more compact and stiff than common corn salad. Leaves extremely dark-green in color; rather narrow, and often undulated or folded back at the edges; veins prominent; much thicker and fleshier than those of other cultivars; maintain their freshness longer than any other kind while being brought to market. Remarkably cold tolerant. Introduced prior to 1885. VILMORIN; C53, G68, Q11M

Vit: Most vigorous cultivar for spring and fall crops, as well as for over-wintering. Long, glossy green, tender leaves form a heavy bunch. Delicious, mild, minty flavor. Mildew tolerant. G6, K57{PL}, N81, N84, S55, S95M

#### CODES FOR SPECIAL TYPES

##### 1. Baby

## COWPEA {S}

#### VIGNA UNGUICULATA

Bettergreen: 69 days. Small-seeded cream type developed by the USDA Vegetable Lab of Charleston, South Carolina. Contains a homozygous gene trait that allows for harvesting at the near-dry seed stage of maturity without loss of the seed's fresh green color. Planted in spring, mid-season or fall in the Southeast. L4

Bettersnap:<sup>1</sup> Edible-podded cowpea developed by the USDA Vegetable Lab of Charleston, South Carolina. Slightly curved pods, 8 to 10 inches long and containing 12 to 16 seeds. Pods or "snaps" make a good substitute for green beans. Snap peas are often canned with peas and sold as "blackeyed peas with snaps". Cream-colored peas can be used as a cream type shell or dry pea. L4

Big Boy: 70 days. Very prolific bush type pea, producing green pods borne well above the foliage. Pods 8 to 9 inches long, with 13 to 16 oblong peas per pod; peas cream-colored with a light brown eye. Resistant to wilt and nematodes. Similar to blackeye in taste and appearance but shells much more easily. G1M, G27M, K71, N16

Big Red Ripper: (Mandy) 60 days. A well-flavored table pea with 10 inch long pods, containing 18 large peas per pod. Pods are easy to see amongst the foliage, and plants are resistant to very hot, dry summers. Use green shelled or dry. Heirloom from Virginia and North Carolina. F80, L7M

Black Crowder: 63 days. Very prolific, high bush-type plant; bears unusually long, green pods at foliage level. Very flavorful peas have a deep-purple cast at the green shell stage, turning black when mature. Sweet and nutty. Easy to shell. F73D, G1M, N16, N84

Blue Goose: (Gray Crowder) 80 days. One of the best all-purpose cultivars. Excellent for soil building, h<sup>a</sup>, or edible peas. Heavy, productive vines; height 3 feet. Long pods, producing well-flavored speckled, purplish-gray peas. A90M{DF}, F73D, G1M, H54

Bombay:<sup>1</sup> (All Seasons Red-Seeded) Superior to any Indian cultivar. Soft and tasty green fruits, one cubit (18 inches) long, generally

with red seeds. Can be sown from January to December, but highest yield is obtained if sown in April and September. N91

Brown Crowder: 65 days. Medium-sized pods; about 8 inches long; dark-gray at green shell stage. Seeds are smooth; "crowded" in the pod, thus becoming flattened and misshapen; brown, with a dark-brown eye when mature. Unique, strong nutty flavor preferred by many in the South. Will do well on thin soil. D76, F73D, G1M, G27M, G57M, H49, H61, I59M, N16, N84

Burgundy Purple Hull: Semi-bush type purple hull pea with excellent production, quality and shelling characteristics, Long, slender non-shattering pods; bright red at green shell stage, turning light brown; held well above the foliage; easy to harvest, giving good shell-out over a relatively wide range of maturity. Excellent quality for fresh market, freezing or canning. L89G

Calico Crowder: (Hereford Pea, Polecat Pea) 80 days. One of the more flavorful cowpeas, recommended for southern states and warm coastal areas. The 5 1/2 inch long pods are green at the green shell stage and turn dark tan when dry. Dried peas are buff-colored with maroon splashes, especially around the eye. F73D, L7M, N84

California Blackeye #5: 65 days. Improved strain of Giant Ramshom. Very vigorous and heavy yielding. Pods are up to 12 inches long, with plump, cream-colored peas larger than ordinary blackeyes. Tall, bunch-type plant with good root system; resistant to nematodes, wilt and other diseases. Leading *black-eyed pea* in the U.S. HAWKES [Re]; A75, B75M, D76, G27M, G57M, G71, G82, G93M, H95, J84, M95M, N16

Clemson Purple: 67 days. Improved Knuckle Purple Hull type. Very large, smooth, dark-brown seeds; crowder shaped; 16 per pod. Large, straight pods, 6 1/2 inches long; dark purple at green shell stage. Easy to pick and shell. Very productive, upright plant. Highly tolerant of mosaic and rootknot nematode. G1M, L4, L10, N16

Colossus: 60 days. Extra large brown crowder type. Pods 7 to 9 inches long; straw-colored, with a red tinge. Peas are brown when mature. Tends to produce pods in bunches for easy harvest. Popular home garden pea for canning, freezing and green shell peas. Developed by Dr. W.L. Ogle of Clemson University. G1M, K71, L4, L10, M95M

Dixie Lee: 60 days. Hardy, heavy-bearing plant produces 8 inch pods, turning from green to light yellow; borne well off the ground; easy to shell. Peas are small to medium-sized, brown, and excellent for home or commercial use. Yields 2 crops a season. Nematode tolerant. G1M, L4, L10

Hercules: A late season brown crowder type that continues producing for 4 weeks or more, longer than most cultivars. Pods are 8 to 9 inches long, reddish at maturity, bear a heavy crop of large size peas of pronounced flavor. Peas are green fresh, brown when dried. Developed by Dr. W.L. Ogle of Clemson University. G1M, L4

Iron and Clay: Mixture of Iron and Clay cultivars, producing a heavy growth of vines used for soil improvement and forage. Small seed, usually harvested as dry peas as they are too tedious to shell fresh. Iron and Clay are considered to be among the types brought from Africa by slaves and slave traders to the United States in the 1700's. A90M{DF}, G27M, L4, M25

Knuckle Purple Hull: (Knucklehull Purple Hull) 65 days. Large-seeded brown crowder type. Strong, erect bush-type plant. Short, 6 inch pods; purple when mature; relatively easy to shell; late maturing. Seeds are dark-brown when mature. Called "knucklehull" because of the large, plump peas. F73D, G1M, G27M, G57M, K49M, K71, M95M, N16

Lady: (Lady Finger) 65 days. Very small, tender, well-flavored peas; white in green shell stage, turning cream when mature; freeze well when young, and are good for drying when mature; hold well on the vine when green. Bush-type plant; very prolific; excellent for the home garden. F73D, G1M, G27M, K49M, N16

**Magnolia:** 65 days. Small-sized, very high-yielding blackeye type of excellent quality. Bush-type plants; pods approximately 7 inches long. Good for canning and freezing. Bred to be resistant to fusarium fungi, root knot nematodes, and tolerant to viruses. 164, K10, K50, K73

**Mississippi Cream:** High-yielding plants; tolerant to root-knot nematodes and most viruses. Pods are 7 inches long; green to nearly white at green shell stage, straw-colored when dry; peas shell much easier if left overnight after picking. Peas are green turning to light cream when dry. N16

**Mississippi Pink Eye Purple Hull:** 65-70 days. Improved Pink Eye Purple Hull type with enhanced disease resistance and yield capability. Pods grow about 6 1/2 inches long and have white seeds with pink eyes. Excellent for fresh market or processing. Medium-sized vines; extremely productive; resistant to all major cowpea diseases. A27M, G1M, 164, K10, K73

**Mississippi Purple:** 65-70 days. Mississippi Silver x Knuckle Purple Hull. Large-seeded brown crowder type. Pods are about 7 inches long; light green, turning purple first at the tip and along the suture, at which time they will shell; mature over a short time span. Easy to pick and shell. Resistant to most major cowpea diseases. F73D, G1M, K50, K73, N16, N84

**Mississippi Silver:** (Mississippi Silverhull) 85-100 days. Large-seeded brown crowder type. Low, bushy plants produce few runners, are somewhat insect resistant. Pods are 6 to 6 1/2 inches long, slightly curved, silver colored at green shell stage. Peas set early at the top of the vines and shell very easily. Excellent in hot, humid southern climates; also does well in northern areas with longer seasons. A27M, A90M{DF}, G71, G93M, 191, J11M{DF}, K10, L7M, M46, N16

**Pink Eye Purple Hull:** 65 days. Semi-vining plant grows 18 to 24 inches tall. Pods are 6 to 7 inches long; are held slightly above the foliage; turn purple at shell stage. Peas are medium-sized, rounded on ends; light-green with a red eye at green shell stage, turn white with maroon eye when dry. Good producer, usually produces 2 crops per season. A90M{DF}, D76, G27M, G82, G93M, J11M{DF}, J84, K71, K73, M29, M46, N16

**Pusa Barsati:**<sup>1</sup> 45 days. Heavy-yielding short plant, does not require support. Produces light-green, cylindrical pods, 10 to 12 inches long, stringless. An improved type, recommended for sowing during the rainy season in India. Pods can be harvested after 45 days. Seeds are boldly striped white and dull red. N91, Q45M, R0, R50, S59M

**Pusa Dofasli:**<sup>1</sup> (Two Flashes) Bushy plant producing yellowish-green pods, approximately 7 inches long, in great profusion. Suitable for both the plains and hills. In India, grown as an irrigated crop during the summer and as a rainfed crop during the monsoon. S59M, S93M

**Pusa Phalguni:**<sup>1</sup> 60 days. High-yielding cultivar, suitable for growing in spring to early summer. Dwarf, bushy plants freely produce dark green pods, 7 to 8 inches long. Pods can be harvested after 60 days. R50, S59M

**Queen Anne:** (Queen Anne Blackeye) 65 days. Very dependable, heavy yielding blackeye introduced by the Virginia Truck Experiment Station. Plants are compact, 26 inches tall and runnerless. Pods are 7 to 9 inches long, with 8 to 12 seeds per pod. Highly recommended for green shell or dry use, freezing or canning. B73M, G57M, H54, K50, L7M, L10, M29, M95M

**Running Conch:** 90 days. Produces 7 inch long pods, containing 12 to 14 peas per pod. Gives a clear pot-liquor when cooked. Non-climbing vine. Harder to shell than modern types, but valuable for its ability to resist curculio and suppress weeds. An heirloom, dating from the late 1800's. The original *conch pea* from which the various cream peas were developed. F73D, L7M

**Six Week Brown Eye:** 65 days. Long, green pods, about 6 1/2 inches in length. Small, smooth, cream colored peas with brown eyes. Very good flavor. Vigorous and productive plants. Susceptible to mosaic and rootknot nematodes. Excellent for home gardens. Very popular in parts of the South. G1M

**Tennessee White Crowder:** 65 days. Large, rounded seed; eggshell-white with a protruding, light brown eye; cream-pea-like flavor. Pods light green at green shell stage, dark green at maturity; 6 inches long. Vining type plant usually blooms over a longer period than other types. Very good producer if mature peas are kept picked off. L10

**Texas Cream 40:** 70 days. Bush type, high-yielding conch usually producing 2 crops a season. Long, cream-colored pods are oval, straight, and closely filled with medium-sized, tender cream-colored peas. Pods form at the top of the bush in hands, making for easy picking. Cross between an extra early blackeye and a midseason cream cultivar. G27M, L89G, N16

**Thailand Long:**<sup>1</sup> Catjang type. Developed especially for the tasty pods which are picked when they are 8 to 10 inches long and cooked like snap beans. The seeds can be used as shell beans if the pods become too mature to eat. Disease-resistant vines are either grown on a trellis or they can be left to sprawl along the ground. D33

**Tohono O'odham:**<sup>1</sup> (Papago) 80 days. Delicious, delicately flavored pods. Small to medium-sized seeds usually have white eyes with black splotches (Dalmatian dog style), but may be all black. Similar to blackeyes but much more prolific and drought resistant, especially in the Southwest. C95, F73D, F80, 116, K46T, K49T, L77D, N84

**Whippoorwill:** 80 days, Very prolific, heavy vining type. Green pods, about 10 inches long; medium maturing. Smooth, speckled buff-brown peas. Will bear peas over a long period of time. A good general purpose old standard Southern pea. C20M, F73D, L77D, N16, N84

**White Acre:** 75 days. Large, bush-type plant producing green pods with numerous small, creamy-white seeds. Pods set at the foliage level and are light straw-colored. Matures early and bears for a long period of time. The small seeds are harder to shell, but it is still one of the best-liked peas for home use with excellent fresh eating quality. A90M{DF}, G27M

**Zipper Cream:** 70 days. Medium-green pod, turns a light straw color when dried; has a "zipper" for easy shelling. Peas are creamy-white; very large, especially for a cream type; of very good flavor. Low, bushy, compact plants with high yields. Resistant to curculio, stink bug and weevil damage due to its thick pod walls. D76, G27M, K50, K71, N16

#### CODES FOR SPECIAL TYPES

1. Edible-Podded

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## CUCUMBER {S}

CUCUMIS SATIVUS

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### PICKLING CUCUMBERS

#### COMMON

##### *Hybrid*

**Anka:** 50 days. Small, uniform fruit; smooth, tender, bright-green skin; crisp, crunchy flesh, with a fine flavor and no trace of bitterness; extremely small-seeded. Excellent eaten whole, fresh from the garden. Vigorous, heavy-yielding vine, produces fruit in three flushes; resistant to disease. The type of pickling cucumber most favored in Germany. 139



Calypso: 56 days. Uniform, straight, medium dark-green fruit; blocky, slightly tapered at the blossom end; white-spined. High yielding, gynocious vine; highly disease resistant; adapted to high density planting and machine harvest. For home gardens, local markets and commercial production. Introduced by the North Carolina Agricultural Experiment Station. A25, E75{PL}, F63, G13M, G27M, G82, J84, J97M, K10, L4, L42, L59G, M29, M46, M49, N16, etc.

County Fair: (County Fair '83) 52 days. Dual-purpose cucumber. Can be used for pickling when small, and for slicing if allowed to grow larger. Sweet, non-bitter flavor; white-spined. Seedless if isolated from other cucumbers. High yielding, all-female vine; sets fruit without pollination; highly disease resistant; excellent trellising qualities. E24, L89

Liberty: 54 days. Blocky, nearly cylindrical, dark-green fruit; black-spined. Excellent for pickling whole; also produces uniform slices for bread and butter pickles. Vigorous, widely adapted vine; tolerant to cool spring weather; produces heavily over an extended period; resistant to or tolerant of most cucumber diseases. All America Selections winner in 1978. E38

Saladin: 55 days. Short, bright-green fruit; 4 to 5 inches long, 1 1/2 inches in diameter; flesh crisp, tender, non-bitter; white-spined. Dual-purpose; ideal for pickling and salads. High yielding, gynocious vine; widely adapted; resistant to cucumber mosaic virus, tolerant of powdery mildew and bacterial wilt; well suited for trellising. All America Selections winner in 1979. K66

#### *Open-Pollinated*

Arkansas Little Leaf: (H-19) 52 days. High quality pickling cucumber with a unique plant type. Medium-sized, blocky, fruits; distinctive, emerald green color. Suitable for pickling or slicing. Compact, multi-branching vine, produces well even under stress; parthenocarpic; readily climbs a trellis. Smaller leaf size provides easier visibility of fruits. C85M, D11M, E53M, F63, F70, G6, G71, G87, J91, J9M, L7M, LIO, L89C, R47

Boston Pickling: (Green Prolific) 58 days. Smooth, long oval, dark-green fruit; 6 to 7 inches long, 2 1/4 to 2 1/2 inches in diameter; slightly tapered, blunt-ended; flesh tender, crisp, very white; black-spined. Suitable for either sweet or dill pickles. Early and very prolific. Very popular home garden cultivar. Introduced about 1880. TAPLEY 1937; A2, A25, A75, B3M, C44, E59Z, G57M, G79, G83M, H85M, J59M, K49M

Bush Pickle:<sup>3</sup> 45 days. Slightly tapered, cylindrical, medium-green fruit; 4 to 5 inches long; white-spined. Short-vined plant; only 2 to 3 feet in diameter; highly productive over a concentrated period; tolerant to scab and cucumber mosaic virus. Widely adapted. Ideal for container culture and miniature gardens. Introduced in 1882. D76, E91G, F13, G16, G27M, G71, G82, H33M, H54, H61, H85M, J91, J97M, K49M, L42, etc.

Chicago Pickling: 60 days. Uniform, tapered, medium-green fruit; 5 to 6 inches long, 2 to 2 1/2 inches in diameter; nearly square-ended; black-spined. Especially well adapted for use as dill pickles; good for slicing when young. High yielding, precocious vine. Traditional home garden favorite. Introduced in 1888. TAPLEY 1937; A75, B8M, C92, D65, G57M, G87, L67M, K20M

Early Cluster: (Early Green Cluster) 55 days. Short, medium plump, light-green fruit; tapered towards the stem end; 5 to 6 inches long, 2 1/4 to 2 1/2 inches in diameter; flesh white, seedy, tender, well-flavored; black-spined. Vigorous, productive vine, often bears fruit in clusters near the root. One of the oldest of all cultivated cucumbers. Introduced prior to 1778. BURR, TAPLEY 1937; K20M, K49M

Early Russian: 50 days. Very short, oval, medium-green fruit; 3 1/2 to 4 inches long, 1 1/2 to 2 inches in diameter; flesh tender, crisp, well-flavored; black-spined. Highly prolific vine; generally bears fruit in pairs; produces until frost. Does well in northern short-

season areas. Similar to Early Cluster. Introduced prior to 1854. BURR, TAPLEY 1937, VILMORIN; A2, D27, D29P, E5T, F24M, K49M, K49T, K71

Edmonson: 70 days. Uniform, whitish-green fruit; about 4 inches long; flesh crisp, tender and non-bitter, even when past its prime. Best used for pickling; also good for slicing. Very hairy, prolific vine; has good resistance to disease, insects and drought. Family heirloom from Kansas since 1913. F73D, L7M

Homemade Pickles:<sup>3</sup> 56 days Versatile new variety especially bred for growing and making pickles at home. Medium-green fruits with small white spines. Solid, crisp and crunchy. Can be harvested when 1 1/2 inches long for tiny sweets, or at 5 to 6 inches for robust dills and spears. Vigorous, short-vined plant; high yielding and disease tolerant. A25, B6, B73M, D56M, D65, E24, G16, G83M, H57M, H85M, J91, J20, K71, L89, M46, M65, N16, etc.

Japanese Long Pickling: 60 days. Slender, dark-green fruit; 12 to 18 inches long, 1 1/2 inches in diameter; flesh crisp, very mild and easy to digest; extremely small seeds. Should be harvested when about 12 inches long. Excellent for slicing for salads and bread and butter pickles. Often referred to as a "burpless" cucumber. L42

Jersey Pickle: 55 days. Straight, medium long fruit; 7 to 8 inches in length, 2 to 2 1/2 inches in diameter; skin deep medium green, tinted yellowish-white at the apex; flesh moderately thick, white; black-spined. Used for dill and ripe, sweet chunk pickles; considered too slender and long for smaller sizes. Heirloom that originated in Burlington County, New Jersey. TAPLEY 1937; G57M, K49M

Mincu:<sup>3</sup> 4 (Baby Mincu) 50 days. Slightly tapered, short oval, bright green fruit; 3 to 4 inches long, 1 3/4 inches in diameter; firm, crisp, snow-white flesh; white-spined. Compact, short-vined plant, only 2 feet in diameter; highly prolific. Ideal for small gardens and containers. Developed at the Minnesota Agricultural Experiment Station. A16, D27, D82, F44, H42

National Pickle: (National Pickling) 56 days. Short, slender, medium-green fruit; 5 1/2 to 6 inches long, 2 inches in diameter; thick walled; black-spined. Widely adapted, high yielding vine. Traditional home garden favorite. Introduced in 1929 by the National Pickle Packers Association. Selected for adaptability to both small pickles sizes and dills. TAPLEY 1937; A16, A75, C85M, E38, F60, F92, G16, G57M, G68, G79, H42, H85M, K27M, M95M, N16, etc.

Northern Pickling: 48 days. Medium-long, medium green fruit; slightly tapered towards the blossom end; black-spined. Should be picked frequently when small to maintain acceptable color and fruit shape. Relatively short, space-saving vine; resistant to scab, susceptible to mosaic; reliably high yielding. Adapted to cool northern areas. E24, F44, F46, G6, J9M, J39, K49M, K49T, L13M

Picklebush:<sup>3</sup> 52 days. Short, blocky fruit; 4 1/2 inches long, about 1 1/2 inches in diameter; skin light green, moderately waxy; white-spined. Suitable for pickling at any stage, from small sweets to large dills. Very compact vine, grows only 20 to 24 inches long; tolerant to powdery mildew and cucumber mosaic virus. Ideal for gardeners with limited space. B75

SMR 58: (Wisconsin SMR-58) 56 days. Straight, blocky, medium-green fruit; 6 1/2 inches long, 2 1/2 inches in diameter; black-spined. Good processing qualities. Vigorous, prolific vine; widely adapted; resistant to cucumber mosaic virus and scab. Standard home garden and market cultivar. A75, B75M, C85M, F60, F82, G16, G71, G93M, H95, J39, J84, J97M, K5M, L89, M95M, etc.

Vyaznikovsky: 40-55 days. Medium-sized fruits, 5 to 7 inches long; black-spined. Excellent for pickling and canning. Well suited to cold climate regions. An old Russian cultivar. Pickling of fruits may be accelerated by packing alternately with cabbage leaves or adding a piece of rye bread to the barrel. BOLOTNIKOVA; K47

**CORNICHONS** Small French pickling cucumbers. Traditionally served with meat pates and *terrines* (foods cooked in earthenware containers) because their tart pungency cuts the richness of these fatty dishes. VONWELANETZ. J66M{PD}, K66

#### Hybrid

**Cool Breeze:** 45 days. High quality French comichon. Small, uniform fruits, 4 to 5 inches long; heavily stippled, dark-green skin, non-bitter; crisp, seedless flesh. Usually harvested when about 2 inches long for pickles. Excellent for salads or pickling. Vigorous, all-female plants, highly productive. Resistant to cucumber mosaic virus, scab and powdery mildew. E75{PL}, F13, H42, 139, J20, L79, M1P, M46

**Parigyno:** Small, somewhat blocky, medium green fruit; resembles Vert Petit de Paris. Black spined. Remains firm and highly colored when pickled in vinegar. Vine very vigorous and productive, 100% gynoeious; resistant to cucumber mosaic virus. Introduced by Vilmorin. S95M

**Witlo:** 53 days. Tiiy, well-shaped, European-style “mini” cucumbers or cornichons. Traditionally used for making very small, sour pickles. Slightly tapered fruit; firm and crisp. Should be harvested frequently, as they are bred to be picked at no more than 2 inches long. Vigorous, productive vine; resistant to cucumber mosaic virus, scab and powdery mildew. P59M

#### Open-Pollinated

**De Bourbonne:** (Comichon de Bourbonne) Tiny, spiny cucumbers bred especially for making the whole, very small sour pickles that are served with pate. Should be harvested at 2 to 2 1/2 inches in length. Soak in brine for a few hours, then pack in jars with mustard seed and a few sprigs of tarragon. Cover with vinegar and they will keep for months in the refrigerator. K49Z

**Fin de Meaux:** (Fine Meaux) 60 days. Similar to Vert Petit de Paris, but fruits are longer and darker green. Should be picked when 2 inches long and 1/2 inch in diameter for comichon pickles, or at 4 inches long and 1 1/2 inches in diameter for dills. Bears heavily until frost. G68

**Vert de Massy:** 53 days. High quality French comichon. Distinctive fruits, considerably more slender than American pickling cucumbers. May be picked at “baby” finger size for tiny pickles, or when 4 inches long for pickling whole or sliced. Suitable for salads and snacks, with excellent taste and texture. For home gardens and specialty markets. Tolerant to scab. Black-spined. B75, C53, C92, D68, D74B, F44, G16, 139, J20, K49M, L3J, L77D, M46, N16, S95M, etc.

**Vert Petit de Paris:** (Small Green Paris) 60 days. European strain of cucumber cultivated especially for use in making cornichons. Short, green, spiny fruit; should be harvested when about 2 inches long. Vigorous, compact, highly productive vine. An old standard cultivar that is very popular with French gardeners. Introduced prior to 1885. BRENNAN [Re], VILMORIN; E63D, G68, K49M, P59M, Q11M

### SLICING CUCUMBERS

#### COMMON

#### Hybrid

**Burpless:** 60 days. Hybrid version of Japanese long. Straight, slender, bright-green fruit; 10 to 12 inches long; soft, tender, non-bitter skin, does not require peeling; crisp, mild flesh, very low in acid, easy to digest. Excellent for slicing or pickling. Vigorous, high yielding vine; bears over a long period; resistant to downy and powdery mildews. Should be grown on a trellis, otherwise the fruits may curve. B6, D65, D76, F92, G57M, G79, G83M, G87, H33M, H42, H61, J20, K71, K73

**Fanfare:**<sup>3</sup> 63 days. Uniform, slender fruits; 8 to 9 inches long; smooth, dark-green skin; white spined; extra crisp flesh; mild, sweet flavor. Dwarf plants with short internodes, monoecious, highly productive over a long season; multiple disease tolerant. Ideal for growing in containers or where space is limited. All America Selections Winner in 1994. B73M, B75, D65, D74B, E91G, E97, F82, G16, G27M, G71, G82, H49,139,191, J97M, L91M, M29, etc.

**Pot Luck:**<sup>3</sup> 58 days. Slightly tapered, medium dark-green fruit; 6 1/2 to 7 inches long, 2 1/4 inches in diameter; white-spined. Vigorous, short-vined plant, only 18 inches long; extremely productive; tolerant to cucumber mosaic virus and scab. Ideal for pots, window boxes and limited space gardens. B6, D11M, E53M, F70, G71, G93M, H33M, I50G, K10, L79, N16

**Salad Bush:**<sup>3</sup> 57 days. Smooth, uniform fruit, 8 inches long; skin dark green. True dwarf plant, with a spread of only 24 inches; highly productive. Strongly resistant to powdery and downy mildews, target leaf spot, cucumber mosaic virus and scab. Excellent for patio containers. All America Selections winner in 1988. E53M, F13, G27M, G82, G87, H33M, H42, H95,139,191, J20, J84, L10, M49

**Sweet Slice:** 62 days. Straight, cylindrical, dark-green fruit; 10 to 12 inches long, 2 1/2 inches in diameter; thin, tender skin, does not require peeling; crisp, non-bitter, extremely sweet flesh. Vigorous vine; productive over a long season; resistant to or tolerant of most cucumber diseases. A25, B8M, B75M, C85M, D11M, E63D, F70, F82, G16, G71, G82, H61, H95, L79, M46, M49, N16, etc.

**Sweet Success:** 55 days. Smooth, straight, medium-green fruit; 12 to 14 inches long; tender skin; sweet, crisp, mild flesh; white-spined. Vigorous, productive vine; sets fruit without pollination; has multiple disease resistance. Best grown on stakes or trellises. Suitable for greenhouse or outdoor cultivation. All America Selections winner in 1983. A16, B75, C44, C85M, D11M, D76, FI, F13, F70, G16, G71, G82, H95,139, L79, etc.

**Tasty Green:** (Burpless Tasty Green) 58 days. Slender, dark-green fruit; 12 to 15 inches long; smooth, tender skin; crisp, mild flesh; white-spined. Best when harvested at 9 inches long and 1 inch in diameter. Vigorous vine; highly productive over a long season; tolerates summer heat; resistant to downy and powdery mildews; requires support for best results. C85M, E53M, FI, G33, 139, K16M, L59, L91M, M46, M49, R32, S55, TIM

#### Open-Pollinated

**Ashley:** 65 days. Straight, dark-green fruit, tapered at the stem end; 7 to 8 inches long, 2 1/2 inches in diameter; white-spined. Good for shipping. Vigorous, high yielding vine; widely adapted; resistant to downy and powdery mildews. Developed at the Clemson Trnck Experiment Station, Charleston, South Carolina. Introduced in 1955. A75, B6, B8M, C69, DIT, G1M, G16, G27M, G71, G79, L7M, N16

**Boothby's Blonde:**<sup>1</sup> 63 days. Heirloom perpetuated by the Boothby family of Livermore, Maine. Medium-sized fruits, 6 to 8 inches long; creamy white skin, deeper and richer than typical white cucumbers; contrasting black spines; crisp and sweet, pleasant flavor and texture. Excellent for slicing or pickling. Very small fruits can be used for making white cornichons WEAVER 1997; D29P, F73D, H15P, J20

**Bush Crop:**<sup>3</sup> 60 days. Straight, medium-green fruit; 6 to 8 inches long; flesh crisp, tender, flavorful. Ideal for slicing and salads. Compact, short-vined plant, only 2 1/2 to 3 feet long; nearly free of runners; very productive. Excellent for containers and small space gardens. E53M, E91G, G16, H21, H33M, H54, H61, H95, I50G, J20, J97M, K10, M46, M95M

**Carosello Barese:** (Nun's Tits) Unique cucumber from the Puglia region of Italy. Short, oval fruits; bright green skin with lighter green stripes, slightly hairy; distinctive, gray, areole-like scar at the

stem end. Young fruits are dressed with oil and vinegar and eaten like cucumbers. If 1 or 2 fruits are left on the vine, they mature into melon-like fruits which keep until Christmas. Mature fruits are traditionally served with *prosciutto crudo*. GRAY, P.; B8, Q11M, S17

Crystal Apple:<sup>1</sup> (White Lemon) 65 days. Similar to Lemon, but distinctly lighter in color. Short oval, creamy white fruit; 3 1/4 inches long, 2 1/2 inches in diameter; flesh crisp but tender, sweet, very flavorful; white-spined. Suitable for either slicing or pickling; also very good for stuffing. Vigorous, highly prolific vine. Originated in Australia prior to 1933. TAPLEY 1937; A2, B49, C20M, E5T, F73D, J39, PIG, R32, R47, S55

De Bouenil:<sup>1</sup> Medium-sized, white fruits borne on spreading plants. Popular in Europe for larger sized pickles because the white color allows the cook to choose the color the relish will be. Can also be used for whole pickles if harvested young, or for salads after peeling. C53

Early Yellow Dutch: (Gele Tros) Fruit longer and later than that of Early Russian; at first yellowish-green, becoming slightly orange-yellow when quite ripe. Usually only one or two fruit on each plant. Adapted to greenhouse or outdoor culture. Introduced prior to 1885. VILMORIN; K49M, N24M

Improved Long Green: (Long Green) 68 days. Straight, warted, medium dark-green fruit; 10 to 12 inches long, 2 1/2 to 3 inches in diameter; flesh tender, crisp, mild, black-spined. Suitable for both slicing and pickling. Vigorous, reliably productive vine. Long-time home garden favorite. Introduced in 1870. TAPLEY 1937; A16, A25, A75, E5T, G57M, G79, H49, H85M, H95, K27M, K71, M95M

Lemon:<sup>1</sup> (Apple, True Lemon) 65 days. Short oval, lemon-yellow fruit; 3 to 3 1/2 inches long, 2 to 2 1/2 inches in diameter; flesh very thin, white, with a faint lemon-like flavor in late stages of development; black-spined. Excellent for both slicing and pickling. Vigorous, highly prolific vine. Introduced about 1894. TAPLEY 1937; C44, C53, D82, E24, F42M{PD}, F60, F80, F92, G16, I64, I67M, J97M, K23{PL}, K71

Long Paris White:<sup>2</sup> (Bianco Lungo di Parigi) 62 days. Long, knobby cylindrical white fruit with firm, creamy-white flesh; white-spined. The best white cucumber for use in salads. Also excellent for pickling. Vigorous, rapid growing vine, yields continuously into early October. Resistant to cucumber mosaic virus. J20, J39, N84, O53M, Q11M

Marketer: (Early Green Market) 65 days. Straight, slightly tapered, dark-green fruit; 8 inches long, 2 1/2 inches in diameter; flesh white, solid, tender, very small seed mass; white-spined. Vigorous, productive vine. Popular for home gardens, local markets and shipping. All America Selections winner in 1943. C44, C85M, D1T, D12, G57M, G68, G71, G79, H49, P59M, TIM

Marketmore 76: 58 days. Dark-green fruit; 8 to 9 inches long; white-spined. Productive vine; has multiple disease resistance. Contains the uniform dark-green color gene which reduces the number of "yellow bellies" at harvest time. For home gardens and commercial production. Developed by Dr. Munger at Cornell University. B1M, B75M, C44, D74B, F60, F82, G57M, G71, H61, K10, K73, M46, N16

Perfection: (Perfection King of the Ridge) Cross between a frame and a ridge type, with the best qualities of both. Straight, nearly spineless, dark green fruit; 8 to 10 inches in length; excellent flavor. Vigorous, productive, comparatively hardy vine. Once grown extensively for the seaside salad trade in England. G44M, L13M, N84

Poinsett: 70 days. Cylindrical, dark green fruit, slightly blockier than Ashley; 7 1/2 inches long, 2 1/2 inches in diameter; white spined. Highly productive vine, especially in the Southeast. Strongly resistant to downy and powdery mildews. Moderately resistant to

anthracnose and angular leaf spot. C20M, G57M, G71M, G79, K27M, K49M, Q45M, R50

Poona Kheera: (Puna White Khim) Very unusual cultivar from India. Small, smooth, greenish-white fruit, 4 to 5 inches long; flesh very tender, crisp, flavorful. May be eaten at all stages, skin and all. Concentrated fruit set. K20M, K49M, R0, R50

Precoce Grosso Bianco Crema:<sup>2</sup> (Early Large Creamy-White) Unusual Italian cultivar with attractive, creamy-white fruits, 5 inches long and 2 inches in diameter. No bitterness, with a mild, slightly sweet flavor. J73, N84

Spacemaster:<sup>3</sup> 58 days. Smooth, cylindrical, dark-green fruit; 7 to 8 inches long. Compact, short-vined plant, only 2 feet long; extremely productive; resistant to cucumber mosaic virus and scab; should be picked regularly to avoid misshapen fruit late in the season. Well suited to container culture. A25, B6, C44, C85M, D82, E24, G79, G83M, H85M, J25M, K49M, K71, L7M, M46

Straight Eight: 60 days. Uniform, straight, deep-green fruit; 8 inches long, 2 to 2 1/2 inches in diameter; well rounded at the ends; white spined. Excellent for slicing; also used for pickling when small. Vigorous, productive vine; susceptible to most cucumber diseases. Popular home garden cultivar. All America Selections winner in 1935. TAPLEY 1937; A16, A25, A75, B73M, C44, C85M, D65, D82, E38, FI, F60, H33M, M46, N16, R47, etc.

Telegraph: (Rollinson's Telegraph, English Telegraph) 60 days. Smooth, glossy dark-green fruit, tapered to a distinct neck at the stem end; 15 to 18 inches long; thin, palatable skin; flesh solid, crisp, of excellent quality; black-spined. Vigorous, productive vine. Suitable for cold greenhouses, frames and outdoor trellis culture. Traditional English cultivar. Introduced prior to 1885. VILMORIN; D11M, D27, E75{PL}, F70, F92, I67M, L42, O89, S75M

Telegraph Improved: 62 days. Smooth, straight, dark-green fruit, distinctly tapered at the stem end; up to 18 inches long; flesh crisp, tender, mild, flavor excellent, very few seeds. Vigorous, high yielding vine; very reliable. Suitable for greenhouse, polytunnel or outdoor culture. Traditional English cultivar. Introduced about 1897. C85M, G53M, N84, R32, S55, S61

Uzbekski: 50-60 days. Light green-skinned fruits that turn golden russet-brown when mature. The sweet flesh remains crisp and tasty up to 60 days after harvest. Very prolific. Originally from Uzbekistan. A2, K46T

White Spine Improved: (Fordhook White Spine) 65 days. Uniform, straight, medium-green fruit; 7 to 8 inches long, 2 1/2 to 3 inches in diameter; tapered at the blossom end; flesh thick, seed mass moderately small; white-spined. Suitable for both slicing and pickling. Very productive. An old time favorite. H15P, M95M

White Wonder:<sup>2</sup> (Long White) 60 days. Medium oval, cylindrical fruit, rounded at the stem end; ivory-white at all stages of growth; 6 to 7 inches long, 2 1/4 to 2 1/2 inches in diameter; flesh nearly white, crisp, firm, very mild; black-spined. Used primarily for slicing, can also be pickled. Introduced in 1893 by W. Atlee Burpee Company. TAPLEY 1937; A2, B6, B73M, D11M, D26D, E97, F60, F70, G13M, K49M, K71, M65, PIG, TIM

Zeppelin: Extremely large fruit, 10 to 12 pounds or more. Has produced some of the largest cucumbers ever grown, including the world record of 13 pounds 10 3/4 ounces. Can be used when green, or after turning golden yellow. It remains firm and juicy and may be sliced thinly, diced or chopped. 181, K49M

**GREENHOUSE** Also called *European cucumber*, this is the type seen in stores individually wrapped in plastic. They cannot be grown outdoors as they are seedless and self-pollinating. Their culture is quite demanding, and requires exact feeding schedules to maintain deep green color. They are bitter free and easily digested. E13G{PR}, N40{PR}

*Hybrid*

Carmen: Straight, slightly ribbed, glossy dark-green fruit; 13 1/2 to 15 1/2 inches long; short necked; very good flavor and quality. Excellent shelf life Very prolific, all-female vine; resistant to scab and leaf spot, tolerant to downy mildew and powdery mildew. For heated and unheated culture in spring, summer and autumn. L42, L91M, M49, N84, RUM, S95M, TIM

Corona: Dark green, slightly ribbed fruit, 10 to 16 inches long; provides 3 or 4 days longer shelf life. Excellent for slicing. Slim, all-female vine is trimmed to an umbrella fashion; does not produce heavy foliage during the summer. Performs well in hot or cold weather. Strongly resistant to botrytis and mycosphaerella. Developed to withstand consistent cooler, 66° F. night temperatures. C20M, FI, F85G, K10, L42

Fembaby:<sup>4</sup> Dutch “mini” or “baby” greenhouse cucumber. Smooth, cylindrical, dark-green fruit; 8 to 10 inches long; short necked. All-female vine; sets fruit without pollination; resistant to scab, leaf spot, and plant bitterfree. Less demanding than other greenhouse types; suitable for greenhouse or windowsill culture. The result of 8 years of breeding. L91M

Holland: 60 days. High quality greenhouse forcing cucumber from the Netherlands. Slender, cylindrical fruits, 12 to 15 inches long; thin, dark-green skin, slightly ribbed; mild, crisp flesh. Completely bitter free and seedless. All-female plants, highly productive, resistant to scab and leaf spot. Does not require indoor culture unless seedless fruits are absolutely desired. A16, C20M, C85M, E53M, E91G, 139, K66, L79, M1P, M46

Petita:<sup>4</sup> 60 days. Easy to grow “mini cuke”. Has the high qualities of the extra-long European-style cucumbers, in the popular American size. Slightly ribbed, dark-green fruit; 7 to 8 inches long; tender, glossy skin; crisp, sweet flesh. Vigorous vine; highly productive over a long season; resistant to cucumber mosaic virus, race 1. N81, N84, R32, S55, S61

Superator: Medium length, straight fruit, 12 to 15 inches long; smooth dark green skin; excellent color and shape. Good shelf life. High yielding, all-female vine; produces well when night growing temperatures are reduced; easy to prune. Slight tolerance to powdery and downy mildews. Resistant to scab, leaf spot and plant bitterfree. L42, N84, RUM

**MIDDLE EASTERN** Also called *beit alpha cucumber*, this type is considered by many to be the most delicious salad cucumber. They are smooth-skinned, crisp, tender, bitter free, nearly spineless and require no peeling. Suitable for greenhouse, poly tunnel, and outdoor crops. DIT, K49M, 089

*Hybrid*

Amira: 62 days. Slightly tapered, bright green fruit; 6 to 6 1/2 inches long, 1 1/2 inches in diameter; tender, spineless, non-bitter skin; crisp, sweet, “burpless” flesh. Should be picked when 4 to 5 inches long for best quality. Excellent for slicing and pickling. Very prolific vine; resistant to cucumber mosaic, tolerant to downy and powdery mildews. B73M, C53, C85M, C92, D11M, D27, D65, D68, F70, G71, G87, H95, 139, 177, J20, L79, L89, M46, etc.

Aria: 52 days. Dark-green, cylindrical, slightly ribbed fruits; about 8 inches long; thin skin; tender, brittle, bitterfree, very sweet and delicious; quality excellent. Best when 4 or 5 inches long. All-female, parthenocarpic plants with multiple disease resistance. High early and total yields. Suitable for indoor or outdoor crops. G6, R47

Delila: Most popular gynocious hybrid of the Beit Alpha type. Dark green fruit; 6 1/2 to 7 1/2 inches long. Vigorous plant; early, with exceptionally high yields; resistant to cucumber mosaic virus and melon mosaic virus race 1. Suitable for all open field production seasons. Grown extensively in the Middle East. P75M, T27M

Jordan: 56 days. Straight, cylindrical, glossy green fruit; 6 1/2 to 7 inches long; smooth, non-bitter skin; crisp, easily digested flesh;

quality very high. Excellent for either slicing or pickling. High yielding, all-female vine; resistant to cucumber and melon mosaic viruses. C20M, C97, F60

Kidma: 59 days. Smooth, glossy, medium-green fruits; thin, tender skin. Crisp, juicy, very sweet flesh. Excellent for eating out of hand as a juicy thirst-quencher on hot summer days. Best harvested when 5 to 8 inches long. Strong plants, resistant to watermelon and cucumber mosaic viruses and powdery and downy mildew. C20M, D68, P75M

Sweet Alpee: 55 days. Extra-dark green Beit Alpha type with a small seed cavity and a nice, bitterfree flavor. Ideal for small scale production because it does not need a separate pollinator. Has an extended picking period but must be picked small, no larger than a pickle. Developed for outdoor and poly tunnel crops. Tolerant to scab and both mildews. C20M, G6, K16M, N84

Tenderfresh: 56 days. Straight, cylindrical, glossy green fruit; 6 1/2 inches long, 1 1/2 inches in diameter; smooth, non-bitter flesh; crisp, “burpless” flesh, very good flavor and quality. Excellent for home grown pickles at shorter lengths. Very prolific, gynocious vine; resistant to cucumber mosaic virus Very similar to Jordan. D82

*Open-Pollinated*

Amira II: 65-70 days. Intermediate in size between ordinary slicing cucumbers and pickling cucumbers. Thin, very smooth skin, does not require peeling. Sweet and juicy with a very fine, full flavor. Grows better in cool weather than most Middle Eastern types. E63D

Beit Alpha M.R.: 58 days. Straight, cylindrical, glossy medium-green fruit; tapered towards the blossom end; 6 1/2 to 7 inches long, 1 1/2 to 2 inches in diameter; tender skin, with fine black spines; crisp, sweet flesh. Excellent for slicing or pickling. Gynocious vine, entirely free of male blossoms; widely adapted; resistant to cucumber mosaic virus. B49, RUM

Muncher: (Burpless Muncher) 59 days. Attractive, smooth, medium-green fruit; 6 1/2 to 7 inches long, 2 inches in diameter; bitter free at all slicing stages. Excellent for slicing; can be pickled at smaller lengths. Vigorous, productive vine; resistant to cucumber mosaic virus. A25, B75M, F60, 164, PIG

Timor: (Tamra) 58 days. Uniform, slightly ribbed fruits, 4 to 7 inches long; extra thin, dark-green skin; firm, thick, juicy, very sweet. Predominantly female plants with multiple disease resistance. Vigorous and high yielding, suitable for all open field production seasons. Used by Middle Eastern villagers to quench the thirst on hot market days. C20M, K66, L91M, P75M

**ORIENTAL** These cultivars have been developed especially for their crispness. Most are very long and narrow and have numerous, long spines which can be easily brushed off. Some newer types produce straight fruit even if allowed to sprawl on the ground, older types should be trellised or the fruit will curve. E13G{PR}

*Hybrid*

Natsuhikari: (Tokyo Slicer) 35 days. Very smooth, dark-green fruit, 12 inches long and 1 1/2 inches in diameter; very low spined; of excellent quality. Very vigorous plant with numerous side branches, enabling a high yield over a long period. Good for sowing from spring to summer. Suitable for growing without support or trellis. C20M, D55, N84, Q11M, S63M, S70, S75M

Orient Express: 55-60 days. Long, slender fruits, 10 to 12 inches in length and 1 1/2 inches in diameter; extra thin, dark-green skin; very crisp and sweet, mild flavor, easy to digest. Ripens over a long season. Harvest every 2 to 3 days. Vigorous plant with wide disease tolerance; highly productive. Should be trellised to keep fruit straight. B6, B73M, B75, C53, D26D, F13, F63, G13M, G16, G83M, H49, H61, K10, K50, L42, L89, N16, etc.

Palace King: Slender, dark green fruit; 12 or more inches long, only 1 1/2 to 2 inches in diameter; thick, crisp flesh of fine flavor; white-spined. Provides thin-skinned fruit for salads or in mixed pickles. Vigorous, productive vine, produces over a long season; tolerant to powdery mildew. Needs to be trellised for straight fruit. B75

Palace Pride: Refined Suyo type. Moderately ribbed, dark green fruit; 10 to 12 inches long, 1 1/4 inches thick; high, white spines; small seed cavity. Crisp, sweet flesh. Excellent in salads. Also good for bread 'n butter pickles. Strong, vigorous, productive vines; suitable for trellising. B73M, G33

Silver Star: Slender, black-spined fruit; greenish-white, except at the stem end where it is darker green; firm flesh with excellent palatability. Best harvested when about 8 inches long. Primarily used for kimchee and pickling. Vigorous, high-yielding vine; female-node ratio about 72%. Suited for early spring growing in tunnels or greenhouses. C20M, Q3

#### *Open-Pollinated*

Aodai: (Japanese Climbing) 60 days. Straight, cylindrical, bright-green fruit; 9 to 10 inches long, 2 to 2 1/2 inches in diameter; spineless; very crisp, mild flesh. Vigorous, climbing vine; very hardy, also tolerant to heat; can be grown on poles, trellises, or without support. Main stem should be cut to encourage side-branching. R47

China Long: (Chinese Long Green) 70 days. Straight, slender, dark-green fruit; prominently ridged and warted; 15 to 20 inches long, 2 to 2 1/2 inches in diameter; firm, crisp, mild flesh, few seeds. Vigorous, high yielding vine; dependable and widely adapted; resistant to mosaic; requires support, or fruit may curve. Introduced in 1862. TAPLEY 1937; D27

Early Ochiai: Slender, dark green fruit; 7 to 8 inches long, 1 1/2 inches in diameter; high black spines; quality excellent. Usually harvested when about 6 inches in length. Well suited for forcing. High yielding in cooler areas. When unstaked, fruits coil into "serpent" form. A2

Heiwa Green Prolific: (Heiwa Prolific) 65 days. Straight, bright-green fruit; 9 to 10 inches long, 2 inches in diameter; "burpless", non-bitter. Insensitive to day-length; prolific even under tropical conditions. Can be grown without support outdoors, or trellised in a cold-frame. Very popular in Japan. K49T, L13M

Kyoto Three Feet: (Kyoto Yard Long) 62 days. Long, slender, light bright-green fruit; 24 to 30 inches in length, 1 1/2 inches in diameter; firm, crisp, mild flesh, small seed mass, confined to the blossom end, very good quality. Good for slicing and pickles. Requires trellising to produce the straightest fruit. For early summer planting. F80, K49M, L59, L91M

Sanjiaku Kiuri: Straight, slender, light-green fruit; 18 to 24 inches long; thin, smooth skin; crisp, mild flesh, very good flavor. Best quality is obtained when harvested at 18 inches in length or less. Excellent for slicing or pickles. Should be grown with support, otherwise the fruit may curve. G33

Suyo Long: (Soo Yoh) 65 days. Slender, deep-green fruit; 12 to 15 inches long; highly ribbed and spined; crisp, sweet, "burpless" flesh, few seeds, very high quality. Excellent for slicing and bread and butter pickles. Vigorous, productive vine; widely adapted; grows well in hot weather; resistant to powdery mildew; requires staking for best results. D55, D68, E24, G6, G33, J9M, J20, J73, K49M, L7M, L11, L59, L79G, Q34, R47, etc.

Tokiwa: (Tokyo Green) 35 days. Very deep green fruit, 12 inches long and 1 1/2 inches in diameter; low spined. Highly prolific vine; very well suited for growing without support or trellis. For sowing from spring through summer. D55, N84, S70

Yamato Extra Long: 65 days. Straight, slender, dark-green fruit with narrow yellow stripes; 18 to 24 inches long, 1 1/2 to 2 inches in

diameter; smooth skin; firm, crisp, mild flesh, few seeds, very good flavor. Excellent for slicing. Should be trellised for best results. C20M, D74B, 139, L7M, Q11M, R32, S55

#### CODES FOR SPECIAL TYPES

1. Round
2. White-Skinned
3. Short-Vined
4. Mini or Baby

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## CURRENT{GR}

### RIBES SPP.

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#### BLACK CURRANTS (*R. nigrum*)

Baldwin: Medium to large fruit; skin fairly thick and tough; flesh juicy, subacid, very rich in vitamin C; ripens evenly and hangs well on the bush. Medium-sized bush; suitable for small gardens; susceptible to leaf spot and mildew diseases. Main commercial cultivar in England, where it has been cultivated for over 100 years. SIMMONS 1978; D47, N24M, 081

Ben Lomond: Vigorous, upright bush, free of foliage damaging insects. Flowers almost 3 weeks later than Baldwin but fruits at the same time. One of the highest producing black currants and also one of the least prone to mildew. Developed at the Scottish Horticultural Research Institute. D47, NO, 081, R83

Ben Nevis: Large-fruited black currant with good frost tolerance. Large fruits with intensely colored juice and good color stability. Vigorous plant, somewhat taller than Ben Lomond. Resistant to leaf spot; some resistance to American gooseberry mildew. Susceptible to gall mite. High chilling requirement. Originated in Scotland. D47,174, NO, 081

Ben Sarek: Large, black fruit of good quality. Small, compact bush, highly productive. Can be planted at 4 foot x 5 foot spacing, yet bears as heavily as full-sized bushes. Resistant to frost and mildew. Developed at the Scottish Horticultural Research Institute. D47, F87, J61M, NO, 081, R83

Black September: A late-ripening cultivar with very large, firm fruit that has a mild flavor and aroma typical of black currants. Ripens unevenly. Makes excellent jam, preserves and jelly. Upright bush; very hardy and disease resistant. D47,149P, I66T, 174, NO

Blackdown: (Baldwin x Brodtop) Large, jet-black berries, very juicy and flavorful with a distinctive musky taste. Excellent in jams, jellies and juice. Vigorous bush with an upright growth habit. Resistant to white pine blister rust and mildew. Originated in Great Britain. D47,149M, 149P, 174, NO

Blacksmith: Basal berry large, graduating to a small berry at the end of the strig; skin thin and tender; flesh juicy, subacid, somewhat sweet when fully ripe; ripens in midseason, hangs well on the bush. Bush large to very large, spreading; bears a good crop even on light soil. Very easy to pick. Introduced in 1916. SIMMONS 1978; D47, N24M

Boskoop Giant: (Boskoop) Fruit large to very large, but smaller at the end of the strig; skin thin and tender; flesh juicy, rich, subacid, sweetish when fully ripe; ripens early and fairly evenly; does not hang very well. Bush vigorous; production fair to heavy; usually 1 sprig of berries to a spur; strig long and drooping and easy to pick. Raised at Boskoop, Netherlands, before 1895. HEDRICK 1925, SIMMONS 1978; A65, B47, D11M, D47, F70, G50, G54, H42, 174, J89M, NO, R83

Brodtop: Large, sweet fruit with a mild flavor. One of the best black currants for drying into raisin-like fruits. Can either be left to dry on the bush or harvested and dried. Excellent for adding a

distinctive flavor to desserts and other dishes. Lew, spreading bush, disease resistant. Originated in Scandinavia. D47,174, J61M, NO

**Champion:** Fruit small to large, round; skin medium in thickness and toughness; skin color dull black; flesh yellowish, firm, not very juicy; flavor sprightly, becoming nearly sweet; quality good to very good; ripens late and unevenly. Bush large; vigorous; upright-spreading. Originated in England; introduced to the United States prior to 1897. HEDRICK 1925; D47, NO

**Climax:** Large, black fruit; skin relatively thick; flavor briskly subacid; quality good; ripens in mid-season. Bush vigorous and productive; bunches large. Originated by William Saunders, London, Ontario, Canada about 1887, from a seedling of Naples. HEDRICK 1925; N24M

**Consort:** (R. ussuriense x) Medium to large fruit, 1/2 to 3/4 inch in diameter; skin bluish-black; flesh somewhat soft; flavor strong; ripens late July; clusters medium long. Bush resistant to white pine blister rust; self-fruitful, not requiring insect pollination; vigorous and productive; upright. Originated in Ottawa, Ontario, Canada. Introduced in 1952. BROOKS 1972; A91, B43M, C34, C58, D37, D47, G50, H65, J29, L27M, M81M, NO, N24M

**Coronet:** (R. ussuriense x) Medium-sized, black fruit; resembles standard black currant cultivars. Bush immune from rust. Originated in Ottawa, Ontario, Canada by Canada Department of Agriculture Research Station. Introduced in 1948. BROOKS 1972; D47

**Crusader:** (R. ussuriense x) Fruit large; skin black; resembles standard black currant cultivars; ripens later than Consort. Reported to have poor fruit set when planted alone. Most valuable characteristic of the bush is its immunity from rust. Originated in Ottawa, Ontario, Canada. Introduced in 1948. BROOKS 1972; A74, A91, D47, F87, J61M, NO

**Green's Black:** Medium to medium large fruit; skin thick and fairly tough; flavor subacid. Ripens second early to midseason, being ready for harvest just before Wellington. Bush moderately vigorous, very heavy bearing; benefits from cross-pollination; flowers partly resistant to frost damage. Usually 2 or 3 fairly short strigs to a spur. SIMMONS 1978; D47

**Jet:** (Mailing Jet) Small fruits borne in long clusters, mostly bland in flavor; matures very late, one of the latest. Bush very prolific; flowers late and thus avoids early frost damage. Ideal for U-Pick operations. Highly regarded in Great Britain where it originated. D47, R83

**Laxton's Giant:** Very large fruit, excellent for exhibition; skin thin and tender; flesh juicy, somewhat sweet when fully ripe, quality very good; ripens early and fairly evenly. Bush vigorous, spreading, resistant to disease and frost, bears heavily. Usually 1 or 2 strigs to a spur. Strigs fairly long, easily picked. Originated in England. Introduced in 1946. SIMMONS 1978; D47, NO

**Mendip Cross:** Medium-sized fruit; skin thin and tender; flavor subacid to sweet when fully ripe; ripens early July. Unpopular commercially because it ripens unevenly and the overripe berries soon become squasy. Bush medium-sized; spreading; sensitive to poor drainage conditions. Usually 1 or 2 long strigs to a spur. SIMMONS 1978; D47, L12, NO

**Silver Gieter:** (Silvergieters Zwarte) Fruit large; skin thick and tough; flesh juicy; flavor subacid; quality very good; ripens in early mid-season. Very tall, vigorous bush; production fairly good; strigs long and easily picked. Originated in the Netherlands. SIMMONS 1978; D47, L12, NO, N24M

**Strata:** Large, roundish fruit; skin purple-black, glossy, very attractive, resembles that of an eggplant; flavor very sweet for a black currant, quality excellent. Bush vigorous and productive, low-spreading. D47,174, NO

**Wellington XXX:** Medium to large fruit; skin thick but tender; flavor subacid, somewhat sweet when fully ripe; ripens early mid-

season. Berries do not hang well on the bush and often split. Bush large; very vigorous and productive; spreading; strigs usually 1 or 2 to a spur. Popular commercial cultivar in Kent, England. SIMMONS 1978; D47, NO, P59M, R83

**Willoughby:** Fruit medium to large; skin black; flesh juicy; quality good; clusters large. Bush highly resistant to mildew and white pine blister rust; self-fruitful; very hardy; productive; more spreading than Consort. Originated in Parkside, Saskatchewan, Canada by Walter Willoughby Sr. Introduced in 1953 by Honey wood Lilies & Nursery. BROOKS 1972; A16, B47, D47, F67,174, J89M, L12, NO, N24M

## PINK CURRANTS

**Couleur de Chair:** (Champagne) Bunches medium in length, loose; berries large, pale pink, rather acid; ripens late. Esteemed in France for makiqg jelly. Bush vigorous, productive. Probably a cross between the common red and the common white currant. Introduced prior to 1778. HEDRICK 1925; U7D{SC}, Y83{SC}

**Gloire de Sablons:** Fruit small; skin white, striped with red; flavor acid; quality considered poor; bunches short, small. Bush upright; vigorous; moderately productive. Introduced prior to 1858. HEDRICK 1925; U7D{SC}, Y83{SC}

**Rosa Hollandische:** Reddish-pink, relatively smooth and glossy fruit; quality fair to good. Vigorous, upright-spreading plant, free of thorns; moderately productive; easy to harvest. Originated in Europe. ANONYMOUS 1990; U7D{SC}, Y83{SC}

**Tinka:** Medium to large, rose pink fruit; sweet flesh, contains a higher percentage of sugar than that of other pink currants. Recently introduced into the United States from Germany. D47

## RED CURRANTS

**Cascade:** Large fruit, larger than Red Lake, sweeter than most; matures 1 week earlier than Red Lake; clusters not as long as those of Red Lake. Moderately vigorous, upright bush; productive; somewhat susceptible to leaf spot. Originated in Excelsior, Minnesota. Introduced in 1942. 174, NO

**Cherry:** (Cherry Red) Fruit large, not very uniform, round; skin thin, smooth, tough; skin color bright but dark red; flesh very juicy, firm; flavor pleasant, acid or mildly subacid; quality good; ripens early. Bush medium to large; vigorous; upright when young, becoming more spreading with age; resistant to mildew. Short strigs make picking difficult. Known prior to 1840. HEDRICK 1925; A91, B47, C34, D37, F16, F53M, H49,149M, I49P, I66T, 174, M81M, NO, N24M

**Jonkheer van Tets:** (Von Tets) Medium to large fruit; deep-red in color; flavor subacid; quality very good; ripens early, late June to early July. Bush fairly upright; very productive; mildew and aphid resistant. Strigs of medium length. Seedling of Fay's Prolific; originated in the Netherlands. SIMMONS 1978; B74, D47, F16, F87,174, J61M, L12, NO, 081

**Laxton's No. 1:** Medium-sized fruit; skin very bright red; flesh juicy, seeds small; ripens in midseason, about the middle of July. Strong vigorous bush, upright to spreading; a heavy and consistent bearer. Berries thickly bunched on strigs of medium length. SIMMONS 1978; D47, L12, 081, R83

**Mailing Redstart:** (Redstart) Medium to large fruit; has a stronger flavor and greater acidity than Red Lake; quality very good; ripens late, about 2 weeks after Red Lake. Bush moderately vigorous and upright, a consistent and heavy bearer. Strigs long, with up to 2 secondary trusses. D47, F16, J61M, 081

**Perfection:** Uniformly large fruits, roundish or slightly oblate; skin smooth, thin but tough; skin color medium to dark red; flesh juicy, tender; flavor sprightly subacid becoming mild when fully ripe; quality very good; ripens early mid-season. Bush large, vigorous;

upright-spreading; productive. Originated in Rochester, Nov York by C.G. Hooker in 1887. HEDRICK 1925; C61, D76, G43, N24M

Red Lake: Fruit large, borne on long stems; skin tough, bright-red; flesh juicy; seeds fairly large but quality equal to that of Perfection; excellent for jelly; ripens late; clusters long, well filled. Bush upright; vigorous; superior to Perfection. Originated in Excelsior, Minnesota by W.H. Alderman. Introduced in 1933. BROOKS 1972, SIMMONS 1978; A16, B43M, B73M, C61, E38, G16, G54, G71, I78, K64, M65M, NO

Rotet: Large, medium to dark-red fruits with very good flavor; quality excellent. Ripens mid-season to late, about 2 to 3 weeks after Jonkheer van Tets. Strong, erect growth habit; long trusses. Attractive, luxurious foliage, suitable for landscape plantings. Very high yields. Resistant to mildew and leaf spot. Suitable for fresh markets, commercial processing and home gardens. Originated in Holland. L12, P68M

Rovada: Large to very large, dark-red fruits; quality excellent. Ripens late, 3 to 4 weeks after Jonkheer van Tets. Strong, erect growth habit; very long trusses. Attractive, luxurious foliage, suitable for edible landscaping. Very high yields. Resistant to mildew and leaf spot. Originated in Holland. The main variety used for commercial production in Central Europe. L12, P68M

Versailles: (Red Versailles) Large, juicy, dark-red fruit; ripens in midseason, about the second week in July. Vigorous, upright bush, fairly productive; blooms early; medium length strigs with loosely hanging berries. Originated in Versailles, France around 1835. SIMMONS 1978; L12

Wilder: Medium to large, roundish oblate fruit; skin smooth, thin, tender; skin color dark-red; flesh firm, juicy; flavor pleasantly subacid; quality good; ripens late mid-season to late; hangs on a long time after ripening. Bush large; vigorous; upright to slightly spreading; very productive. Originated in Irvington, Indiana ty E.Y. Teas about 1877. HEDRICK 1925; A91, B19, B47, C45M, C54, C61, E97, F43M, LI, M81M

#### WHITE CURRANTS (*R. sativum*)

Bar-le-Duc a Fruits Blanc: A white currant used in the preparation of the famous seedless currant jelly made only in Bar-le-Duc, France, since 1559. In the preparation of this gourmet delicacy a goose feather is used to gently pick out the currant seeds one by one without damaging the berries. HENDRICKSON; U7D{SC}

Bianca: Large to very large fruit with an exceptionally high sugar content. Has good shelf life. Vigorous and productive, averaging 30 pounds of fruit per bush. Blooms late, avoiding spring frosts. Self pollinating. Relatively new cultivar that originated in Sweden. D37, D47, F16, NO, P68M

White Dutch: Medium-sized, milky yellow fruit; flesh juicy, fairly sweet when fully ripe; ripens in midseason, about the second week of July. Bush moderately vigorous, upright to spreading, fairly productive. Strigs of medium length. One of the oldest white currant cultivars. SIMMONS 1978; D47, L12

White Grape: Medium to large, round ovate fruit; skin smooth, thin, tender; color clear translucent yellowish-white; flesh firm, juicy; flavor pleasantly subacid; quality good; ripens mid-season. Bush of medium size and vigor; spreading, sometimes sprawling; productive. Strigs difficult to pick without crushing some berries. HEDRICK 1925, SIMMONS 1978; A16, D47, R83

White Imperial: Medium to large, rounded fruit; skin smooth, thin, tender; color creamy white, a shade darker than White Grape; flesh firm, juicy; flavor pleasantly subacid to rich and sweet; quality very good to best; ripens mid-season. Large, dark-colored seeds show through flesh and skin. Bush above medium in size and vigor; broad, spreading; productive. HEDRICK 1925; B74, D47, F87, I49M, I74, J61M, L12, NO

White Jiiterboig: (Weisse aus Jiiterborg) (*R. petraeum*) Medium to small, white fruit of good quality. Bush not a heavy bearer. An old European heritage cultivar that still has merit. D47

White Pearl: Large, pale-yellow fruit; flavor briskly subacid; quality good; bunches large, well filled; ripens mid-season. Bush moderately vigorous; upright-spreading; unproductive. Originated in Brussels, Belgium prior to 1875. HEDRICK 1925; A65, D47, G50, H85, I66T, L12, N24M

White Versailles: Large, light yellow fruit; juicy sweet flesh; ripens early, about the beginning of July. Bush fairly strong, vigorous, upright; very heavy bearing. Strigs of medium length. SIMMONS 1978; D47, L12, 081, P59M, P68M

## DATE {DF}

### PHOENIX DACTYLIFERA

Abbada: Attractive, glossy black fruit with frost-like bloom; 2 inches long, 3/4 of an inch wide; cures to black with a purple glume; flesh not thick, soft, melting. Novelty because of its black appearance in variety packs. Early to midseason ripening. Originated in Brawley, California. C34M

Amir Hajj: Rare, high quality date that originated in the Mandali oasis of Iraq. Medium-large, deep, rich orange-brown fruits, unusually translucent. Excellent chewy, caramel-like texture and very pleasant, delicious flavor, rich and sweet but not cloying or overly strong. Tree a shy bearer. Amir Hajj means Commander of the Pilgrimage Caravan, so named because the owner of the original tree reportedly held this important position. POPENOE, P.; EI 1M

Asharasi: Medium to medium-large? fruits; skin dry, thin and tender, coarsely crinkled and folded; flesh hard, opaque, creamy white, changing to translucent brownish amber at tip, with a softer consistency; flavor excellent, rich, sweet and nutty. Well adapted to California conditions. One of the best dry dates in the world. POPENOE, P.; U7Z{PL}

Barhi: (Barhee, Honey Ball) Small to medium fruit; amber when ripening, deep golden brown when cured; flesh firm but very tender, very syrupy, rich yet not heavy or cloying; relatively little astringency in khalal stage for fresh consumption; highest sugar content—2% invert sugar. Late ripening. Moderate damage by rain and humidity. Fresh fruit widely available in Middle Eastern stores sold as *khalal dates*. Frozen fruit is said to taste like caramel candy. Originated in Iraq. C34M, C87M, E11M, E97P, 159, I83M{PL}, L15M

Blond Beauty: Semi-dry type. Large, oblong-elliptical fruit; skin tender, yellow when immature, amber to reddish-brown after ripening; soft, melting flesh, medium-sweet; pleasant, taffy-like flavor; ripens in midseason. Moderately vigorous tree, somewhat resistant to checking. Seedling of Deglet Noor. Originated in Indio, California between 1911 and 1917. Further developed by E.F. Shields. BROOKS 1997; K68

Brunette Beauty: Semi-dry type. Medium-sized, oblong-elliptical fruit; skin moderately tough, red when immature, nearly black after ripening; soft, very sweet flesh; flavor good; ripens late. Moderately vigorous tree with a thin trunk. Seedling of Deglet Noor. Originated in Indio, California between 1911 and 1917. Further developed by E.F. Shields. BROOKS 1997; K68

Dayri: (Dairee, Dairi) Fruit medium to large, oblong to oblong-elliptical; skin red when immature, brown to black when soft and ripe; flesh soft, amber, texture good, semitranslucent; flavor good, with a heavy sweetness. Ripens in midseason; ripens well in high humidity and extreme heat. Apparently best adapted to heavy soils. Originated in Iraq. BROOKS 1972; I83M{PL}, L15M, L53

Deglet Noor: (Date of the Light) Medium to large fruit; semi-dry; amber on ripening, deeper brown when cured; flesh deep golden brown, conspicuously translucent; flavor delicate, mild, very sweet, distinctive. Susceptible to rain and high humidity. Late ripening, requires a large amount of heat to mature properly. Originated in the Saharan oasis of Balad al Ahmar more than 375 years ago. A13M, A86, C34M, C81, C87M, E11M, E31, E97P, F97M, G3Z, G44M, I59, K68, L15M, L97G, M63M, etc.

Empress: Large, dry type date. Skin medium thick, amber to medium brown when ripe; flesh medium soft; flavor rich; quality very good; ripens in midseason. Moderately vigorous tree with good productivity. Seedling of Thoory first planted in 1916. Originated in Cathedral City, California by Everett K. Da Vail. BROOKS 1997; C81, E47M, F97M

Halawi: (The Sweet) Fruit medium large; translucent bright golden brown; skin thin, tender, adheres closely to the flesh; flesh firm but tender, often more like a soft date than a dry date; flavor sweet and honey-like, but not rich; good keeping qualities. Midseason ripening. Originated in Algeria. POPENOE, P.; A13M, C34M, C87M, E11M, E47M, F97M, L15M, L53

Honey: Medium-sized, semi-dry type. Skin medium thick, reddish-brown when ripe; soft, melting flesh with a mild and pleasant flavor. Ripens over a long period. Moderately vigorous tree. Seedling of Deglet Noor discovered in 1916 or 1917. Originated in Cathedral City, California by Eveiett K. DaVall. BROOKS 1997; A86, C34M, C81, E47M, E97P, G3Z, F97M

Khadrawi: (The Verdant) Medium to large fruit, oblong to oblong-elliptical; translucent orange-brown to light brown in color; skin firm, medium thick, fairly tough; flesh thick, firm and meaty, translucent orange-brown; flavor rich and extremely pleasant, never cloying the palate, even if eaten in quantity every day. Ripens in midseason. Originated in Iraq. POPENOE, P.; A13M, C34M, C87M, E11M, E47M, E97P, F97M, G3Z, L15M, L53

Khalasa: (Quintessence) Medium-sized, oblong fruit; satiiy, very translucent, light orange-brown skin; flesh firm but tender, caramel-like in consistency, entirely free of fiber; flavor delicate, but deliciously bringing out the characteristic date taste. Makes excellent date paste. Originated near Hofuf, Saudi Arabia. One of the most famous dates of the Persian Gulf region. POPENOE, R; U7Z{PL}

Khisab: (The Abundant Producer) A fresh fruit date, rarely cured. Medium sized, broadly oval fruit; deep amber when ripe; skin moderately thick, tough, coarsely wrinkled; flesh tender, deep amber, 1/2 inch thick, quality fair. Produces fresh fruit later than all other cultivars. Originated in Oman. I83M{PL}

Kustawi: (The Date of the Grandees) Medium-sized, oblong-oval fruit; translucent orange-brown to bright brown skin; translucent golden brown flesh with a pronounced caramel-like consistency; unusually rich and sweet flavor, yet not cloying; quality excellent. Ripens fairly early, the first half of September. Originated in Iraq. POPENOE, R; G3Z

Maktum: (The Bitten) Medium-large to large fruit; skin deeply wrinkled, occasionally forming folds and blisters; translucent, light golden-brown flesh, very soft and delicate, almost melting in the mouth; flavor very mild and pleasant; quality superior. Ripens somewhat later than Halawi. Does well in both California and Arizona. POPENOE, R; U7T{PL}

Medjool: Large to very large fruit; amber when ripening, reddish brown when cured; flesh soft, rich and delicious, firmer than Barhi, with high invert sugar; needs thinning for largest size and uniformity. Early ripening. Only slightly damaged by occasional rains and high humidity; susceptible to bayoud (fusarium) disease. Originated in Bou Denib, Morocco. Popular for gift baskets. A13M, A25G, A86{PD}, C34M, C87M, D3M, E1G, E11M, E31, E97P, F97M, G3Z, G92, I59, I83M{PL}, L15M, L53, M63M, N84{S}, P5{S}, etc.

Sphinx: (Black Sphinx) Large, oblong fruit, 1 3/4 inch by 1 inch; skin brownish-black, thin and delicate; flesh amber, soft and melting, slightly syrupy; flavor excellent, mild and pleasant, not cloying; ripens midseason to late. Tree vigorous; very productive, yielding 250-330 pounds of fruit annually. Originated in Phoenix, Arizona. Introduced about 1925. BROOKS 1972; C87M, L15M

Thoory: (The Bull's Date) Medium to large, oblong fruit; ripens and cures to light grayish-brown to straw color; flesh golden brown, thick, firm and nearly dry but not hard or brittle; flavor sweet, nutty, and delicate; does not deteriorate even if kept for a year or more. Sometimes known as the *bread date*. Late ripening. Bears heavily, with clusters of exceptional size. Originated in Algeria. 159

Zahidi: Fruit medium sized; surface smooth, glossy, attractive; skin rather thick; flesh translucent golden-yellow close to the skin, whitish near the seed, soft, meaty and full of syrup; flavor sweet, sugary, and not cloying; can be used either as a dry date or a soft date. Much used in the manufacture of *arrak*. One of the earliest dates to mature. Originated in Iraq. POPENOE, R; A13M, C34M, C87M, E11M, E47M, F97M, G3Z, I59, I83M{PL}, L15M, L53

## EGGPLANT {S}

SOLANUM AETHIOPICUM SOLANUM MACROCARPON  
SOLANUM MELONGENA

### GREEN-SKINNED

#### HYBRID

Harabegan: Very attractive, elongated fruits, usually somewhat curved; glossy, bright olive skin; firm white flesh with few seeds. Does not become mushy when boiled. Erect plant, bears fruit in bunches. Flowering begins 55 to 60 days after transplanting. Fruits are harvested at 5 to 6 day intervals. Originated in India. N16

#### OPEN-POLLINATED

Applegreen: 62 days. Small to medium-sized, egg-shaped fruit, averaging 4 ounces in weight; light-green skin, does not need peeling; mild, non-acid white flesh. Productive, upright plant, sets fruit under adverse northern conditions. Developed at the New Hampshire A.E.S. in 1964. K20M, L7M

Louisiana Green Oval: 90 days. Large, round oval fruit, attains a weight of 2 to 4 pounds; resembles Black Beauty, but larger; glistening, light-green skin; quality excellent, flavor mild; seed cavity confined to the blossom end. Best harvested while skin is still glossy. Sturdy, upright plant; height 2 to 3 feet; holds fruit well off the ground. F73D

Louisiana Long Green:<sup>1</sup> (Green Banana) 100 days. Long, well-shaped fruit; 8 inches in length, 3 inches in diameter; skin green with dark-green stripes; quality excellent. Similar to Louisiana Green Oval, except for the longer shape: Very prolific plant; height 3 feet. Highly recommended for roadside markets. F73D, I18M, I77, L7M

Thai: (Thai Round Green, Green Tomato) 80 days. Small, round fruits, 1 to 2 inches in diameter; borne in clusters; skin green and white, turning gold on full maturity. May be seedy or even bitter, but provides authentic fruits for Southeast Asian cuisine. Excellent for pickling, stuffing and stir-frying. Tall, bushy plants; height 3 feet; some may have thorns. B60M{PR}, C20M, D55, E13G{PR}, N84

Thai Green: (Thai Long Green, Elephant Tusk) 90 days. Long, slender, cylindrical fruit; 12 to 14 inches in length, 1 1/2 to 2 inches in diameter; skin light-green, thin, attractive; flesh tender, flavor very mild. Vigorous and prolific plant. Heirloom from Thailand. C20M, D55, F73D, J9M, L7M, N84, O53



## PURPLE/PINK-SKINNED

## HYBRID

Baby Bell:<sup>2 3</sup> (Bambino) 55 days. Tiny, oval fruit; 2 inches deep and 1 1/2 inches wide; glossy jet black skin; purple calyx. Dwarf, bushy plants, 10 to 12 inches tall; produce about 6 fruits per plant. Ideal for pots, beds or borders. Unusual "baby vegetable" becoming very popular with the salad bar trade. C92, DI 1M, F13, F70, G71, G82, H95,139,177,191, J97M, K57{PL}, L42, L89, L91M, M46, Q34, etc.

Classic: 76 days. Recommended where a longer, slimmer fruit shape is preferred. Rich, glossy purple-black color that holds well after picking. Its tapered shape is uniform in all sizes. Vigorous, erect plant; bears abundantly; stands up to stress better than most. A87M, C20M, F13, G1M, H61, H85M, N52

Dusky: 63 days. Medium-sized, long oval fruit, 8 inches in length and 3 1/2 inches in diameter; glossy, purplish-black skin; firm flesh of quality good; ripens extremely early; packs and ships well. Very uniform color and shape. Upright plant; height 2 to 3 feet; high-yielding; resistant to tobacco mosaic virus. Recommended for commercial growers and home gardeners. A16, C44, D11M, E75{PL}, F1, F70, G71, G79, H33M, H85M, 139,164, J14{PL}, K73, L89, etc.

Haguro Hitokuchimaru:<sup>2</sup> 35-40 days. A genetically small eggplant. Highly prolific; produces dozens of very small, oval fruits the size of large pecans. Very dark purple, glossy skin. The calyx and stem are deep purple as well. Good for pickles; suitable for processing. Compact, semi-upright plant; tolerant to heat and dry conditions. Q28

Ichiban: 58 days. Hybrid oriental type. Long, slender, cylindrical fruit; 10 inches in length, 2 inches in diameter, slightly tapered towards the blossom end; skin dark purple, glossy; flesh soft, slow to develop seeds, quality and flavor good. Tall, upright plant; height 36 to 40 inches; highly productive. For local markets and home gardens. C20M, D11M, F70, H33M, H61, H95,139,191, J20, J84, M29, N52

Little Fingers:<sup>2</sup> 68 days Very early oriental type used for "baby" eggplants. Can be picked when 3 to 7 inches long and 3/4 to 1 1/4 inches in diameter. Long, slim, cylindrical fruit; attractive, glossy, dark-purple skin; quality high; spineless. Vigorous plant; bears fruit in clusters of 5 to 10; continues to produce over a long season. C20M, D68, F13, G13M, I18M, I18M{PL}, 177, K57{PL}, K66

Neon: 68 days. Unique rose-colored eggplant. Medium to long fruits, 6 to 8 inches in length and 3 inches across at the bottom, tapered slightly at the calyx end; attractive, rose-lavender skin; tender, pure white flesh with very few seeds, free of bitterness. Recommended for Asian markets and the salad bar trade Very popular in the Caribbean. B8M, C53, D11M, D26D, D26G, E75{PL}, F70, G6,118M, 177, K10, K50, K57{PL}, K60M, N84, etc.

Pink Bride:<sup>1</sup> (Asian Bride) Fruit slender and straight, 7 to 8 1/2 inches long and 2 1/2 inches in diameter; weight 3 to 4 ounces; skin pink-violet with white stripes; green calyx; flesh white, tender, of good quality. Similar to Pinky, but long. Small, compact plant; strong-growing and well-branched; bears 2 to 3 fruit on each cluster. C20M, J20, K10, K66, L42, L89, Q34, Q39

Short Tom:<sup>2</sup> 75 days. Small fruit, only 3 to 5 inches long and 1 inch in diameter; shiny black skin, thin and tender; excellent eating quality, can be picked when young or left to grow larger. Vigorous plant; sets fruit prolifically. Bred for extremely early harvest at the sacrifice of fruit size. Suitable for container culture. L89, N52, S55

Vittoria: 61 days. High quality Italian type eggplant. Long, cylindrical fruits, about 9 inches long and 2 1/2 inches in diameter; attractive, deep purple skin; green calyx; firm, mild flesh. Perfect size and shape for slicing. Vigorous, high yielding plant, 3 feet tall.

Resistant to tobacco mosaic virus. B8M, B75, B75{PL}, E53M, G71,164,167M, 191, K10, L7M, L42, M46

## open-pollinated

Black Beauty: 80 days. Large, round oval fruit, 4 to 6 inches long; skin purplish-black, smooth, glossy; calyx bright green; good quality and flavor; holds color and quality well after being picked. Medium-tall plant; bears 4 to 6 fruit held well off the ground; widely adapted. Popular with home gardeners and commercial growers. Introduced about 1910. B75M, B78, C44, G79, H33M, H61, 164, 184, K23{PL}, K49T, K73, L7M, N16, R47

Chinese Long: (Chinese Long Sword) 75 days. Unusual long, thin fruit; 10 to 12 inches in length, 1 1/2 to 2 inches in diameter; tapers to a sword-like point; skin purple, thin; flesh white, very tender, of good flavor. Robust, heavy-yielding plant; tolerant to diseases. C20M, G33

Dark Long Red: Long, narrow, reddish-purple fruits, 7 to 13 inches in length. Very attractive plant, can tolerate cold and grows better in partial shade than full sun. A valuable type when attempting to grow eggplants in regions colder than Zone 6. A popular favorite in Malaysia. D29P, F73D, J73

De Barbentane: 70 days. A French heirloom, has been grown in the south of France since the 19th century. Long, cylindrical fruit; skin purplish-black, glossy; flavor good. Sturdy vigorous plant; not highly productive, but hardy. Traditionally used for *ratatouille*, a stew of eggplant, tomato and green pepper. D74B, G68, K49M, P59M

Early Black Egg: 70 days. Small, pear-shaped, slightly blocky fruit; 5 to 6 inches long; skin purple; flesh unusually tender and flavorful. Bushy, purple-tinted plant; height 2 feet; sets well in cool, short season areas. Should be picked when young for best quality and to encourage continuous fruit setting. E24, J9M, L7M

Early Long Purple: 75 days. Long, slender fruit, about 12 inches long and 3 to 4 inches in diameter; skin dark violet; flavor very good; ideal for slicing. Bushy, prolific plant; height 24 to 38 inches. Mediterranean type, similar to *Violette Longue*. Introduced prior to 1885. VILMORIN; C44, D74B, C69, F80, K49M, K73, L77D, PIG

Florida Market: Very large, oval fruit, 9 inches long and 6 1/2 inches in diameter; skin dark-purple, smooth, glossy; calyx green; resistant to fruit rot. Vigorous, upright plant; height 30 to 36 inches; holds fruit well off the ground; productive over a long harvesting season. Grown widely in Florida for the fresh market. A87M, C20M, F80, G1M, G27M, H54, H61,184, K49M

Improved Muktakeshi: Oblong, deep-purple fruit; very thin skin; extremely palatable flesh with very few seeds; quality excellent. An improved strain of a traditional Indian cultivar; developed by Sutton & Sons, India. Popular in the state of Bihar. S59M

Italian Pink Bicolor:<sup>1</sup> 75 days. Large, bell-shaped fruit; skin creamy white overlaid with rose-pink vertical stripes. Tender, sweet flesh. A popular novelty with the European trade. An open-pollinated cultivar with a percentage of off types. A2, D11M{PL}, F70{PL}, , I99M, K49T, L42

Japanese Pickling: 75 days. Long, thin, uniquely shaped fruits; 6 to 8 inches in length; very long, wavy stems; thin, deep purple skin; tender flesh, sweet and mild. Excellent for pickling. Extremely productive plant, about 18 inches tall. Has traditionally won first prize at several county fairs. Heirloom from the early 1900's. K23{PL}, K49T

Kurume Long: (Kurume Long Purple) Long, slender fruit; 12 inches in length, 2 inches in diameter; skin purplish-black, attractive, glossy; flavor excellent. Resistant to fusarium wilt. A standard long purple type from Japan. Does well in warm areas. A79M, C20M, D55, G33, H49, J82, K71, L79G, N84, S63M

Listada de Gandia:<sup>1</sup> 75 days. Fruit egg-shaped, 5 to 6 inches long; skin very attractive, purple with irregular white stripes; calyx green, somewhat spiny; mild-flavored, snow-white flesh, of fine texture. Compact, productive plant; height 2 feet; somewhat drought tolerant; sets fruit well during high temperatures. C95, F73D, K20M, K49Z, L7M

Morden Midget:<sup>3</sup> 65 days. Very early cultivar that produces full-sized fruit on dwarf plants. Medium-sized, oval fruit; purple skin; good flavor. Small, sturdy plant. Most reliable eggplant for far northern gardens. Developed at the Morden Research Station, Morden, Manitoba, Canada. J9M, J20, K20M, L79, M27

Pallida Romanesca:<sup>1</sup> (Pale Roman) Large, broad, oval fruit, sometimes ribbed; skin white blushed with lavender-purple; flesh meaty, mild-flavored. Compact plants. Grown for market in Rome. G53M, S17

Pingtung Long: 65 days. Long, slender fruits, 10 to 11 inches in length and 1 1/2 inches in diameter; attractive, dark purple skin; pure, bright white flesh. Very vigorous and hardy plant, highly productive, resistant to many diseases. Tolerant of extreme heat and wet conditions. Very popular in Taiwan. A2, C20M, D55, D68, F73D, I18M, 177, 191, J20, L11, N84, Q39, S70

Pingtung Long Improved: (Pingtung Extra Long) Light-purple fruits, 11 to 12 inches long, 1 to 2 inches in diameter. Excellent for slicing and pickling. Plants more upright than some of the other eggplants; very early and very productive, producing up to 20 fruits per plant; resistant to extreme heat and humidity. Improved strain of a traditional Taiwanese cultivar. F80, J73, L59

Pusa Purple Cluster: 75 days. A small-fruited cultivar with fruits of a deep-purple color, borne in clusters of 4 to 6; weight about 21 grams. Tall, erect, purplish plants; often produce up to 50 fruits per plant. Resistant to bacterial wilt and little leaf disease. Developed at IARI, New Delhi, India. BOSE 1993; Q45M, R50, S59M

Pusa Purple Long: 60 days. A greatly improved extra early strain from India. An excellent producer of tender, thick, glossy deep-purple fruits, about 12 inches long. Semi-erect plants. Suitable for spring and autumn seasons. Developed at the Indian Agricultural Research Institute, New Delhi. BOSE 1993; N91, Q18, Q45M, R50, S36

Rondede Valence: (Violetta Tonda) 75 days. Small, truly round fruit; skin dark purple, sometimes tinged with green at the shoulders, even when fully ripe; should be picked when the size of a large naval orange or a small grapefruit. Excellent for stuffing. Not very productive; requires a hot climate. Old, traditional cultivar; named after the city on the Rhone River in France. B8, C20M

Rosa Bianco:<sup>1</sup> 75 days. Very attractive, globular fruit; 4 to 6 inches in length and 3 to 4 inches across; skin colored with shades of true lavender and creamy white; calyx very large compared to other eggplants, often enclosing the fruit for days; flesh meaty, of very fine, delicate flavor. Commands premium prices in specialty markets. B75, B75{PL}, C20M, D68, F73D, I18M, I18M{PL}, 177, K49M, K66, M27, M32, 089

Slim Jim:<sup>2 3</sup> 75 days. Long, slender fruit, 4 to 6 inches in length when mature; skin lavender to purple, colors up while still the size of a peanut. Small, compact plant; ideal for growing in pots; produces fruit in clusters close to the main stem; has ornamental violet foliage. Recommended for market gardeners growing "baby" vegetables for the specialty trade. C53, 089, Q11M

Taiwan Long: 70 days. Long, slender fruit, about 7 inches in length and 1 1/2 inches in diameter; skin purplish-black, glossy; flesh tender; ripens early; should be picked when young. A continuous and heavy yielder, can produce as many as 45 fruits; disease resistant. L59

Violetta di Firenze:<sup>1</sup> 97 days. Unusual, attractive fruit; rich lavender, sometimes striped with white; very large, round to oblong, grooved. Very good for stuffing or using as a centerpiece. Very

spreading, upright plant. Needs high temperatures to mature a crop; cloches and black plastic recommended in far northern areas. C53, J20, K20M, M46, 089, Q11M, Q34, S17

Violette Longue: (Violetta Lunga) 65 days. An early cultivar, very popular in southern France. Fruit oblong-oval, slightly club-shaped, thickest at the blossom end; 6 to 8 inches in length; skin purplish-black, attractive, smooth; flesh firm, contains few seeds, quality excellent; well-suited to slicing. Produces 8 to 10 fruits per plant. Introduced prior to 1885. VILMORIN; B8, C53, E63D, F73D, Q11M, S17

#### RED/ORANGE-SKINNED (*S. aethiopicum*, *S. macrocarpon*)

Jaxatu Soxna: 60-80 days. Bitter-fruited African type. Small, flattened, ribbed fruits; 2 to 2 1/2 inches in diameter; weight 50 to 80 grams. Upright plant, about 20 inches tall. The immature, light green to creamy white fruits are eaten as a bitter vegetable. Leaves are used like spinach. Adapted to hot and dry or rainy season growing. S66M

Keur M'bir N'dao: 60-80 days. Bitter-fruited African type. Small, flattened, strongly ribbed fruits; 2 3/4 inches in diameter; weight 100 grams. The immature, light green fruits are cooked and eaten as a vegetable. Leaves are used like spinach. Spreading plant, about 15 inches tall; yields 10 fruits per plant. Harvested over a 30 to 40 day season. S66M

N'Drowa Issia: 50-70 days. Sweet-fruited African type. Small, flattened, ribbed fruits; about 2 inches in diameter; weight 70 to 80 grams; red-orange when fully ripe. Fruits are picked when yellowish green and used as a vegetable. The leaves are eaten like spinach. Erect plant, 24 to 40 inches tall; resistant to aphids. S66M

N'Goyo: 60-80 days. Sweet-fruited African type. Small, flattened, ribbed fruits; about 4 inches in diameter; weight 100 to 130 grams; bright red when fully ripe. Erect plant, 20 to 24 inches tall. The fruits are harvested at the dark-green immature stage and used as a vegetable. Leaves are eaten like spinach. S66M

Small Ruffled Red: (Red Ruffles, Hmong Red) 100 days. Small, deeply creased fruit, 2 inches in diameter; skin orange-red; flesh seedy, bitter. Prized in Southeast Asian cuisines for its bitter flavor. Tall plant, height 3 feet; bears fruit in clusters; resistant to nematodes and light frost. Also used for decoration. F80

Turkish Gem: 63 days. Small, globe-shaped fruit, about the size of a Celebrity tomato; brilliant, glossy reddish-orange skin with an occasional streak of deep green. High sugar content. Very good for grilling, in vegetable arrangements or for eggplant parmesan. C92

Turkish Orange: (Turkish Italian) 75 days. Small, spherical fruit, 2 1/2 inches in diameter; skin bright orange-red; flesh seedy, with an excellent sweet taste. Usually eaten when green. Delicious in Thai curry and *caponata*. Tall, hardy plant; produces abundantly; resistant to flea beetles. Said to have originated in Turkey; now used in parts of Italy. C95, D29P, F73D, I99M, K23{PL}, K49T, L7M, L77D, 089

#### WHITE-SKINNED

White eggplants are generally firmer, less moist, and hold their shape better than purple types. They are also closer-grained, creamier, and less bitter. The flesh can be more heavily seeded, although the seeds are often less acrid. SCHNEIDER 1986 [Cul, Re]. N40{PR}

#### HYBRID

Ghost Buster: 80 days. Attractive, deep oval fruit, about 6 to 7 inches in length; bright white skin; slightly sweet flavor. Broad, vigorous, semi-spreading plant; productive; dense, bright-green foliage provides excellent cover for the fruit and holds them well off the ground. Excellent specialty market item. C44, F13, G27M, I18M{PL}, 177, K57{PL}

OPEN-POLLINATED

Banaras Giant: 63 days. Large, round fruit, 5 1/2 inches long and 5 inches in diameter; skin greenish-white; flesh white, firm, of excellent quality. Semi-erect, spineless plant, height about 20 inches; produces 5 to 9 fruits. Popular Indian cultivar. R0, S59M

Casper: 70 days. An attractive ivory-white version of Blackjack. Fruit averages 6 inches long, 2 3/4 inches in diameter; snow-white flesh, mild, delicate, mushroom-like flavor; green calyx; ripens early. Medium-sized, prolific plant. C20M, D11M{PL}, F70{PL}, F73D, K49M, L42, N24M

Dourga: 65 days. An attractive, ornamental eggplant. Fruit cylindrical, 6 inches long and 2 inches in diameter; skin shiny white; flesh white, flavor sweet and delicate; quality excellent. Compact, productive plant, about 2 feet tall, produces many small double fruits per cluster. Disease resistant. A1, D56M, F73D, K71, M29, M65

Italian White: 72-78 days. Small, plump, round fruits; 3 or 4 inches in diameter; pure white skin; creamy white flesh, milder and sweeter than purple types. Has a somewhat mushroom-like flavor, especially when picked small. Extremely productive plant, about 18 inches tall. Good for container gardening. Italian heirloom from the early 1900's. A2, F73D, K23{PL}, K49T, L11

Long White Sword: 100 days. Elongated, slender, white-skinned fruit; 6 to 9 inches in length, 2 inches in diameter; flesh very meaty, with very few seeds, flavor mild and delicate. Grows about 3 feet tall. K46T, L7M

Snowy: 58-62 days. Very uniform, early white eggplant. Long, cylindrical fruits, 7 to 8 inches in length and 2 1/2 inches in diameter; smooth, glossy white skin; firm, creamy-white flesh with a mild, delicate flavor. Upright plant. Does well in short season areas. Recommended for roadside stands and specialty markets. D74B, E91G, F63, G68, I18M, K50, K66

White Beauty: 70 days. Medium-large, nearly round fruit; 4 to 5 inches long, 5 to 6 inches in diameter; smooth, snow-white skin; flesh white, seedy, very full-flavored, quality best when eaten small. Sturdy, bushy plant; height 3 feet; holds fruit well off the ground. L7M

White Egg: (Japanese White Egg) 75 days. Small fruit, 1 to 2 inches long; the size and shape of a hen's egg; skin white; quality excellent. Prolific plant; height 3 feet; sets fruit continuously over a long season. K49M

## CODES FOR SPECIAL TYPES

1. Striped
2. Mini or Baby
3. Dwarf

**ENDIVE {S}**CICHORIUM ENDIVIA**CURLY-LEAVED**

Also called *chicoree frisee*, these are flat, low-growing plants with narrowish curled, fringed or indented leaves. They have a tendency to rot in damp, cold weather but are more tolerant of heat than broad-leaved endive, so are used mainly from late spring to autumn. LARKCOM 1984.

Bianca Riccia da Taglio:<sup>1</sup> Tender, delicious, pale green leaves. Especially adapted to cut-and-come-again techniques and salad mixes. When sown thickly will provide an abundance of greens all year long that are excellent in salads. Forms large, prostrate bunches with white hearts. Regrows quickly. G6, N84, Q11M

Elodie: 70 days. Strong, attractive plants; dense, frilly, green outer leaves; crisp but tender mid-ribs; closely-bunched blanched hearts.

Has a crunchy texture and a clean, fresh taste. More heat-tolerant than older sorts and produces over a longer harvest season. The fine-cut lacy leaves combine attractively with lettuce. French introduction. C95

Fine de Louviers: (Fine Curled Louviers, De Louviers) 90 days. Very finely curled, indented, yellow-green foliage; forms a nicely compact but curled heart; thin, white ribs. Grows 10 to 12 inches in height. Rosette almost hemispherical in form; contains a greater number of blanched leaves in proportion to its size than other sorts. Introduced prior to 1885. VILMORIN; U14

Fine Maraicheie: Very small, compact endive; grows to only 8 inches in diameter. Very frizzy, decorative leaves. Ideal for individual servings, or for picking when very young to use in mesclun. Not hardy; sow in spring and early summer for summer use. S55

Galia:<sup>3</sup> 42 days. Early Tres Fine Maraichere type Very curled leaves with fine, slender petioles; large, full heart, sweet and tender. Good self blanching qualities. Excellent for mesclun salad mixes and "baby" endive. Small plant, well suited to small gardens. Good resistance to bolting. Developed by Vilmorin of France. C53, C92, 177, S95M

Green Curled Ruffec: (De Ruffec, Green Curled, Early Green Curled, Giant Fringed Oyster) 85 days. Very large rosette, often 16 to 18 inches in diameter, resembling Moss Curled but fuller in the center. Midrib very white and thick, very tender and fleshy, nearly an inch in diameter but appearing much broader due to the blanching of a large portion of the leaf blade. Suitable for summer and autumn. Bears cold weather remarkably well. Introduced prior to 1865. VILMORIN; A16, A25, C85M, FI, F92, G16, G71, G79, G83M, 139, K49M, M46, Q34

Large Green Curled White Ribbed: (Large Green Curled) 85 days. Commercial type with attractive, bright-green leaves that are long, well-fringed, curled and have a white mid-rib. Large-framed plant, 14 to 18 inches in diameter. Excellent heart; blanches well. Most popular in the South. Tolerant to black heart. B78

Moss Curled: (Green Moss Curled, Early Green Moss Curled) 90 days. Rosette rather small, seldom exceeding 10 or 12 inches in diameter. Leaves clear dark-green, very much cut, curled, and crisped, the whole plant resembling a tuft of moss; mid-ribs narrow and very white. Not very productive, but in demand due to its unique appearance. As it occupies little space, it is very suitable for growing under cloches. Introduced prior to 1885. VILMORIN; B49, 167M, 184, 053M, R32

Pink Stem:<sup>2</sup> Unique curled endive with attractive pink midribs. Large, heavy plants; slow to bolt. Suitable for spring, summer and fall crops. Excellent for adding an extra touch of color to salads. New introduction that should be well suited to the specialty market. Q34

President: (Giant Green Curled) 85 days. Very large rosette. Deeply cut and frilled, dark-green leaves resemble Salad Bowl lettuce, but with a nicely blanched, creamy yellow-white core that is particularly tasty and tender. One of the hardiest cultivars, withstanding adverse weather in the fall. A2, K49M, L89, R11M

Riccia Pancalieri: (Green Curled Rmcalier, Grosse Pancalieri, Green Curled Upright) 95 days. Forms a very large rosette with a voluminous heart; very curled and crisped leaves have rose-tinted white midribs. The central leaves stand quite erect so that the plant is blanched naturally, without requiring to be tied up. Sow in rows from March to September; use in summer, autumn and winter. VILMORIN; B49, N84, Q11M, R32, Si 7, S55

Ricciutissima d'Ingegnoli: A distinct cultivar with very finely divided and curled, tender leaves. Produces a full heart of light yellow color and an especially delicious flavor. May be planted from March to August for continuous harvests over a period of 8 months per year. N84, Q11M

Salad King: 80 days. Vigorous, healthy, heavy-bearing plant. Large, attractive, deep-green, finely cut leaves. Deep, full heart may be easily blanched by gathering and tying the outer leaves. Early maturing; for spring, summer and fall crops. Very slow to bolt and resistant to tipburn and hot weather. Not harmed by light frosts. B75M, C20M, C44, D26D, D82, G79, G82, G93M, 164, K50, K71, K73, L42, R47

Tosca:<sup>3</sup> 45 days. Tres Fine Maraichere type Very large heads; full white blanched hearts, very mild and sweet; narrow, very finely cut, medium-green leaves. Highly recommended for "baby" endive. Suitable for spring or summer plantings. Excellent resistance to heat, drought and bolting. Developed by Vilmorin of France. C20M, C85M, I18M, 177, K49Z, L42, L91M, N81, S61M, S95M

Toujours Blanche: (Ever-White Curled) Very distinct endive, the leaves being very pale-colored, giving the appearance of having been artificially blanched. Very finely curled leaves; yellow midribs, tinged with rose. Forms rosettes 14 to 16 inches in diameter. Not very productive. An old French heirloom from the 19th Century. VILMORIN; P59M

Tres Fine Maraichere: 46 days. Long and smooth but deeply cut, toothed grey-green leaves with delicate crisp ribs; well-blanched, creamy hearts. Must be harvested early before showing tipburn or bottom rot. Mild, delicious salad ingredient for specialty markets. Grows well in a variety of soils. D68, E63D, F44, G93M, 177, I99M, J97M, K23, K23{PL}, K49M, K49T, K66, L91M, M46, N7G, Q34, etc.

Wallonne: Traditional French variety often available in several strains. Large, tightly packed heads with self blanching hearts and finely cut leaves. Vigorous and handy. Usually sown in August and September for November through January harvests. Also suitable for poly tunnel culture. K49M, N84, Q52, S17, S55, S95M

White Curled: (Ever-White, Ever-Blanched, Bianca) Rosette not very dense, 14 to 16 inches in diameter; heart loose and open. Leaves pale yellowish-green, having the appearance of being artificially blanched; frilled or curled on the borders. Midrib yellow, tinged with rose-ied. Tender and of good quality when very young, otherwise chiefly valued for its unique appearance. Introduced prior to 1865. BURR, VILMORIN; E38, Q34

#### BROAD-LEAVED

Also called *escarole*, *Batavian endive*, *scarole* and *chicoree scarole*, these are larger and taller than curly-leaved endive with broader leaves, somewhat twisted at the base. They are much hardier and more suitable for autumn, winter and, where they have been overwintered, for early spring crops. They require blanching in hot weather, when at their most bitter. LARKCOM 1984.

Broad-Leaved Batavian: (Full Heart Batavian, Batavian Green) 85 days. Leaves yellowish-green; large and broad; 10 inches long, 5 to 6 inches in diameter at the broadest part; thick and fleshy. Very deep, well-blanched, creamy white heart. Standard, traditional cultivar. Introduced from Java via Holland in 1860. BURR; A25, B49, C44, D68, G27M, G71, G93M, H95,139,164,184, K10

Casco d'Oro: 45-50 days. Large, prostrate head; broad, wavy, elongated leaves, yellowish-green with white midribs. Blanches to a golden-yellow internal color after the heads are tied up 15 to 20 days before harvest. Usually sown in spring and summer. N84, Q11M

Florida Deep Heart: (Florida Full Heart) 85 days. More upright than Full Heart Batavian; grows 12 to 15 inches tall. Thick, crumpled leaves and dense foliage encourages development of a creamy white heart that is less susceptible to basal rot. Standard broad-leaf type; grown extensively in the South for fresh market and shipping. Al, C20M, D1T, F13, G79, J84, K10, K50, M29

Geante Maraichere: Very large, vigorous growing, hardy endive that develops a blanched heart very early in its growth. The rosette is very full and dense, producing many packed leaves in the center of

the plant. Outer leaves broad, wavy, irregularly lobed. Plant June through August. D11M, F70, S66M, S95M

Gigante Degli Ortolani: Very large plant, easily growing to 15 or 16 inches in diameter. Succulent outer leaves of an attractive bright-green color. Forms a rose colored heart that blanches to a whitish-yellow in a few days. Sown in summer, harvested in autumn and winter. N7G, N84, Q11M, S17

Grosse Bouclee: 50 days. Uniform, extra large-leaved escarole from France. Large heads, up to a foot or more across; very tight, full hearts; long, smooth, well-blanched leaves, tender and delicious. Very good in salads or simply braised with olive oil and garlic. Easy to grow and slow bolting. Suitable for summer or fall sowings. Al, E63D, E91G, F44, I18M, 177, J20, K10, K49M, L91M, M46, N16, Q11M, S95M

Sinco: 85 days. Early maturing, vigorous, healthy plant produces a dense mass of large, folded outer leaves with a closely bunched, well-blanched, creamy yellow heart. Leaves are broad, slightly crinkled and dark-green in color. Good tipburn tolerance. French introduction. J97M, K66

Wivol: 80 days. Medium-green heads form a rosette of ruffled leaves whose broad central stems make a blanched heart which is very mild and tasty. Hardy to below 7° F. Selected specifically to tolerate rain, cold and general adverse weather. Usually planted in July for an autumn harvest. L89, N7G

#### UPRIGHT

A possible link between the curly-leaved and broad-leaved types, these have a distinct upright growth habit instead of the usual flat or rosette form. Most are extremely hardy.

Cartocciata d'Ingegnoli: A splendid cultivar that forms large, upright heads that are naturally self-blanching. The broad, round outer leaves wrap themselves around the golden-white inner heart in a manner similar to crisphead lettuce. Excellent flavor. Usually sown for fall and winter harvesting. N84, Q11M

Cornet d'Anjou: Broad leaved, semi-heading type Very large leaves, almost as broad as long; cut at the edges into numerous long teeth; midrib fan-shaped. Outer leaves unfold and envelope the younger leaves to form a loose head. Can be blanched to mellow its fine flavor. Named for the shape of the heart which resembles the mouth of a horn, or comet, and the town where it originated, Anjou, France. For spring or fall crops. C53, G68, S95M

Cornet d'Bordeaux: A fine old French cultivar which is very hardy. Upright in growth habit, forming a loose head. Very large outer leaves; cut at the edges into numerous long teeth; fan-shaped midrib. Can provide a constant cut-and-come-again crop through the winter. Performs exceptionally well in cold frame, tunnel, or cloche. Leaves make excellent wrappings for various stuffings. LARKCOM 1984; E83T, G68, N84, S17, S55

Cornetto della Loire: (Cornet de la Loire) Large, elongated, upright plant; pale green in color; outer leaves quickly envelope the inner ones to form a loose head. For autumn production, it may be sown later than others because it grows very rapidly. Very handy, suitable for growing until the first frost. E83T, 060, P59M

#### CODES FOR SPECIAL TYPES

1. Cutting
2. Pink
3. Baby

## FAVABEAN {S}

#### FABA VULGARIS

Aprovecho Select: 75-85 days. A selection developed in Oregon by Ianto Evans with unusually large seeds and a fine sweet flavor.

Excellent for table use, especially when mashed into a hummus-like paste. Vigorous, 3 to 4 foot plants. Hardy to below 20° F. Has excelled in trials in the maritime Northwest and on the East Coast. Introduced in 1988. C95, J39, K49T

Aquadulce: 85 days. Medium-green pods, 14 to 16 inches long and nearly 2 inches wide; 7 to 8 large, white seeds per pod; suitable for fresh use and freezing. Erect plants, 2 to 2 1/2 feet high; not very stout; sometimes quite green and sometimes slightly tinged with red. Extra hardy for autumn sowing to avoid blackfly, and to grow an early spring crop. Introduced around 1844. A2, C92, D74B, G79, K49M, K73, L42, N24M, O89, Q11M, S17, S95M

Aquadulce Claudia: 90 days. Long, 15 inch pods; 1 inch diameter seeds have pale greenish skins. Excellent for use as a dry bean; also makes a very good shelling bean. Sturdy plants, growing 3 to 4 feet tall at full maturity. The primary cultivar for a very early crop; can be sown as early as January in mild-winter areas or in the fall. Reliably hardy to 12° F. Originated in Spain. G53M, R32, R47, R83, S55, S75M

Aztec Yellow: Very large, lemon-yellow to golden-skinned beans with good flavor. Vivid lemon-yellow flesh, makes for an attractive, colorful addition to stews and other dishes. Has also been recommended for making golden tofu. Early producer of short pods containing 1 to 3 beans. Selected by Ianto Evans from ancient breeding material collected in Mexico. C95, J39

Banner:<sup>1</sup> Said to be one of the highest yielding, best-tasting commercial small-seeded field types. The stalks also make excellent silage or green manure. Vigorous, 6 foot plants shade out weeds and grasses. Very tolerant of temporarily waterlogged soils in winter. Hardy to at least 10° F. B49, C95, L89

Bell:<sup>1</sup> (Bell Bean, Peanut) Small-seeded field type which are also known as *horse beans* or *tick beans*. Round to oval, reddish-brown seeds can be used as dry beans. Also planted as a cover crop, green manure and for silage. Tolerant of a wide range of soil conditions, including wet areas, acid pH, etc. Plants are somewhat taller than those of the large-seeded cultivars. Best sown from October until February in warm-winter areas. D68, F11, G93M, I99M, K17M, K49T, K95M

Broad Windsor: (Broad Windsor Long Pod) 85 days. Glossy green, 6 to 8 inch long pods; pods solitary or in pairs, almost always curved, and usually very broad towards the end; each pod containing 5 to 7 large, oblong-shaped, flat, light-green beans used as shell beans. Very upright, 2 to 3 feet tall plants. A2, A16, A75, B49, C85M, F92, G57M, G82, I67M, I81, K49M, K73, L42, L89

Bunyard's Exhibition: 75 days. Pods 12 to 14 inches long, smooth and narrow; produce 7 to 8 large, well-flavored white seeds per pod. Very heavy cropping plants, 24 to 40 inches tall. Recommended for spring sowing. English heirloom, introduced in 1884. A2, D11M, G53M, J39, R32, R83

Cairo Market:<sup>1</sup> Small, meaty beans, less sweet than large-seeded types. Ideal for *falafel* and *hummus*. Matures very early. Short-stemmed plant, 2 to 3 feet in height; pods contain 1 to 5 beans per pod. More drought tolerant than true Broad beans, though equally hardy. Original seeds collected in a Cairo bazaar. J39

Chak'Rusga: 110-140 days. A mixture of several strains of delicious fava beans collected in northern Bolivia, near Lake Titicaca. These are the favorites of the local Aymara people. Tall, multi-branched plants yield 6-10 pods per stalk. Prolific and drought resistant. Hardy to 10° F. Should be planted in early spring or late summer. F73D, K49T

Colossal: 70 days. Exceptionally long, 7 to 10 inch pods are produced in abundance on plants that are about 4 feet tall. Plump beans of excellent flavor. Bears so heavily it is necessary to bank the soil up well around the roots to prevent the plants from falling over. Widely used for exhibition. M49, S61

Con Amore: 70 days. Refined European strain combining high yields with very early maturity. Long, straight pods, 8 to 9 inches in length. Large, oval-shaped seeds, turn brown after being cooked. Tall, robust plant; produces pods in clusters, 3 to 5 seeds per pod. Recommended for fresh market. M49, N81, R11M

Copper: Medium-sized, thick, deep copper beans with excellent flavor and a distinctive greasy seed coat. Erect, upright pods with 1 to 3 seeds, in bunches of 2 to 4. Matures very late. Copper-colored seeds are common among Criollo populations in Mexico and Central America. J39

Exhibition Longpod: 72 days. Pods 4 1/2 to 6 inches long, contain 5 to 7 large seeds per pod; seeds flat, pale green to cream when ready for use as a shell bean. Excellent for freezing. Strong-stemmed plants, 3 1/2 to 5 feet high. Very productive. Some support may be needed in unprotected areas; best planted in "block" rows because of wind. An old English favorite. D27, F73D, TIM

Express: 71 days. One of the fastest maturing cultivars, and from an early spring sowing will outyield others. Produces up to 34 seven inch long pods per plant. Medium-sized, tender, flavorful seeds. Outstanding for freezing as it does not discolor. Winter hardy. D11M, F73D, L91M, N84, R32, R83, S55, S75M

Foul Misri: (Egyptian) 77 days. Small, brown seeds of the type often found in Middle Eastern stores. Suitable for a late spring and summer sowing, this bean is heat tolerant and has a good root system. Sometimes listed as Foul Muddamma, foul is actually the Arabic name for fava bean, and *foul medammes* is the proper name for stewed fava beans, popular in Egypt and other Arabic countries. DARBY, MALLOS [Re]; B49, F73D, L50M{DF}, L50M{PD}

Frostproof: (Lima Pea) 80 days. Produces flat, straight pods; 7 inches long and 1 1/2 inches wide; 5 to 7 very large seeds per pod. Good fresh or used as dried beans. Productive, upright plants, 2 1/2 feet high with strong, sturdy stems. Very hardy; has survived -24° F. B73M

Giant Exhibition Long Pod: One of the finest of the Longpod cultivars. Very heavy cropper grown from specially selected pods. Pods of good length and beans of very good flavor. Ideal for exhibition. N84, O53M, R83

Green Windsor: A large-seeded cultivar of excellent flavor. Once used for brown Windsor soup but now a favorite for the freezer. For spring sowing only. Introduced in 1831. Similar to Broad Windsor, except for the color of the seeds, which, even when ripe, remain a deep green color. VILMORIN; R32, R83, S55

Guatemalan Purple: 80-90 days Very attractive and unusual fava. Medium-sized seeds of an intense purple color, occasionally some seeds will be black. Good flavor. Grows 3 to 4 feet tall. Has proven to be frost hardy in areas of the Pacific Northwest. Selected by Ianto Evans from seeds collected in Guatemala City. C95, F73D, K49T

Imperial Green Longpod: 84 days. Twenty years of painstaking research have developed a plant capable of continually producing 15 to 20 inch long pods, each pod containing up to 9 large beans. Eating quality very good to excellent, the beans retaining their attractive green color when cooked. A2, F73D, K49M, L91M, R83, S75M, TIM

Ipro: 78 days. Medium-sized seed, about half as large as Windsor, means that a quantity of seeds plants more. Plants grow 3 to 3 1/2 feet tall, with an easy-to-pick horizontal set of 5 1/2 inch long pods averaging 5 beans per pod. Bred for tolerance to top yellow virus and hot weather. Very good flavor when cooked fresh. E24

Masterpiece: (Masterpiece Green Longpod) 88 days. One of the finest green-seeded broad beans. Plants are 30 to 36 inches tall with 8 inch long pods. Excellent fresh or for deep freezing. Grows well under all conditions, being heavier cropping than the Windsors. Introduced in 1894. Highly commended by the Royal Horticultural Society in 1972. F73D, G53M, O53M, R32, R83, S55, S61

Metissa: Short, very well-filled pods, slightly shorter than Express. Each pod contains 4 to 5 small "petit pois" type beans with a delicious mild flavor. Excellent for freezing, as the beans retain their light color. Matures very early. High yielding and easy to pick. RUM, R32, S75M

Nintoku Giant: (Jumbo) Very large, attractive deep-green seeds, about 1 1/4 inches in diameter; excellent flavor. High yielding plant, produces 3 seeds per pod; grows vigorously in warm climates. Recommended for home garden and fresh market use. Also freezes well. D55, G27M, G33, K16M, L91M, N24M, S63M

Polar: 84 days. Medium-sized, white seeds are high in starch and low in tannin, and are said to have a 5% higher digestibility factor than other cultivars. Bred for the English freezer market, the beans not discoloring when canned or frozen. Plants grow to 36 inches tall. Hardy for fall sowing in many northern areas or as soon as soil is workable. J39, N84

Red Epicure: For sheer flavor there is no broad bean to equal this. So named because the beans are of an unusual chestnut red color, and they surprisingly possess much of the flavor of the chestnut when cooked. Cooks to a yellow shade. The plant is hardy and a heavy cropper and grows about 4 feet tall. Deep red flowers. GENDERS 1975, PHILLIPS; U33

Seville: (Tarragona, Early Seville Long Pod) Long pods more than 1/2 inch in diameter and 8 to 12 inches in length. Large seeds, 4 to 8 per pod. Matures early. Erect stems, 2 to 2 1/2 feet tall, sometimes tinged with red; produces pods singly or in pairs. Not very hardy. An early strain of an old Spanish heirloom. VILMORIN; P59M, TIM

Tarahumara Habas: Green to beige seed with black hilum. Added to soups or ground and made into thick tortillas. Planted in early summer along the continental divide of Mexico's Sierra Madre Mountains. Frost hardy. The last crop harvested by the Tarahumaras in late fall. Prolific in Tucson, Arizona. F73D, 116, N84

The Sutton:<sup>2</sup> 84 days. Six inch long, white-seeded pods; 5 small, tender beans per pod; matures early. The pods can be eaten whole even when quite large. Very hardy plant with a branched, bushy growth habit; reaches a height of only 12 inches and yet crops abundantly; perfect for small and windy gardens. Ideal for extra early sowing under tunnels. Award of Merit winner in 1952. GENDERS 1975; N84, R32, R83, S55, S61

#### CODES FOR SPECIAL TYPES

1. Small-Seeded
2. Edible-Podded

## FEIJOA {GR}

### FEUOA SELLOWIANA

Apollo: Medium to large, oval fruit; smooth, thin, light-green skin with blue-green surface bloom, subject to bruising and purpling; pulp well-developed, slightly gritty; flavor very pleasant, quality excellent; ripens mid to late-season. Tree upright spreading, to 8 feet tall; vigorous and productive; self-fertile, and will pollinate Gemini. N84, 097, R77

Beechwood: Medium-sized, elliptical fruit, weight 4 to 6 ounces; skin relatively smooth, dark green; flavor good, lacking any disagreeable aftertaste. Tree self-fruitful. Originated in Hollywood, California. I83M

Coolidge: Small to medium-sized fruit, 4 or more inches in length and 2 1/2 inches in diameter; form pyriform to oblong or elongated; skin somewhat wrinkled; flavor mild, of indifferent quality. Tree upright and strong growing; a reliable and heavy bearer; 100% self-fertile. The most widely planted cultivar in California. Originated

prior to 1926. MORTON 1987a; D57, G49, I49M, I66T, I83M, N84, R77, S97M

David: Medium to large fruit; well-shaped, round to oval; skin of sweet and agreeable flavor; flesh texture reasonably good, flavor good; ripens in mid-season. An excellent dual purpose type, ideal as a fresh fruit or useful for canning. MORTON 1987a; 097

Edenvale Improved Coolidge: Large, oblong fruit of very good to excellent flavor and quality; ripens in October. Tree slow growing; self-fertile; precocious and productive; grows best in climates similar to cool, coastal areas of southern California. Originated in Santa Cruz, California by Frank Serpa of Edenvale Nurseries. 174

Gemini: Fruit small to medium, egg-shaped; skin very smooth, thin, dark-green with a heavy bloom; flavor and texture excellent; ripens in early autumn, earlier than Apollo. Tree upright-spreading, to 8 feet tall; moderately vigorous; high yielding; partially self-fruitful, but cross-pollination is recommended for best fruit quality. 097

Jackson: Medium-sized, oval fruit, 2 1/2 inches in diameter; weight up to 4 ounces; skin thick; flesh white, ather dry, sugar content moderate; flavor very strong but pleasant, somewhat sour near the skin; nearly seedless, with smaller seed cavity and more pulp than most cultivars. Ripens in late November, keeps unusually well. Originated in San Jose, California. I83M

Lickver's Pride: Large, round fruit, weight 6 to 12 ounces; very sweet, rich flavor; quality excellent. Tends to brown when overripe. Very attractive tree with a rounded growth habit; self-fruitful. Originated in San Marcos, California by Gary Lickver. I83M

Mammoth: Large, round to oval fruit, to 8 1/2 ounces, resembles Coolidge; skin somewhat wrinkled, thick; flesh somewhat gritty, quality and flavor very good; matures early to midseason; softer and not as good a shipper as Triumph. Tree of upright habit, to 10 feet tall, strong growing; self-fertile, but bears larger fruit with cross-pollination. Selected in New Zealand from seedlings of the Choicena cultivar. MORTON 1987a; H4, I83M, N84, Q49M, Q93, R77

Nazemetz: Large, pear-shaped fruit, averaging 3 ounces in weight; side walls moderately thin; pulp translucent, sweet; flavor and quality excellent; ripens late October to mid-December. Unlike that of many other cultivars, the pulp of Nazemetz does not darken after being cut or as it ripens, but retains its clear color. Tree self-fertile, but bears most heavily when cross-pollinated. Good pollinator for Trask. Originated in San Diego, California by Alexander Nazemetz. G17, G49, I49M, 174, I83M, J61M, S97M

Pineapple Gem: Small, round fruit of good to very good quality. Mid to late season ripening. Tree self-fruitful but bears heavier crops if cross-pollinated. Does poorly under cool, coastal conditions. Originated in Azusa, California by Monrovia Nursery. H4, N84

Robert: Medium-sized, very uniform, oval fruits; flesh very juicy, somewhat gritty; flavor mild; ripens very early, up to two months before Triumph and Mammoth. Tree produces heavily when well established; develops undesirable russet leaves; if not cross-pollinated adequately will produce hollow fruit, which cannot be distinguished externally from well pollinated fruit. Originated in New Zealand. 097

Smilax: Small to medium-sized, perfectly round fruits; flesh has high sugar content and extremely fine flavor; clear pulp extends almost out to the skin. Tree short and bushy; self-fertile. Originated in San Marcos, California. D57

Trask: Medium to large, oblong fruit, up to 3 1/2 inches long and weighing 3 to 5 ounces; rough, dark green skin; shells thicker and grittier than Coolidge; flavor and quality good to very good; ripens early. Tree self-fertile, but most productive when cross-pollinated; precocious. Ideal pollinator for Nazemetz. Originated as a bud sport of Coolidge. G17, G49, 174, I83M, S97M

Triumph: Short, oval, plump fruits, not as pointed as those of Coolidge; medium to large; skin uneven but firm; flesh somewhat gritty but with good seed to pulp ratio; excellent sharp flavor; ripens in midseason. Tree upright, of medium vigor; bears very heavily if pollinated. Good pollinator for Mammoth. Along with Mammoth, one of the two leading cultivars in New Zealand. Selected there from seedlings of the Choiceana cultivar. N84, 093{S}, Q49M, Q93, R77

Unique: Fruit large, oval; skin smooth, light-green with a blue-green surface bloom; pulp very smooth in texture, flavor good; ripens early. Excellent as a fresh dessert fruit and also good for canning. Tree upright spreading, to 8 feet tall; vigorous; self-fruitful and precocious; a regular and heavy bearer. Originated in Inglewood, New Zealand by Dennis Barton. H4, N84, 097, R77

## FIG {GR}

FICUS CARICA \*2

### CAPRIFIGS

With the exception of the Croisic cultivar, caprifigs do not produce edible fruit. They are important, however, as a source of pollen for Smyrna type figs. Three crops are produced by a caprifig tree, the spring or profichi crop, the summer or mammoni crop, and the autumn or mamme crop that overwinters in a dormant state. H4

Croisic: (Cordelia, Gillette) Fruit of profichi crop medium or above, up to 1 3/4 inches in diameter, pyriform with a distinct neck; ribs prominent, with surface often somewhat corrugated; eye fairly large, with yellowish-green scales; color greenish-yellow; interior white; edible pulp insipid, lacking in sugar; staminate flowers few, generally lacking in pollen. Mammoni crop figs much the same as profichi. Tree vigorous and productive. CONdit; 174, J51P

### COMMON FIGS

Common fig cultivars produce fruit parthenocarpically, i.e. without caprification. Generally, they develop and mature both breba and fig crops, brebas being the smaller crop of the two. These are much appreciated as fresh fruit early in the season. The figs, or second crop, are also fine for eating fresh, but of the two, are preferred for drying.

### DARK-SKINNED

Beall: Medium to large fruit; skin purplish-black; pulp amber, has a delicate, mildly sweet flavor. Tree moderately vigorous; produces 2 crops for fresh fruit purposes. Excellent in Imperial Valley, San Diego County and Fresno, California. Originated in Santa Clara, California by W.A. Beall. Introduced in 1924. BROOKS 1972; C25, H4, R77

Black Jack:<sup>1</sup> Large to very large fruit; skin purplish-brown; flesh reddish-amber to strawberry; flavor sweet. Dwarf, heavy bearing, spreading plant. Ideal for growing in containers, greenhouses or small gardens. Needs protection during the winter in cold areas. A88M, C54, D37, H4, H78, 149M, 168, 174, 183M, M16, N20

Black Madera: Large, oval fruit; skin purple-black; eye small, closed; flesh deep red, sweet, of excellent flavor. Ripens well on the coast of southern California as well as inland. I83M

Black Mission: (Mission, Franciscana) Breba crop good in most seasons; fruits large; color black; pulp light strawberry; flavor rich. Second-crop figs medium to large; eye small to medium; color black; pulp amber to light strawberry; flavor distinctive, rich; quality excellent, both fresh and dried. Used as a fresh fruit, and can also be dried and canned. Introduced at San Diego, California about 1768 from mission stations in Baja, California. CONdit; A38M{PD}, A88M, D7{PD}, D23M, D77M, E31{DF}, E84, F15{PR}, F97M{DF}, G92{DF}, H4, 168{ES}, 174, I83M, LI, L47, L97G{DF}, etc.

Bourjassotte Gris: Brebas few, many not maturing properly. Second-crop figs medium, 1 1/2 to 2 inches in length, pyriform; eye medium, open; skin greenish violet, darker at the apex; pulp strawberry, quality fair to good. Caprifigged figs with violet-brown external color; pulp blood red; flavor subacid, rather strong. Highly regarded in England, especially for forcing. CONdit; N84, R77

Brogiotto Nero: (Bamissotte) Brebas rare, above medium to large, pyriform, purplish black; pulp strawberry. Second-crop figs medium to large; turbinate-pyriform; color purplish-black. Meat white; pulp light strawberry; flavor fairly sweet and rich; quality good to excellent, especially in coastal climates. Caprifigged figs larger, subject to spoilage; pulp dark strawberry to blood red. The same cultivar described by Pliny and other Roman writers as Fico Africano. CONdit; 071M, R59M

Brown Turkey: (Eastern Brown Turkey, Black Spanish, Italian Everbearing) Medium-sized fruit; skin thin and tough, mahogany-brown tinged purple; eye small to medium, partially closed; seeds few; meat white or amber-white; pulp pink or rosy; flavor rich; quality good. Best eaten fresh; not good for canning or drying. Tree cold handy, stands cold better than most other cultivars. STEBBINS; A85M, C25, C54, D77M, G17, G23, H4, 174, 183M, K28, NO

Celeste: (Celestial, Malta) Breba crop small, or mostly none. Second-crop figs small, pyriform; eye medium, partly open, but not readily admitting dried-fruit beetles; color violet-bronze to chocolate-brown; pulp strawberry; flavor sweet and rich; seeds hardly noticeable; quality very good. Figs drop and dry without spoiling. Caprifigged figs are larger; pronounced violet tint outside and dark strawberry inside; flavor subacid. CONdit; A85M, C25, D37, D77M, F43M, F93, G8, G17, H4, H65, 174, I83M, L90, M69M, N33, etc.

Flanders: Medium-sized, pyriform fruit with a long, slender neck; skin light tawny with violet longitudinal stripes and scattered white flecks; meat white; pulp light strawberry, has a strong, rich flavor; eye medium, tight. Excellent fresh fruit fig for the home garden. Virtually no splitting. Dried figs dark, commercially unattractive. D57, H4, 174

Hardy Chicago: Medium to small, black fruit; flavor sweet and very rich. Originated near Chicago by a gardener who grew the tree up against his home, where it was protected annually and fruited consistently. One year, the tree was not protected and its top growth died due to cold. Surprisingly, the tree produced an abundant crop from the new growth, without protection. B32, D37, F16, 174, K67

Hunt: Breba crop small; fruit small to medium; skin green; pulp red, somewhat dry, mealy, quality poor. Second-crop fruit small to below medium, elongated, pyriform; skin bronze, dull; flesh amber with some red; flavor rich, sweet, quality fair to good; resembles Celeste. In Georgia, fruit parthenocarpic; in California, fruit incompletely parthenocarpic. Originated in Eatonton, Georgia by B.W. Hunt. Introduced about 1932. BROOKS 1972; H4

L.S.U. Purple: Medium-sized fruit with red to dark-purple skin; light amber to light, strawberry red flesh; excellent mild flavor, high sugar content. Small, closed eye that resists spoilage. Very vigorous, upright tree, hardier than most. Highly resistant to leaf diseases and nematodes. May produce 3 crops a year in suitable climates. Developed by Dr. Ed O'Rourke of Louisiana State University. C30M, D37, H4, K67, N33

Magnolia: (Brunswick) Breba crop generally very small; brebas large; color reddish-brown; pulp amber, with a tinge of pink, texture mealy; flavor flat. Second-crop figs medium, oblique-turbinate; color bronze; pulp amber, tinged with strawberry, hollow at center; seeds small or rudimentary; flavor sweet, fairly rich. Quality good fresh; excellent for preserving; inferior for drying. In Texas, it is grown extensively as a preserving fig. CONdit; C25, D28J, F43M, H4, 141P, 174, N84, R77

Negronne: (Bordeaux, Violette de Bordeaux) Breba crop fair to good; purplish-black; meat white tinged with violet; pulp strawberry, rich; quality very good. Second-crop figs small to medium, spherical, or pyriform to obovate; color purplish-black; meat white; pulp strawberry, fairly rich in flavor. Good for home planting as tree is dwarf and prolific in fruit production. CONDIT; D28J, D37, E87, I49M, I49P, I66T, 174, J61M, R77

Nero: (Black Ischia) Breba crop fair; fruits medium or above; eye medium, open; color purplish black; meat thin, white with a violet tinge; pulp strawberry; flavor fairly sweet and rich. Second-crop figs small to medium, oblique pyriform to turbinate; surface dull, bloom fairly heavy; color purplish-black; pulp strawberry; quality good. CONDIT; C25, D77M, H4, 174, N84, R77

Osborn's Prolific: (Archipel, Neveralla) Breba crop good. Figs in hot interior valleys above medium; color bronze, tinged with violet; pulp cottony white, tinged with pink; texture spongy or mealy; flavor somewhat strong; quality fair. Second-crop figs variable in size; eye medium, open; color bronze with violet tinge; pulp amber, almost seedless; flavor insipid; quality poor. In cool, coastal climates, fruit sizes are larger, and figs are of good to excellent quality for fresh consumption. CONDIT; A88M, C25, C54, D37, D77M, G17, D28J, H4, I68, 174, 183M, J61M, LI, N20, N84

Pasquale: (Vernino) Breba crop none. Second-crop figs small to medium; oblate-spherical to pyriform; eye medium, slightly protruding; skin tough or rubbery in texture; color purplish-black on body, greenish toward the base. Meat thin, white; pulp solid, strawberry in color (darker when caprifigged); flavor fairly rich; quality good. Season late. CONDIT; C25, D57, D77M, G17, H4, 174, 183M

San Piero: (California Brown Turkey, Old Brown Turkey, Granata) Breba crop fair; figs large; color greenish-purple; meat violet; pulp strawberry; flavor rich; quality good. Second-crop figs medium to large, obovate to oblique-pyriform; eye large, open; color purplish-black; pulp strawberry, center hollow; flavor fairly rich. Quality fair to good when matured on the tree. Consumed fresh; worthless for drying. CONDIT; E84, J61M, LI

Texas Everbearing: (Southern Brown Turkey) Medium to large fruit with purple skin; mild sweet flavor, quality good. Very similar to, if not identical with, Brown Turkey. Tree large, very vigorous and productive. Best in the Southwest, especially in higher elevation areas that have a short growing season. MCEACHERN, STEBBINS; C54, F93, G72, H4, I41P, I68, 174, I77G, K28, L90, M69M, M83, N33

#### LIGHT-SKINNED

Adriatic: (Verdone) Breba crop very small, or none. Second-crop figs in hot, interior valleys are medium, turbinate; eye medium, open; color green to greenish-yellow; meat thin, white; pulp light strawberry, somewhat hollow at the center. Flavor fairly rich, of a characteristic fig type. Quality good, especially for drying. In cool climates figs are large, grass-green outside; blood red inside; quality excellent. CONDIT; D57, E31{DF}, H4, 174, LI, N84, R77

Alma: Medium-sized yellow to tan fruit; meat white, thick; pulp light tan with pink undertones in the center, very succulent and sweet; seed hulls hardly noticeable; quality excellent; eye well-sealed. Ripens in late July and early August. Tree compact and rounded, with glossy leaves that are sparse compared to other cultivars; prolific and cold-hardy, displaying prolonged spring dormancy. Introduced in 1974 by the Texas Agricultural Experiment Station. MCEACHERN; A19, B32, C25, D37, D57, D77M, G8, G17, H4, 174, K67, M16, M83, N33

Angelique: Small to medium-sized, bright yellow fruit. Attractive, waxy skin and rosy eye scales. Pulp light strawberry to almost amber. Very susceptible to insect infestation through the large open eye. Moderately vigorous tree. Does well in pots and greenhouses. Very old French fig grown by Thomas Jefferson at Monticello. CONDIT; L90M, N84, R77

Armenian: Breba crop fruit very large; hollow, thick-fleshed, very flat, deep yellow in color; flesh amber, mildly sweet, quality good. Second-crop fruit not as large but still has rather good quality. Does well in pots. D57, 174

Conadria: Fruit flesh very firm; smaller eye, lighter dry color and higher sugar content than Adriatic, which it resembles, also more resistant to fruit spoilage. Tree vigorous, precocious; produces two crops; breba crop good, second crop very good. Widely planted in San Joaquin Valley for production of dried figs and in dooryards for fresh fruit. Originated in Riverside, California by Ira J. Condit. Introduced in 1955. BROOKS 1972; A63, A88M, C25, C54, D57, D77M, F15{PR}, G17, H4, I68, 174, M81M, N20

Deanna: Fruit oblate; eye medium, tight; skin light-yellow; meat white; pulp amber, sweet, quality good; ripens in mid-season. Yields well. Attractive. No splitting. Developed by Ira J. Condit to replace Calimyrna. D57, 174

Drop of Honey: Medium to large, light-colored fruit; flesh yellowish, very sweet, of excellent quality. Has an open eye which fills with a drop of nectar to seal off the opening, protecting it from insect damage. I83M

Excel: Fruit medium to large, ovoid to globose; skin light greenish-yellow; meat white; pulp light amber; slightly higher sugar content, with smaller eye than Kadota; less likely to spoil. Excellent Kadota type for fresh fruit, canning, and drying. Virtually no splitting. Tree a strong, vigorous grower. Developed by Ira J. Condit. D57, G17, H4, 174, K67

Golden Celeste: Deep yellow to golden colored fruits, about the size and shape of a large Celeste; very sweet and tender, of excellent flavor and quality. Small, closed eye, resists spoilage during inclement weather. Vigorous and productive. Developed by Dr. Ed O'Rourke of Louisiana State University. H4, K67

Green Ischia:<sup>1</sup> (Verte) Brebas few, or rarely produced. Second-crop figs small, turbinate, without neck, or pyriform; with prominent, somewhat flattened neck; eye small, fairly well closed; color grass-green; meat white; pulp dark strawberry; quality very good. Season late. CONDIT; A19, C25, D37, D77M, G17, H4, I53M, 174, I77G, LI, M16, N24M

Gulbun: Large, oblate fruit; eye medium, tight; skin light greenish-yellow; meat white; pulp light pink, delicately sweet, quality good; few split; ripens in mid-season. Tree productive; does well in containers. Originated by Ira J. Condit. D37, 174

Ischia: (White Ischia) Breba crop small or none. Second-crop figs small, turbinate; skin greenish-white, transparent, sometimes tinged by the red flesh below; meat white, thin; pulp strawberry, very sweet, rich; ripens early. Good for homemade preserves and pickles. Tree compact, not handy. Popular in England for pot culture and for forcing, where three crops is the aim. CONDIT, SIMMONS 1978; N84, R77

Kadota: (Dottato) Breba crop none, or late. Second-crop figs medium to occasionally large; shape spherical to obovate; eye medium, often sealed with drop of gum; skin rather thick, rubbery in texture; color green to golden yellow; meat white; pulp amber; seeds few, small. Flavor very sweet, but lacking distinctive character; quality excellent, especially for preserving and canning; skin of dried fruit somewhat thick and tough. CONDIT; A88M, B74, B93M, C25, C54, D37, D77M, F15{PR}, G49, H3{P£}, H4, I68, 174, K67, L15M{PD}, L47, N20

Janice Seedless Kadota: Newly introduced Kadota type. Large, light greenish-yellow fruit with virtually no seeds; sweet, delicious flavor. Has a very long harvest season, August through November at Fremont, California. Adapted to both coastal and inland climates. A88M, N20

L.S.U. Gold: Very large, flattened, bright golden fruits; up to 1 3/4 inches in diameter; tender, amber flesh, exceptionally sweet. Slightly open eye, but still resists splitting and souring. Quality



excellent, especially in dry climates. Vigorous and very productive. Developed by Dr. Ed O'Rourke of Louisiana State University. H4

Mary Lane: (Jelly) Medium-sized, round fruit with a short neck; skin yellowish-white, smooth in texture; pulp amber, fills in well, nearly seedless; good, sweet flavor; ripens summer through fall. Good for fresh fruit and canning. Originated in Escondido, California by John Stevenson. C25, C54, D57, G17, H4, I74

Nardine: Attractive, oblate fruit; skin light yellow; meat white; pulp amber, sweet, quality good; eye medium, tight; ripens in midseason. Yields well. Few split. Originated in Riverside, California by Ira J. Condit. Developed as a replacement for Calimyrna. H4

Panachee: (Tiger) Brebas none. Second-crop figs medium; shape pyriform; ribs practically absent; surface glossy with a delicate bloom; eyes medium or above, open; color light yellow with alternate stripes of green, the latter fading out at complete maturity; meat thick, white; pulp strawberry, mealy in texture; quality fair to good. Caprifigged figs are somewhat larger, with pulp blood-red in color. Fruit splits badly, even when uncaprifigged. CONDIT; H4, 174, I83M, LI, N84, R77

Peter's Honey: (Rutara) High quality fruit has tender glossy greenish-yellow skin when ripe, and very sweet and flavorful dark amber flesh. A warm location with southern exposure is important for ripening this cultivar in the Maritime Northwest. Introduced from Sicily. D28J, H78, I49M, I49P, I66T, J61M, N24M

Petite Negri: Large, black fruit; sweet, exceedingly rich flavor. Tree dwarfish, handy, sets 2 crops and usually sets more fruit per plant size than other cultivars. Excellent for pot culture, having produced as many as 65 fruits in a 2 gallon container. Resembles Black Mission but hardier and more productive under cool climate conditions. B32, D37, E87, I74, J61M

Tena: Fruit oblate with little or no neck, medium in size; skin light greenish-yellow; meat white; pulp light strawberry in color; flavor excellent; eye medium, but very tight. Ripens in mid-season; highly resistant to splitting under adverse weather conditions. Tree a strong grower with ascending branches. C25, D57, G17, H4, I74, R77

Tennessee Mountain: Medium sized fruit; sugar content high enough for use in drying, fig newtons, or preserves. Very hardy tree; bears heavily. Recommended for outdoor growing in marginal areas. Originated in the mountains of Tennessee. Introduced by Dr. Silas Harmon, former Professor of Horticulture at the Coastal Plains Experiment Station in Tifton, Georgia. C25, F43M, I53M, 174

Troiano: (White Mission) Breba crop none. Second-crop figs below medium to small, spherical to turbinate; eye large, open; skin prominently checked crisscross at maturity; color yellow, sometimes faintly tinged with brown on the exposed side; meat white; pulp strawberry; quality fair to good. Caprifigged specimens larger; color green; pulp dark strawberry; seeds fertile. CONDIT; U7G{SC}

Ventura: (Verdal) Brebas rare. Second-crop figs medium, turbinate to obovate; eye medium, open; skin green; meat thin, white; pulp strawberry; flavor rich, quality good; ripens late but matures well in cool areas. Caprifigged figs medium to large; pulp solid, blood red, flavor very strong and rich; considerably better in size, appearance, and quality than uncaprifigged fruit. Season late. CONDIT; D57, G17

White Genoa: (Genoa) Breba crop small; fruits large; shape oblique-pyriform; eye medium, open; pulp light strawberry, hollow at center; flavor sweet but not rich; seeds few, small; quality fair. Second-crop figs medium or above, somewhat oblique, turbinate; color greenish-yellow, blemished by circular brown spots at maturity; skin thin, tender, peeling readily; pulp amber, tinged with strawberry; texture gelatinous; flavor mild; quality very good; seeds practically none. Very susceptible to spoilage. CONDIT; A63, B93M, C54, D23M, G49, H4, I68, LI, N20, R77

White Marseilles: (Marseilles, Blanche, Lattarula, Lemon) Breba crop fair; figs medium or above; color light green; pulp and meat

white; seeds large, conspicuous; quality fair to good. Second-crop figs similar to brebas, except for smaller size; shape spherical to oblate. Flavor fairly rich and sweet; quality fair as a fresh fruit, of light weight and poor quality when dried; susceptible to fruit spoilage. Caprifigging has little effect upon size and color, either of skin or pulp. CONDIT; C25, D37, D77M, G17, H4, I49M, I49P, 174, J61M, K67, L90M, M77, M81M, 081

#### SAN PEDRO FIGS

Cultivars of this class have characteristics intermediate between the common figs and the Smyrna figs. The breba crop develops, matures, and ripens fruit parthenocarpically on the previous year's wood. Fruit of the second crop, which forms on the current year's wood, requires pollination by the fig wasp in order to develop, or they will shrivel and fall from the tree.

#### PARK-SKJNNEP

Dauphine: (Violette Dauphine) Breba crop generally good; fruit large, 2 1/2 inches long; ribs broad; eye large, protruding; skin greenish-violet to violet-purple; meat white; pulp light strawberry, flavor fairly rich; especially good for shipping fresh. Second crop figs similar to brebas, except for smaller size. Cultivated extensively in southern France. CONDIT; N84, R77

Pied de Boeuf: Breba crop fair to good; fruits large, oblique-pyriform with a prominent, often curved neck; skin tender, Hessian brown; meat white tinged with pink; pulp light strawberry, texture rather coarse, quality good. Second-crop caprifigged figs medium to large, prominently ribbed; skin chocolate brown to mahogany red, tender; pulp dark strawberry, flavor rich and sweet, quality excellent. CONDIT; T49M{SC}, U7G{SC}

Royal Vineyard: (Drap d'Or) Breba crop small; fruits large, pyriform; ribs prominent; color light coppery-bronze, attractive; pulp light strawberry; flavor sweet and rich; seeds few. Eating quality excellent; regarded by French confectioners as one of the best figs for crystallized and glace fruit. Caprifigged figs of the second crop medium to large; color reddish-brown to violet-brown; pulp strawberry; flavor rich; quality good. CONDIT; C25, I74, K67

#### Light-skinned

King: (Desert King) Large, pyriform fruit; skin dark green, thin, smooth; flesh pink, sweet, quality excellent; matures in cool coastal climates as far north as British Columbia, Canada; resembles Genoa. Tree moderately vigorous; breba crop prolific; severe dropping of second crop in inland districts. Originated in Madera, California by Sisto Pedrini. Introduced in 1940. BROOKS 1972; A88M, B74, C25, C34, C54, D77M, G17, H4, I49M, I49P, I74, I83M, J61M, M81M, NO, etc.

San Pedro: (San Pedro Miro, White San Pedro) Breba crop good; figs medium to large, turbinate; skin yellowish-green; meat white; pulp amber tinged with strawberry, flavor sweet, fairly rich. Second-crop figs medium to large; skin green to yellowish-green; meat white, thick; pulp strawberry, gelatinous; flavor insipid, flat. CONDIT; N84, 097, R77

#### SMYRNA FIGS

Cultivars in this class set virtually no breba crop. The second crop develops on the current season's growth and reaches full maturity only when the flowers are pollinated by the fig wasp and the ovules develop into fertile seeds; the fertile seeds adding a nutty flavor to the meat and pulp. This class contains some of the finest tasting cultivars.

#### DARK-SKINNED

Marabout: Large, pyriform fruit, 2 1/4 inches in diameter; neck very prominent; eye large, open; skin purplish-black, shading to light green on the neck; pulp strawberry, rather coarse in texture, flavor rich and sweet; quality very good fresh. Season later than that of Calimyrna, with figs continuing to mature over a long period. Introduced into the United States from Algeria in 1928. CONDIT; U7G{SC}

Zidi: Large, pyriform fruit; skin violet-black; pulp dark strawberry, rich and sweet; quality excellent fresh. Resembles Marabout superficially but is self-colored throughout, and 50% larger on the average. Tree vigorous, large and open; leaves often very large. Introduced into the United States from Tunisia in 1950. U7G{SC}

#### LIGHT-SKINNED

Calimyrna: (Sari Lop) {DF} Breba crop fair in some seasons. Second crop figs large, up to 2 1/2 inches in diameter; eye large, open; skin golden-yellow to light lemon-yellow; pulp amber to light strawberry, flavor rich and sweet; quality excellent both fresh and dried; seeds numerous. Regarded as the "ne plus ultra" of fig cultivars in California. Has been grown in the Meander Valley of Turkey for several centuries. First planted commercially in California in 1886. CONDIT; E31, F15{PR}, G92, H4{GR}, K68, L97G

Shirazi: Small, pyriform fruit; eye large, open; skin light yellow, thin; pulp golden amber, honey sweet, quality excellent; seeds numerous. Grown commercially near Shiraz, Iran. Dried figs are readily available at Persian markets. K60D{DF}

Snowden: Breba crop none. Second crop good; figs large, pyriform, ribs fairly prominent; skin lemon yellow, attractive; meat white; pulp amber, flavor rich and sweet; quality excellent, both fresh and dried; inclined to split in unfavorable weather. Tree vigorous and productive. Discovered in 1922 on the place of P.W. Snowden, Modesto, California. CONDIT; U7G{SC}

#### CODES FOR SPECIAL TYPES

##### 1. Genetic Dwarf

## FILBERT {GR}

#### CORYLUS AVELLANA

#### CORYLUS MAXIMA

Barcelona: Medium-large, round nut; kernel rough, averages about 40% of nut. Tree moderately productive and hardy; highly susceptible to bacterial filbert blight and brown stain. Accounts for approximately 85% of the Pacific Northwest filbert production, supplying the inshell market demand for a round nut with good flavor. Has been the leading cultivar for over 60 years. JAYNES; A88M, B74, H8, H49, H65, J15M, LI, M39M, NO, N20

Butler: Nut medium-large, oval; shell thicker than Daviana; kernel smooth, averages 46% of nut. Tree productive, much more so than Daviana; hardy; somewhat resistant to bud mite, but much less susceptible than Daviana. Excellent pollinizer for Barcelona and Ennis. Gradually replacing Daviana as the principal pollinizer in commercial orchards of the Pacific Northwest. A88M, A91, B93M, H49, H65, H89M, J15M, LI, M39M, NO, N20, 081

Cassina: Heavy producer of small, thin-shelled nuts that fall free and at the same time as Barcelona. Kernels crackout at 50% of nut and are very even in size, compared to Barcelona with a 40% crackout and kernels of 5 or more size. Will pollinize Barcelona and Ennis. A88M, E91M, H89M, J15M, N20

Cosford Cbb: (Miss Young's) Nut medium-sized, oval with a broad shoulder; shell thin, medium brown in color; flavor sweet, quality high; borne in clusters of 2 or 3. Tree upright, fairly vigorous; hardy; a reliable bearer; produces abundant pollen. Will pollinate other cultivars. One of the best English cobs. 081, Q30{SC}, R77, R83

Daviana: Long, medium-sized nut; shell thin, very susceptible to bird and rodent damage; kernel smooth, averages about 48% of nut. Tree unproductive; moderately hardy; extremely susceptible to eastern filbert blight and bud mite; more finely branched than Barcelona. Main pollinizer for Barcelona. Accounts for approximately 7% of the Oregon filbert crop. B93M

Du Chilly: (Kentish Cob) (C. maxima) Nut large; long and rather flattened with a well-defined seam; shell moderately thick; flavor and quality excellent; has a tendency to remain in the clinging husk when falling from the tree. Tree spreading; heavy yielding; hardy; produces better in colder climates. Pollinized by Butler, Royal and Daviana. Main cultivar in the United Kingdom; selected in Kent, England in 1830. A88M, B93M, K43{DF}, M39M, M63M{DF}, N20, 081, R77, R83

Ennis: Large, round nut; kernel smooth, averages 46 to 48% of nut. Tree productive; moderately hardy; somewhat resistant to bud mite. Has a larger nut and is more productive than the standard cultivar, Barcelona. Has less of a tendency toward biennial bearing. Produces approximately 20% fewer blank nuts. Gradually replacing Barcelona in commercial orchards. A91, B74{DF}, C34, H89M, J15M, NO, N20, 081, Q30{SC}, R77

Grand Traverse: Nearly round, brownish nut with a thin shell; kernel 51% of nut by weight; kernel plump, clean and of excellent flavor; ripens with Ennis. Introduced for the in-shell trade. Vigorous and productive tree; not precocious; very hardy. Resistant to big bud mites. Originated in Lansing, Michigan by Cecil Farris. E91M, E92

Hall's Giant: Nut large, round; kernel smooth, averages 40% of nut. Tree hardy; resistant to bud mite; yields poorly. Late-flowering pollinizer compatible with Barcelona and Ennis. Recommended for planting in small numbers along fence rows or odd spaces to cover late-flowering blossoms of the main crop cultivar. JAYNES; A91, B74, B74{PL}, C34, J15M, 081, Q30{SC}, R77

Lisa: Slightly elongated nut with a lightly striped shell; smooth, light colored kernel with excellent flavor. Well-suited to marketing in the shell. Ripens the first week of September in central Michigan. Resistant to big bud mites. Originated in Traverse City, Michigan by Cecil Farris. E92

Nut Washer: Very large, thin-shelled nut, almost as thin as an eggshell. Excellent flavor, smooth, delicious and very sweet. Produces heavy crops in midseason. Filbert-like appearance and bearing characteristics, with some indications of a wild hazel background. Discovered at the old J.U. Gellatly plantation. A91

Red Aveline: (Red, Avelinier Rouge) Large, oval, thin-shelled nut; kernel smooth, red-skinned, of a sweet nutty, excellent flavor. Heavy yielding tree with long, claret-red catkins. At one time prized in eastern California as a productive sort of good quality. BAILEY, L. 1947; Q30{SC}, R77, R83

Royal: Barcelona x Daviana. Nut oval, larger than either parent; shell thin; kernel large, rough, averages 43% of nut; color and markings similar to Daviana; ripens about the same time as Barcelona. Tree hardy; produces early and heavily; sheds pollen medium to early; susceptible to bud mite. Introduced in 1934. BROOKS 1972; B93M, B99{PL}, C82{PL}, H65, H89M, L33

Tonda di Giffoni: One of the leading cultivars in Italy. Notable for its excellent flavor, strong resistance to blight, and ability to blanch perfectly. Round, medium-sized nut. Very good pollinizer for Willamette. Productive tree; grows 10 to 15 feet tall; precocious. Also resistant to mites. Recommended for backyard orchards. B74, C34, J61M, R77

Tonda Gentile delle Langhe: Small, round nut; sweeter and more flavorful than standard filbert cultivars; ripens a month before Ennis. Most popular cultivar in Italy; widely grown in the Piedmont region. Bears only a moderate crop due to susceptibility to big bud mite. Nearly male sterile, should not be relied upon as a pollinizer for other cultivars. U7D{SC}

Whiteskin: (White, Alba, Avelinier Blanche) Medium-sized, oval nut; kernel covered with a white skin, quality and oil content high. Can be kept in the husk longer than others due to constricted form of husk. Vigorous, heavy bearing tree, produces fruit in clusters. Regarded in England as one of the best cultivars. Does well in California. BAILEY, L. 1947; Q30{SC}, R77, R83

Willamette: Attractive, medium-sized, dark brown nut; flavor and texture very good. Good for blanching, the skin being easily removed by briefly heating in an oven. Vigorous and productive; somewhat resistant to Eastern Filbert blight. Interfertile with Tonda di Giffoni. Requires 800 hours of chilling. Developed at Oregon State University. BROOKS 1997; A88M, J15M, J61M, N20

## GARLIC {PL}

### ALLIUM SATIVUM

#### HARDNECK GARLIC

A distinct type that produces bulbs as well as a cluster of bulbils at the top of the stalk. Generally hardier than softneck garlic, but much more difficult to braid and with a shorter storage life. Also more demanding in its cultural requirements. Some cultivars are becoming popular as seasonal gourmet items because of their superior flavor, few but large bulbs, and ease of peeling. The oldest form of cultivated garlic, evolving directly from wild garlic, *A. longicuspis*. ENGELAND; D78{PR}. (*A. sativum* Ophioscorodon Group)

Bai Pi Suan: Marbled purple stripe type Very attractive bulb and clove characteristics. Often produces 6 to 8 mahogany colored cloves. Matures about one week earlier than most marbled types. Long storing. Very rare strain from the interior of western China's Xinxiang province. D78

Brown Tempest: Marbled purple stripe type. Very attractive bulbs blotched with purple; brown cloves, blushed with rose, about 6 per clove. Excellent shape and size. Intense hot flavor when eaten raw, mellowing to a warm, pleasant aftertaste. Keeps very well for a hardneck. Collected by John Swenson. D78, F51M, F51M{PR}, J99G, L7M

Carpathian: Originally from the Polish side of the Carpathian Mountains in central Europe. It is common throughout the countries in that region. A garlic with good size and an excellent, pleasantly pungent flavor, fine for all cooking needs. Also makes attractive braids. Matures one week after Spanish Roja. Keeps well. C24, C24{PR}, C24{PJ2}, D78, F73D

Chengdou Hard Leaves: Extremely early strain with broad leaves and thick stems. Both the young leaves and the spears are harvested. The spears have an especially tasty, highly aromatic flavor. Brought to market when plant reaches 20 inches in height. High yielding plants that are sown in August in Chengdou, Sichuan Province, central China. 054

Chesnok Red: Purple stripe type Very large, attractive bulbs, striped with purple; 9 or 10 cloves per bulb, buff-brown streaked and blushed with reddish-purple; easy to peel. Rich aroma and lingering flavor. Excellent for cooking and baking, holding its shape well and retaining flavor. Originated in Shvelisi, Republic of Georgia. D78, J99G, K49T, L7M

De Vivo: Large bulbs with large, easily peeled cloves, 4 to 6 per bulb. Hot and spicy with a good lingering aftertaste. Has excellent commercial potential for the restaurant trade. One of the most dependable cultivars of hardneck garlic for the Mid-Atlantic region. Heirloom from Dr. Gilbert McCollum of the USDA. L7M

Duganskij: Marbled purple stripe type. Attractive, splotched bulbs; usually 6 cloves per bulb. Medium brown cloves, slightly blushed with purple. Productive, late season strain. Also one of the best storing hardnecks. Plants somewhat shorter than most. Originally from Kazakhstan. D78

Georgian Crystal: (Cichisdzhvari #1) Porcelain type. Large, plump, striking paper-white bulbs; very symmetrical and easy to clean; 4 to 7 cloves per bulb Very mild and flavorful when eaten

raw. Stores very well. Deep green plants, 3 to 4 feet tall. Originated in the Republic of Georgia. D78, E34M, J99G, L7M

Georgian Fire: (Cichisdzhvari #4) Porcelain type with smooth, paper-white bulbs and tight wrappers. Similar to Georgian Crystal, except cloves average 5 to 8 per bulb. Also has a stronger flavor, somewhat hot but not unpleasantly so. Excellent raw in salads or salsas. Originally from the Republic of Georgia. D78

German Red: Gourmet rocambole type. Large, light brown bulbs, splashed with reddish-purple; weight 1/4 pound; 8 to 12 cloves per bulb; yellow-fleshed, easy to peel cloves. Strong, hot spicy flavor. Excellent for sauteeing, pureeing, dehydrating or placing the peeled cloves in oil. Also produces large topsets. Optimum vigor, flavor and quality occur when grown where winters are cold. C24, C82, C92, D78, F40M, G16, Fl, F35M, F51M{PR}, 139, 160, J99G, K49T, K71, L7M, L89, M82, M46, etc.

Italian Purple Hardneck: Medium sized bulbs with a strong spicy, pungent flavor preferred by some connoisseurs. White skin with purple stripes. Excellent storage capabilities. Produces clusters of topsets, much like the Egyptian onion. Topset bulblets may require two seasons to produce a full-sized bulb of garlic with separate cloves. C24, F40M, L89

Leningrad: Outstanding porcelain type similar to Romanian Red, but matures slightly later. Large bulbs and cloves, with 4 to 6 cloves per bulb. Dark green plants, up to 4 feet tall. Collected in western Russia near Leningrad, now St. Petersburg, close to the Estonian border. D78, J99G, L7M

Killarney Red: Outstanding rocambole from Idaho. Better adapted to wet conditions than most other strains. The top producing garlic at Filaree Farm in 1994 and 1995. Original source unknown. May have been German Red or Spanish Roja, but now considered superior to both. D78, J99G

Metechi: Marbled purple stripe type Very firm bulbs, nicely marbled or blotched; cloves few, large and plump; thick, brownish skin, blushed and lined with purple. Raw taste fiery, but with a nice finish. Also produces large bulbil capsules and bulbils. Stores very well for a hardneck. D78, F51M, F51M{PR}, J99G

Nichols Top Setting: Produces well-developed, medium sized bulbs that are harvested at the end of the growing season. Easy to peel skin; biting and pungent flavor; keeps well. Also produces several small bulbils at the top of each plant. May be planted in the fall or early spring. 139

Persian Star: Purple stripe type. Outer bulb wrapper occasionally solid white, but inner wrappers streaked with purple; vivid red-tipped cloves with marbled streaks on whitish or yellow-brown background. Mild, spicy, very pleasant flavor. Purchased in a Samarkand, Uzbekistan bazaar by John Swenson. Brought to the United States in the late 1980's. D78, E34M, F73D

Pskem: Very unique marbled purple stripe type. Usually produces only 2 to 4 cloves, but of extremely large size. Bulbs marbled or spotted with purple; brownish cloves. Stores very well for a hardneck. Originally from the Pskem River Valley in Uzbekistan. Collected by John Swenson. D78

Purple Glazer: (Mchadidzhvari #1) Glazed purple stripe type. Similar to Red Rezan. Plumb bulbs with almost satiny bulb and clove wrappers. Cloves not as tall and fewer per bulb than standard purple stripe types. Originally from the Republic of Georgia. D78

Red Rezan: Glazed purple stripe type. Similar to other purple stripe garlics but the bulb color is more of a glazed purple with a tinge of gold. Cloves also have a partial reddish-purple blush in addition to streaks and lines. Strong, lasting flavor but not hot and without an aftertaste. Originally from near Rezan, south of Moscow in the Russian Republic. D78, F73D

Romanian Red: Porcelain type. Attractive, buff-brown bulbs streaked and lined with bright dark-purple. Mostly 4 to 6 cloves per

bulb, and 65 to 80 cloves per pound. Easy to peel. Hot, pungent flavor that lingers. Ripens late in the season and stores well for a hardneck. From Romania via British Columbia, where it is called *red elephant garlic*. D78, F51M, F51M{PR}, J99G, L7M, L89

Russian Red: Large, plump bulbs, veined and blotched with copper and purple; 8 to 13 brown cloves per bulb, doubles common. Strong-flavored but with a sweet aftertaste. Matures with Spanish Roja. Heirloom from British Columbia. Brought there by Doukhobor immigrants from Russia in the early 1900's. D78, M46, N34{PR}

Siberian: Marbled purple stripe type. An outstanding strain with very large bulbs due to weak flower stalk growth in most U.S. latitudes. Produces 5 to 7 plump, dark brown cloves. Originally secured by fisherman trading green leafy vegetables with poor peasants who only grew roots crops. D78

Salt Spring: Purplish bulbs and cloves, about 8 cloves per bulb. A strong but sweet purple garlic with no bitterness; adds an earthy richness and depth to cooked foods. Easy to peel. Good keeping qualities. Grown on Salt Spring Island, British Columbia for more than 15 years. K17M

Spanish Roja: (Rojas) Very large gourmet type, popular in specialty markets. About 10 cloves per bulb, with smaller bulbils on top stems. Teak-brown skin, blushed with reddish-purple, peels easily. Excellent, rich spicy flavor. Good fresh or cooked. Excellent keeper, can be stored 4 to 6 months. Winter hardy. C24, C82, D78, E24, E34M, E59Z, F11, F35M, 139, J99G, J99G{PD}, L7M, L89

Yugoslavian: From a strain adapted to Hornby Island, British Columbia, this garlic has a crisp texture and a strong garlic aroma. Large bulbs, veined and blotched with copper and purple; dark brown cloves, 9 to 14 per bulb. Initially hot and spicy, but mellowing to a warm, pleasant sweet aftertaste. Good keeper. C82, D78, F73D, K17M, L7M

#### SOFTNECK GARLIC

The most common and widely grown garlics in the world. Mostly larger, more productive and adaptable, and longer storing than hardneck types, but generally considered less flavorful. They also produce more cloves per bulb, and only rarely produce topsets. Softneck garlics were developed from the more ancestral hardneck garlics. Sometimes called "artichoke" garlic after the formation of clove layers which resembles the flower head of an artichoke. ENGELAND; D78{PR}

Asian Tempest: Asiatic type with few but large bulbs. Bulbs marked with a very attractive royal purple blush. Nice clove color and shape. Mild and flavorful raw. Beak on topset can reach 18 inches in length. Long storing. Very vigorous and productive plant with broad leaves. Originally from South Korea. D78, I99M, J99G

Burgundy: Creole type with unusually dark coloration. Medium to large, attractive bulbs; 8 to 12 cloves per bulb. Very striking, deep solid burgundy cloves; clove tips not elongated like those of other Creole strains. Sweet, mild flavor. Stores well. Adapted to mild winter climates. Origin unknown. D78, F73D

California Early: (Early California White, Early California Braiding) The well-known white cultivar most commonly seen in markets. Large, clean, well-filled bulbs; flatter than California Late; 10 to 20 cloves per bulb; skin off-white or tan; exceptionally fine appearance; mild delicate flavor. Easily peeled cloves. Matures in about 7 months, but stores for only 4 to 6 months. D78, F11, I99M, K49T

California Late: (California Late White, California White) Firm, strong-flavored bulbs of high quality; skin light pink to deep red or pinkish brown when mature. Ripens June through July, 8 months after planting and as much as 2 to 4 weeks later than California Early. Best keeper of all the white garlics, will last from one harvest to the next. Good for braiding. D76, D78, E97, F11, G16, I99M, J89, J89{PR}, K49T, K66, K71, M46

Chet's Italian Red: Large artichoke type. Averages 5 or 6 bulbs per pound, 15 to 20 cloves per bulb; skin papery white, streaked with purple; medium-sized cloves; keeps very well. Notable for its mild flavor, but may become hot with extreme winter cold. Re-selected from Italian Purple for over 25 years by master gardener Chet Stevenson of Tonasket, Washington. D78, L7M

Chinese Purple: True turban type. Attractive bulbs with medium to dark purple stripes over a purple blush; 7 to 11 cloves per bulb. Very plump, brownish cloves with short dark purple slashes over a light purple blush. Early maturing. Unique turban-shaped bulbil capsule with reddish stripes. D78

Creole Red: (Mexican Purple) Creole type that has won several taste tests. Very attractive bulbs; cloves pinkish-red, with slightly elongated tips. Sweet, mild flavor. Adapted to southern, mild winter areas. Popular in parts of California and the Southwest, and often seen in the markets of Mexico. D78

Dushanbe: True turban type. Very attractive, heavily striped bulbs; 8 to 11 cloves per bulb. Rose brown to mahogany cloves. Unique turban-shaped bulbil capsule with light red stripes. Very early maturing. Bulbs usually attain good size even when plants appear smallish. Originally from Dushanbe, the capital of Tajikistan. D78

Early Italian Red: (Early Italian) A very early maturing artichoke-type garlic. Fairly large bulbs with good reddish-purple color; not as pungent as Italian Red. Looser cloves that are easy to peel. Best red garlic for braiding. Ripens a couple of weeks earlier than Italian Red. D78, K49T

Inchelium Red: Very large bulbs, up to 3 inches or more; 4 to 5 clove layers with 12 to 20 cloves per bulb. Light purple blotching. Cloves milk white or yellowish, with faint purple at base. Mild but lingering flavor that sharpens with storage. Extremely vigorous. Found at Nespelem on Colville Indian Reservation in northern Washington. Winner of a Rodale Kitchen taste test. D78, E24, E34M, E63D, J99G, K49T, L7M

Italian Red: Large bulbs; very large, easily peeled, red-skinned cloves with a consistent symmetrical shape. Very strong, spicy flavor, preferred by garlic connoisseurs. Excellent keeper. Bulbs for planting are available in 2 sizes: 2 inches or larger and 1 to 2 inches. I99M

Japanese: Very unique strain of Asiatic garlic. Produces 5 to 7 large, yellow-tan cloves that are similar to Elephant garlic in appearance. Topsets may reach 20 inches in length. Productive in both cold winter and wet, mild winter climates. Obtained from an elderly Japanese farmer in western Washington. D78

Lorz Italian: Large, occasionally flattened globe-shaped bulbs with 3 to 5 clove layers and 12 to 19 cloves. Excellent strong flavor, sometimes very hot in front of the mouth. Well adapted to summer heat. Northwest heirloom brought to Washington state's Columbia River basin from Italy by the Lorz family, prior to 1900. D78, L7M

Maiskij: True turban type. Attractive, heavily striped bulbs; 7 to 11 cloves per bulb. Plump, blunt-topped cloves with short purple dashes and a partial blush. Unique turban-shaped bulbil capsule. One of the earliest maturing of all garlics. Obtained by John Swenson from a bazaar in Ashkabad, Turkmenistan. D78

Mild French Silverskin: Red blush overlaid with dark thin red lines on yellow-white background. Mostly 4 clove layers and 13 to 16 cloves per bulb. Hot, sharp taste raw, but smooth and nutty when cooked. Earlier maturing than many silverskins. Well adapted to hot, dry climates. Originally from Texas. D78, E28M, L7M

Morado de Pedronera: (Spanish Morado) Premium Creole type garlic preferred in Europe and South America. Very attractive bulbs; striking, red-skinned cloves. Sweet, mild flavor. Stores well. Adapted to mild winter climates. Softneck garlic that bolts weakly. Originally from the Andalusia region of Spain. D78, K66

Munhung: Arti-Bean type. Has some of the characteristics of turban and Asiatic garlics but matures later. Bulbils may appear in short bean-shaped capsules. Attractive bulbs; 7 to 9 cloves per bulb. Brown cloves, slightly blushed and striped with purple. Originally from North Korea. D78

Nichols Silverskin: A strain of silverskin garlic developed through many years of selection for strong flavor, large size, and easy-peeling qualities. Small, individually wrapped cloves; 2 inch diameter bulbs. Good flavor and keeping qualities. 139

Nootka Rose: Silverskin type, more elegant and refined in appearance than common artichoke types but fussier about soil and climate. Well-colored bulbs with mostly 5 clove layers; 15 to 24 cloves per bulb, up to 35 if large outer cloves subdivide. Mahogany cloves, streaked with red. Strong flavor. Excellent for braiding. Northwest heirloom from the San Juan Islands off the coast of Washington. D78, F73D

Pyongyang: Asiatic type with few but large bulbs. Bulbs blushed and striped with purple; 6 to 8 cloves per bulb. Light brown cloves, elongated at the tips and blushed with rose-purple. Bulb capsule with a 7 to 10 inch beak. Originally from near Pyongyang, the capital of North Korea. D78

Red Janice: Turban type. Attractive bulbs with heavy solid stripes over a purple blush; 8 or 9 brownish cloves per bulb. Topsets do not have the typical turban shape. Matures somewhat later than other turban types, but stores longer. Originally from near Nmarazeni in the Republic of Georgia. Named in honor of Janice Masterjohn. D78

Rose du Var: Silverskin type originally imported from France by Basic American Foods. Attractive bulb and cloves with nice reddish colors. Generally quite strong flavored, and can be extremely hot under certain growing conditions. Stores very well. Also very good for braiding. D78

Silverskin: Attractive, firm, pure-white bulb; medium to large in size, about 10 bulbs per pound; large, reddish-purple cloves. Classic culinary type; excellent, strong distinct flavor. Good keeping qualities. Regarded as one of the finest standard white garlics and a favorite for braiding. F40M, FI 1, F35M, K49M

Susanville: Small to medium-sized bulb; 1 to 2 inches in diameter; weight 1/4 pound; skin thin, white; 19 to 22 cloves per bulb; cloves large, somewhat flattened in shape; keeps very well, one month to six weeks longer than California Late. The flavor is excellent for all culinary uses. Popular and widely adapted strain. Introduced in 1982. D78

Tipitilla: Silverskin type. Mid-season garlic with high oil content and superior flavor. Numerous, dull pink cloves. One of the longest keeping cultivars, often storing until the following harvest. Heirloom from Arizona that should perform well in other southern latitude areas. D78

Tzan: Turban type. Very attractive bulbs, heavily striped with purple; 8 to 11 cloves per bulb. Light brown cloves, blushed with rose on the back. Very early maturing but does not store well. Grown commercially in China's Shandong Province and often marketed in Mexico. D78

## GOOSEBERRY {GR}

RIBES SPP.

### AMERICAN GOOSEBERRIES

Generally smaller and less flavorful than European types, American gooseberries are more tolerant of heat and cold and can be grown over a wider area. Many are also more resistant to powdery mildew. The dark-skinned cultivars are considered to be the sweetest. Mostly *R. hirtellum*.

### PARK-SKINNEP

Canada 0-273:<sup>1</sup> Fruit medium in size, pear-shaped; skin copper red; flavor very good; quality excellent. Bush relatively thornless; pest resistant; light bearing. Originated in Ottawa, Ontario, Canada at the Central Experiment Farm. NO

Captivator:<sup>1</sup> Medium to large, pear-shaped fruit; skin light red to full red when ripe; flavor very sweet; ripens in late July. Bush vigorous and productive; upright, 4 to 6 feet tall; completely thornless; very winter hardy; resistant to mildew. Originated in Ottawa, Ontario, Canada. Introduced in 1952. BROOKS 1972; A74, B43M, B74, F43M, F87, I49G, 174, J61M, J89M, L12, M81M, NO, 081

Clark: Very large fruit; skin thick, rather tough; skin color greenish-yellow turning red when mature; flesh color red; flavor mild, sweet; quality fair to good; free of mildew; easy to pick; ripens in late mid-season. Bush moderately vigorous; handy. Originated in Burlington, Ontario, Canada by M.C. Smith. Introduced in 1922. BROOKS 1972; L12, NO

Glennedale: (*R. missouriensis* x) Fruit roundish-elliptic; skin smooth, thin; skin color dark reddish-purple; seeds small; quality good; excellent for jam; resistant to mildew. Bush vigorous and productive; erect, up to 8 feet tall; resistant to leaf spot and mildew. Best suited for southern limit of gooseberry growing in the United States. Originated in Little Silver, New Jersey. Introduced in 1932. BROOKS 1972; D37, D47

Houghton: Very small, roundish fruit; skin smooth, thin, dull dark red; flesh greenish, moderately juicy, tender, very sweet, of a pleasant rich flavor; quality very good; ripens in midseason. Bush very large, vigorous; upright, becoming very spreading; productive to very productive; very hardy; widely adapted. Originated in 1833 by Abel Houghton, Lynn, Massachusetts. HEDRICK 1925; C45M, K75T

Josselyn: (Red Jacket) Fruit medium in size, roundish oval; skin smooth; skin color reddish green, becoming pale red when ripe; flesh rich, juicy, fragrant, sweet; quality very good to excellent; early ripening. Bush large, spreading; vigorous and productive; practically free from mildew. Originated in London, Ontario, Canada. Introduced about 1890. HEDRICK 1925; C61, G71, N0

Mountain: (Pence's Champion) Medium-sized, oblong fruit; skin smooth, thick; skin color dull brownish-purple; flesh moderately juicy, sweet. Bush tall, upright; vigorous; very disease resistant. Does well in hot weather. Discovered by a colony of Shakers about 1846 growing wild at Lebanon, Nov York. HEDRICK 1925; D47

Pixwell: (*R. missouriensis* x) Fruit medium in size; borne in clusters and on long stems away from the thorns which makes for easy picking; skin pale green, becoming pink when ripe, thin; few thorns; good for all culinary purposes. Bush compact; hardy; very productive; widely adapted. Originated in Fargo, North Dakota by A.F. Yeager. Introduced in 1932. BROOKS 1972; A16, B19, B43M, B73M, C61, F43M, G16, H65, J2M, J63M, K64, M65M

Poor man: (Early Poorman) Medium to large, roundish oval to somewhat pear-shaped fruit; skin smooth, rather tough; skin color pale silvery-green gradually changing to pinkish-red to almost wine-red when ripe; flesh greenish, juicy, tender, aromatic, very sweet; quality excellent. Bush very large and productive; disease resistant. Originated in Brigham City, Utah by William H. Craighead. Introduced in 1896. HEDRICK 1925; A91, B43M, D47, I49M, J61M, L12, L79, M81M, NO

Sylvia:<sup>1</sup> Fruit round, medium in size, about 1 inch in diameter; skin silvery-green, with a light pinkish-red blush when fully ripe; flesh aromatic; quality excellent, flavor mild, sweet, delicious; ripens in mid-July. Bush spreading; heavy bearing; relatively thornless; disease resistant. Originated by William Saunders, Central Experiment Station, Ottawa, Canada. L12, NO

Welcome: Medium-large fruit; skin light dull-red, glabrous; flesh pink; quality good, flavor tart; seeds few, small; ripens before Pixwell. Often picked when green for use in pies and preserves. Bush vigorous; productive; relatively free of disease, especially anthracnose; spines sparse, short, weak, missing on older wood. Originated in Excelsior, Minnesota. Introduced in 1957. BROOKS 1972; B19, C47, C61, D37, D65, D76, E97, I66T

#### LIGHT-SKINNED

Colossal: Very large, oval fruit, 1 1/2 inches in diameter; skin translucent green, refreshingly tart; flesh sweet and mild; ripens in mid-July. Ideal for pies, jams or jellies. Bush vigorous, about 5 feet tall; very winter hardy; heavy bearing; disease resistant. C34, D47, D65, I49M, I49P, I66T, J61M, NO

Oregon Champion: (Champion) Medium to large, roundish-oval fruit; skin greenish-yellow; quality good, flavor tart; ripens early; holds its color well. Good for pies, jams and wines. Bush vigorous, 3 to 5 feet tall; productive; resistant to mildew. Originated in Salem, Oregon by O.D. Dickinson, prior to 1880. HEDRICK 1925; A91, B19, B43M, C54, H49, I49G, J63M, L12, M65M, M81M, NO

#### EUROPEAN GOOSEBERRIES

Generally considered superior to American gooseberries in both size and flavor. However, they require a more moderate climate with less extremes of both heat and cold. The yellow-skinned types are most highly valued for eating out of hand. Mostly R. grossularia.

#### DARK-SKINNED

Achilles: Very large, elliptical fruit; skin red; flavor sweet; dessert quality very good; ripens late. An old English cultivar still grown in northern Europe where the small unripe berries are used for compote and jelly and the ripe fruit is used for jam and preserving. Bush spreading. C34, D47, J49P, I66T, L12, NO

Black Velvet: (Wine Velvet) (R. divaricatum x) Small, grape-like fruit, about 5/8 inch in diameter; unique, very attractive, reddish-black to jet-black color. Dessert quality very good. Very vigorous, easy to grow bush, 3 feet tall and 4 feet wide. Completely resistant to mildew. Worcesterberry x Red Champagne gooseberry. Originated in England. B74, D47, F16, H49, I49M, J61M

Crown Bob: Medium to large, oblong fruit; skin somewhat hairy, thin; skin color dark-red; flesh firm, juicy, sweet; quality good; ripens in mid-season. Used for dessert or cooking; also good for canning and jam. Bush large, spreading, pendulous; vigorous and productive; fairly resistant to powdery mildew. Has been grown in England for well over 100 years. HEDRICK 1925, SIMMONS 1978; NO, R83

Dan's Mistake: Very large, roundish, pale red fruit; thin skin with only a few scattered hairs; delicious flavor; ripens in midseason. Excellent for dessert and exhibition. Vigorous, spreading bush, fairly productive. Chance seedling which originated in England before 1865. R83

Fredonia: Fruit very large, roundish oval; skin attractive, thick, tough; skin color dark red; flesh tender, mild, juicy, subacid to sweet; quality very good; keeps and ships well; ripens late. Bush vigorous and productive; upright-spreading; thorny. Originated in Geneva, New York by Richard Wellington. Introduced in 1927. Open-pollinated seedling of an unknown English-type. BROOKS 1972; 174

Hinnonmaki Red: Large fruit; skin dull-red; flavor very good, having a perfect balance of sweetness and acidity. Good for pies, jams and jellies. Bush vigorous and productive; spreading; very hardy and disease resistant. Developed at the research station in Hinnonmaki, Finland. A74, C58, F16, G50, H42, K64, L33, 081

Lancashire Lad: Large, oblong-oval fruit; claret red, becoming dark red when fully ripe, hairy; flesh juicy, flavor fair; at its best when picked green for cooking, excellent for jam, canning and exhibition. Bush fairly vigorous, upright at first but becoming

spreading; has good resistance to American powdery mildew. First recorded about 1824. SIMMONS 1978; R83

Lepaa Red: Medium to large fruit; skin red; rich tart flavor. Excellent for pies and jams. Bush exceptionally vigorous; very hardy; disease and pest resistant. Developed at the research station in Hinnonmaki, Finland near the gardening school of Lepaa. First cultivated in 1950. Widely grown in Europe. A91, D47, F87, I74, J61M, L12, NO

London: Very large, oval fruit; skin smooth, dark red to crimson; flavor good; ripens midseason to late. Bush spreading, but makes few branches; requires a rich soil; flowers mid-period. Production very good. One of the best red exhibition cultivars. SIMMONS 1978; R83

May Duke: Medium to large, roundish, dark-red fruit with slightly downy skin; flavor good when cooked, only fair for dessert. One of the earliest varieties for picking green. Grown commercially in England for the early berry trade in May. Upright, moderately vigorous bush, very productive. Introduced in 1900. SIMMONS 1978; L12, 081, R83

Red Champagne: Small, roundish fruit; skin somewhat hairy, dark red; flesh sweet, of very good quality. Bush vigorous, resistant to mildew. A very old English cultivar once generally grown in eastern North America. HEDRICK 1925; D47

Whinham's Industry: Large, oval fruit; skin hairy, light to very dark-red; flesh yellowish-green, juicy, tender; flavor very sweet; ripens mid-season. Very popular all-purpose cultivar; excellent for picking green, for canning, freezing and jam making, and for dessert. Bush vigorous and productive; upright; susceptible to powdery mildew. HEDRICK 1925, SIMMONS 1978; D47, I66T, L12, NO, 081, P59M, R83

#### LIGHT-SKINNED

Broom Girl: Large, roundish-oval fruit; skin dark golden-yellow; flavor very good; ripens very early. Good for dessert and exhibition. Bush very vigorous and productive, blooms late. Originated in England. Introduced prior to 1852. At one time a good commercial cultivar. SIMMONS 1978; D47, R83

Careless: Large, oval fruit; skin smooth, transparent; skin color green milky white when ripe; flavor sweet; quality good; ripens early mid-season. Good for jams, bottling, canning, freezing and dessert. Bush upright when young but becoming spreading and somewhat pendulous. Most popular cultivar in England. Known before 1860. SIMMONS 1978; C58, D47, L12, NO, N24M, 081, R83

Catherina: (Catherine) Large to very large oval fruit; skin thick, nearly smooth, bright orange-yellow with a few green marks and a single green stripe; flavor sweet, quality very good; ripens late. Bush moderately vigorous; productive; slightly inclined to mildew. Excellent exhibition cultivar. Originated in England about 1840. HEDRICK 1925; D37, D47, I49M, I49P, I66T, L12, NO, 081

Cousen's Seedling: Medium to large, oval fruit; skin clear pale yellow, slightly hairy; flesh firm, sweet, flavor fairly good; ripens very late. Excellent for dessert, cooking, canning and jam. Bush vigorous, spreading, rather prickly, bears well. Popular due to its lateness and attractive color. SIMMONS 1978; D47, R83

Criterion: Very large, oval, plump fruit; skin smooth, deep yellow mottled with green; quality and flavor very good; ripens midseason to late. Excellent for exhibition. Bush large, upright to spreading. Originated in England. R83

Early Sulphur: Medium-sized, roundish oblong fruit; skin thin, covered with rather long hairs; skin and flesh color pale golden-yellow; flavor sweet, fairly good; ripens very early. One of the best early gooseberries for cooking; also excellent for dessert. Bush large, vigorous and productive; upright to spreading. Raised before 1825. SIMMONS 1978; D47, L12, NO, 081, R83

Glenton Green: Medium-sized, translucent, pale green berries, 1 inch or more in diameter; quality very good. An old English gooseberry rated as "best flavored" by Bunyard. D47,149M, 149P, 166T

Green Ocean: Very large, roundish, dark-green fruit; smooth skin; very good, sweet flavor; ripens in early mid-season, about mid July. Excellent for dessert and exhibition. Fairly vigorous, spreading bush, relatively productive. First recorded in England in 1834. SIMMONS 1978; R83

Gunner: Very large, round-oval fruit; skin dull olive green, somewhat transparent but hairy; sweet, meaty flesh, mild flavor; excellent for dessert, exhibition or jam making; ripens midseason to late. Bush spreading with long, stout shoots; very productive. SIMMONS 1978; D47, R83

Hinnonmaki Gold: (Hinnonmaki Yellow) Fruit very large to exceedingly large, round or oval; skin smooth, shiny; skin color yellowish-green. A dessert berry of sweet, rich flavor. Bred in Finland from large-berried European cultivars and mildew-resisting American cultivars. Completely haidy, surviving the severest winters in Finland. Widely grown throughout Europe. C58, D47, F87, G50,174, J61M, K64, L12, NO, 081. P68M

Hoenings Earliest: (Honing's Fruheste) Roundish, medium to large fruit; skin hairy, thick, beautiful golden yellow; flesh very tender and juicy with a sweet, mild plum-like flavor; quality very good; ripens in early July. Large, vigorous, productive bush. Originated in Neuss, Germany about 1900. One of the earliest and most attractive of gooseberries. SIMMONS 1978; D47, NO

Howard's Lancer: Fruit medium-sized, roundish to oval; skin smooth, transparent, thin; skin color yellowish-green when ripe; flavor excellent. Useful for dessert or picking green for cooking; also good for jam, canning or freezing. Bush large, vigorous and spreading; susceptible to mildew. SIMMONS 1978; D47, NO, 081, R83

Invicta: Medium-sized, greenish fruit of excellent quality. Suitable for pies, jam or freezing. Ideal for U-Pick operations. Precocious, well-shaped bush. Resistant to mildew. One of the newest releases from the East Mailing Research Station. (Resistanta x Whinham's Industry) x Keepsake. B74, D37, D47, F16, H42, I66T, J61M, L33, NO, 081, P68M

Keepsake: Fruit medium to large, oval; skin slightly hairy, thin; skin color whitish-green; flesh greenish, juicy, firm; flavor very good; ripens in mid-season, but one of the earliest when picked green for cooking. Excellent for canning and freezing. Bush vigorous and very productive; spreading and pendulous; susceptible to powdery mildew. HEDRICK 1925, SIMMONS 1978; D47, NO, 081, R83

Langley Gage: Large, roundish oval fruit; skin transparent giving it a silvery appearance; skin color pale yellow; flesh very sweet; flavor exceptionally good. Excellent for dessert. Bush strong growing; upright at first but tending to spread with age. Its tendency to produce berries in the center of the bush makes picking difficult. D47, R83

Leveller: Large, oval fruit; skin slightly dowry, almost smooth; skin color yellowish-green; flavor excellent; ripens in mid-season. Most widely grown dessert gooseberry in England; like Cox's Orange Pippin of apples, it is the aristocrat of gooseberries. Bush vigorous and productive; spreading and pendulous. SIMMONS 1978; D47, NO, 081, R83

Pitmaston Greengage: Small, oval fruit; skin smooth, yellowish-green; excellent dessert flavor; ripens midseason to late, hangs on die bush a long time. Bush fairly vigorous and erect; blooms in early mid-period; bears good crops. SIMMONS 1978; R83

White Lion: Large, oblong fruit; skin slightly hairy, pale whitish-green; flavor very good; ripens very late. Bush vigorous and spreading; high yielding; blooms late mid-period; grows well on soils on which other cultivars do poorly. An excellent late white dessert

gooseberry. Can also be picked green for cooking. SIMMONS 1978; D47, R83

Whitesmith: Roundish oval, medium to large fruit; skin thin, tender, downy; skin color very pale cream with slight green tinge; flesh light green, juicy, firm but tender; excellent sweet flavor; ripens mid-season. Popular for both cooking and dessert purposes. Bush vigorous; upright at first but becoming spreading. First raised about 1824. HEDRICK 1925, SIMMONS 1978; D47, H85,166T, J61M, L12, NO, 081, P59M, R83

#### CODES FOR SPECIAL TYPES

1. Thornless

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## GRAINS

See Amaranth, Com, Quinoa, Rice, Sprouting Seeds, and Wheat in Part II: Major Crops. See also Poaceae in Part I: Botanical Listings, and Seeds in Appendix A: Usage and Edible Parts.

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## GRAPE {GR}

### VITIS SPP.

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#### TABLE GRAPES

AMERICAN These are mostly slipskin grapes, characterized by pulp that readily slides out of the skin. They have soft flesh and a distinctive, "foxy" or musty flavor and aroma. Most have moderately vigorous vines that are trailing instead of upright, and are resistant to many insects and diseases. Generally more cold hardy than Vinifera and French hybrid grapes. Mostly *V. labrusca*.

#### *Blue-Skinned/Seeded*

Alden: Large, oval fruit; skin purplish-black, adherent; flesh firm, juicy, meaty, tender, pleasantly aromatic; quality very good; ripens just after Concord. Vine vigorous, productive, tends to overbear; adapted to a wide range of soils; somewhat susceptible to winter injury. Large, loose clusters. Recommended for home garden and local market use. BROOKS 1972; E1{SC}, H65, J98{SC}, J98{OR}, LIM, LIM{SC}, L12, M81M

A1 wood: Medium-sized fruit; skin blue-black with heavy waxy bloom, slipskin, not subject to cracking; flesh sweet, moderately foxy, flavor comparable to Worden or Concord; quality good; ripens a few days after Fredonia. Vine moderately vigorous, productive; hardy; tolerant to black rot, anthracnose, downy mildew and powdery mildew. Cluster medium-sized, compact. BROOKS 1972; A39, C45M, M81M

America: Medium-sized, globular fruits; skin thin and tender, black with little bloom; flesh juicy, melting, very rich in sugar and agreeable acids; flavor distinct, not foxy, much appreciated by some; ripens slightly after Concord. Quality high for dessert or wine. Capable of producing a very good Port wine without fortification. Prolific, drought tolerant, and extremely haidy. Cluster conical, compact. MUNSON; D37,11{SC}, J98{SC}, J98{OR}

Bailey: Medium to large, roundish fruit; skin purplish-black, covered with a heavy blue bloom; flesh moderately juicy and tender, coarse, vinous, quality good; seeds numerous; ripens as late as Catawba; keeps well. Vine vigorous; productive; injured in severe winters. Cluster large, long, compact. Originated in Denison, Texas by T.V. Munson; first fruited in 1889-90. HEDRICK 1908; II{SC}

Bath: Medium-sized, round oval fruit; skin bluish-black; flesh tender, juicy, sweet, quality fair; ripens the end of September in New York; lacks the foxy flavor of Fredonia, which it resembles.

Vine vigorous; very productive, tends to overbear; fairly hairy. Cluster medium-sized, compact. Originated in Geneva, New York. Introduced in 1952. BROOKS 1972; C82, J98{SC}, J98{OR}, M81M

Beaver: Fruit medium-sized; skin black; flesh firm, tender, juicy, separates easily from seeds, highly flavored; quality high; ripens a week before Moore Early; hangs well without cracking or shattering. Makes an excellent jelly. Vine vigorous, productive, self-fertile. Medium-sized clusters. Originated in Mountain Grove, Missouri. Introduced in 1947. BROOKS 1972; L12

Beta: Small to medium-sized fruit; skin bluish-black, slip-skin; flesh juicy, foxy, tart; table quality fair, excellent for juice, jams and jellies; ripens early. Vine extremely hardy; productive, self-fruitful. Cluster fairly large. Originated in Carver, Minnesota prior to 1908. HEDRICK 1908; A74, B4, B47, C45M, C58, D65, D69, E97, H42, I49G, L27M, L70

Black Spanish: (Lenoir) Small to medium-sized, roundish fruit; skin dark bluish-purple, nearly black, with lilac bloom, rather thick, tough; flesh slightly juicy, tender, subacid, very rich in coloring matter. Popular for juice, jelly and a dark red wine. Vine vigorous, usually quite productive; semi-hardy; tolerant to drought and Pierce's disease. Probably originated in one of the Carolinas or Georgia some time in the 18th century. HEDRICK 1908; A19, C54, N33

Blue Lake: (*V. simpsonii* x) Skin uniformly blue with a light surface bloom; flesh spicy, slightly tart; ripens from late June to late July at Leesburg, Florida. Suitable for fresh and processed juice, jellies and preserves. Vine self-fruitful; resistant to Pierce's disease. Cluster large, loose. Excellent for home gardens in the Deep South. BROOKS 1972; I41M, K76

Bluebell: An older grape becoming more popular. Medium-sized, bluish-black fruit, resembles Concord but with more tender skin. Dessert quality high, also excellent for juice and jelly. Ripens in early to mid-September. Medium-sized clusters. Vigorous, very hardy, productive vine. Hybrid of Beta. Originated in Excelsior, Minnesota. Introduced in 1944. A74, D69, G4, I49G, I49G{SC}, L70

Buffalo: Medium-sized fruit; skin reddish-black, bloom heavy, tough, slip-skin; flesh translucent, moderately juicy, tender, sweet, not aromatic; flavor pleasant, tart, spicy; quality excellent; ripens about 1 week before Concord. Vine vigorous, productive, hairy. Medium-large, well-filled cluster. For home gardens and local markets. BROOKS 1972; B6, C45M, H65, J98{SC}, J98{OR}, K36, L12, M81M

California Concord: (Pierce, Isabella Regia) Fruit very large, oblong; skin black, with a light bloom; flesh tender, very sweet, strongly aromatic; quality good for table use, juice and jelly; keeps fairly well. Vine very vigorous, prolific. Cluster large. Bud-sport of Isabella, originating about 1882 with Mr. J.P. Pierce, of Santa Clara, California. HEDRICK 1908, WICKSON; C54, E1 {SC}, G49

Campbell Early: Medium to large fruit; skin dark purplish-black, bloom heavy, slip-skin; flesh juicy, slightly foxy, somewhat vinous, sweet; quality good, improves by hanging on the vines; ripens over a long period; keeps and ships unusually well. Vine vigorous, hardy, productive; canes of average length. Originated in Delaware, Ohio in 1892. HEDRICK 1908; B74, F43M, J98{SC}, J98{OR}, M81M, P68M

Carman: Small, roundish fruit; skin dark purplish-black, glossy; flesh yellowish-green, not juicy, vinous, spicy, sweetish near the skin to tart by the seeds; ripens just before Catawba; keeps exceptionally well, both on the vine or in storage. Vine vigorous; lacking in productiveness; hardy. Cluster medium-sized, tapering, compact. Originated in Denison, Texas by T.V. Munson. Introduced in 1892. HEDRICK 1908; I1{SC}, N33

Champanel: (*V. x champini* x *V. labrusca*) Large, globular fruit; skin black; quality excellent when fully ripe (about 2 weeks after turning blue); ripens with Concord. Makes a dark-blue juice and excellent jelly. Vine very vigorous; tolerant to adverse soil and weather conditions; resistant to Pierce's disease. Clusters large, loose, conical. Adapted to the prairies of the Southwest. Originated in Denison, Texas by T.V. Munson. MCEACHERN; A19, C54, E39, E39{SC}, I1{SC}, J83D{PE}, M83, N33

Concord: Medium to large, roundish fruit; skin black, slightly adherent, bloom blue, abundant; flesh juicy, foxy, sweet near the skin, somewhat tart near the seeds; quality good; ripens in mid-season; keeps from 1 to 2 months. Vine vigorous, productive; hardy; widely adapted. Medium to large clusters. Standard American grape for juice, jelly, etc. Originated in Concord, Massachusetts in 1849. B43M, B53, B58, B73M, C61, C82, D37, D76, G23, G43, I83M, J2M, J83, L70

Conquistador: Attractive deep purple fruit with a light gray bloom; good foxy flavor; ripens mid to late July; resembles Concord. Excellent table and juice grape, also makes good jelly and a beautiful red wine. Medium-sized, tight clusters. Usually grafted onto a nematode resistant rootstock to insure good vigor and highest yields. Resistant to Pierce's disease. Originated in Leesburg, Florida. Introduced in 1983. G17, I41M, M95T

Fern Munson: Medium to large fruit, very dark purplish-red to nearly black; very juicy, with an agreeable, sprightly flavor reminiscent of Catawba when ripe. Ripens very late, in August and September, holds until frost while improving in quality. Vigorous vine with medium to large clusters. Hardy to about -27° F. Originated in 1883. MUNSON; F43M

Fredonia: Fruit large; skin black, thick, tough; quality good, superior to any other black cultivar of its season; inclined to shatter badly at maturity; ripens early. Vine vigorous, fairly productive; hardy; susceptible to powdery mildew. Cane prune. Cluster medium-sized, compact. BROOKS 1972; A82, B43M, B53, C61, D65, F93, G16, H65, I49G, J2M, J16, L70, M99G

Isabella: Medium to large, oval fruit; skin deep black with a heavy blue bloom, very tough, adherent; flesh juicy, tender, foxy, sweet to subacid; quality good; ripens with Catawba or earlier; keeps and ships well. Vine moderately vigorous and productive, hardy, susceptible to mildew. Cluster medium to large. Introduced about 1816. The most widely grown American cultivar in other parts of the world. Grown commercially in tropical and sub-tropical regions of Colombia, Brazil and India. HEDRICK 1908, WINKLER; C45M, E1{SC}, E39, E39{SC}

Lomanto: Medium to large, spherical fruit; skin black, thin but tough; juice claret red; quality excellent; seeds small and few. Vigorous, prolific vine; resistant to rot and mildew; does well on alkaline soils and in hot, dry climates. Nearly extinct cultivar introduced by T.V. Munson in 1902. C54, I1{SC}, I83M, N33

New York Muscat: Medium-sized, oval fruit; skin reddish-black, bloom heavy; flesh juicy, richly sweet, with a fine muscat flavor; quality very good; ripens early, with Delaware. Suitable for table use and sweet red wines. Vine moderately vigorous and productive; may suffer winter injury below -15° F. Cluster medium-sized, loose to well-filled. BROOKS 1972; E1{SC}, E39, E39{SC}, J61M, J98{SC}, J98{OR}, LIM, L7Af{SC}, NO, R77

Niabel: Uniformly very large, spherical fruit; skin jet black; ripens in midseason. Suitable for table use, fresh juice, and semi-sweet wines. Vine vigorous, canes long; productive; tolerant to cold and powdery mildew; grows and fruits well even in shade. Short, conical, well-filled clusters. Spur or cane prune. BROOKS 1972; A88M, C54, E1 {SC}, I83M, LIM, LIM{SC}

Price: Medium-sized, bluish-black fruit; pure, sweet flavor lacking any of the American foxiness; ripens 3 weeks before Concord. Very good for table use and juice. Vine vigorous, productive. Relatively small, medium compact clusters. One of the best cultivars for extra



cool areas of the Pacific Northwest because of its ability to ripen early, even in cool weather. J61M, J98{SC}, J98{OR}, M81M, NO

Schuyler: Fruit medium-sized; skin bluish-black, tough, astringent; flesh soft, juicy, has much of the flavor of a vinifera grape; ripens 3 to 4 weeks before Concord. Excellent for table use, fresh juice, or light red wine. Vine, moderately vigorous; productive; fairly hardy and disease resistant. Cluster large, well-filled. BROOKS 1972; B74, C82, E1{SC}, H65, J98{SC}, J98{OR}, M81M, N84

Sheridan: Large, round fruit; skin tough, black with a fine light-blue bloom; flesh firm, sweet, delicately flavored; quality very good; ripens late, about 1 week after Concord. Vine moderately vigorous, productive, handy. Cluster large, compact. Originated in Geneva, New York by S.A. Beach. Introduced in 1921. BROOKS 1972; B19, C45M, H65, L12

St. Croix: Medium-sized fruit; skin blue; flesh very juicy, flavor neutral, *su&r* usually 18 to 20 Brix, acid .80 to .90; ripens early, about 6 weeks before Concord. Makes an excellent, almost neutral vinifera-type red wine. Vine productive; haidy to about -40° F. without protection, less in windy areas. Clusters medium-sized. Originated in Osceola, Wisconsin by Elmer Swenson. A74, I49G{SC}, J98{SC}, J98{OR}, L27M, N24M

Steuben: Medium-sized fruit; skin bluish-black, slightly tough; flesh high in sugar, non-foxy, flavor rich and vinous; table quality very good; ripens with Concord, keeps well. Makes an aromatic white wine. Vine vigorous, very productive; hardy; tolerant to downy mildew and black rot. Cluster medium-sized, compact. BROOKS 1972; A91, C45M, G54, G79M, G87, H49, H65, J98{SC}, J98{OR}, L12, M81M, M99G

Valiant: Small, dark-purple, slipskin fruit; flesh sweet, mildly foxy; quality very good for its class; ripens 1 month before Concord. Vine vigorous; extremely haidy, to -50° F.; very precocious, often bearing the same year it is planted; self-fruitful. Small, tight clusters. Developed by Dr. Ron Peterson of the University of South Dakota. A65, B4, C45M, C58, D76, G54, H42, H85, I49G, J98{SC}, J98{OR}, L27M, L70, L79, NO, etc.

Van Buren: Medium-sized fruit; skin jet black; flesh juicy, sweet, foxy; table quality good; quality of unfermented juice not equal to Concord; ripens very early; teeps poorly. Vine fairly vigorous, moderately productive; hardy; susceptible to downy mildew. Small to medium, well-filled cluster. Recommended as an early maturing Concord type. BROOKS 1972; A91, H65, J98{SC}, J98{OR}, K36, M81M

Worden: Large, roundish to oval fruit; skin dark purplish-black, glossy, covered with a heavy blue bloom; flesh juicy, slightly foxy, sweet, mild; quality good to very good; ripens 1 or 2 weeks earlier than Concord; does not keep well. Vine vigorous, productive; very hardy. Introduced about 1867. Clusters large, compact. HEDRICK 1908; A74, C45M, G4, H65, H88, I49G, I49G{SC}, J98{SC}, J98{OR}, K36, L27M, M81M, N24M

#### *Blue-Skinned/Seedless*

Concord Seedless: Bud-sport of Concord released by the New York Agricultural Experiment Station. Similar color to its parent; smaller clusters and fruit; sweeter flavor; ripens about 1 week earlier. Excellent for pies. Occasional seed vestiges present. Vine vigorous and productive with age. B53, B73M, B75, C45M, D76, E3, G43, H49, H58, H65, J2M, J63M, L12, L70, M65M, etc.

Glenora: Small to medium-sized fruit; skin blue-black, thin; flesh firm but tender, juicy, sweet, somewhat foxy, entirely seedless; quality very good for table use; ripens 2 to 3 weeks before Concord. Vine vigorous, moderately productive; hardy; resistant to mildew. Clusters loose. Released by the Nov York Agricultural Experiment Station. C45M, G23, G43, H49, H65, I49M, J2M, J98{SC}, J98{OR}, K89, L33, M81M

Mars: Medium to large, round fruit; skin blue, slipskin; flavor rich and sweet, slightly foxy, somewhat resembling that of Campbell Early; ripens about 2 1/2 weeks before Concord; handles and ships well. Vine vigorous, productive; resistant to black rot, anthracnose, powdery and downy mildews. Clusters medium-sized, compact. Originated in Clarksville, Arkansas by Dr. James N. Moore. A39, B22, B43M, B73M, C45M, D65, F93, I49G, 178, J2M, J98{SC}, J98{OR}, L33, M99G, N33, etc.

Venus: Fruit large; skin blue-black, attractive, resists cracking; flesh sweet, flavor somewhat reminiscent of muscat; ripens 3 to 4 weeks before Concord. Occasional seed vestiges present. Vine productive, very vigorous; buds out early. Clusters large, compact. Developed at the University of Arkansas by Dr. James N. Moore. B22, B43M, C45M, C61, F93, G23, J2M, J61M, J98{SC}, J98{OR}, L90, NO, N33

#### *Green-Skinned/Seeded*

Diamond: (White Diamond, Moore's Diamond) Medium-sized, roundish fruit; skin greenish-yellow, tough, adherent; flesh juicy, tender, somewhat melting, slightly aromatic, sprightly, sweet, quality very good; ripens slightly before Niagara, keeps well. Makes excellent white grape juice. Vine moderately vigorous, haidy, productive. Clusters medium-sized, compact. Introduced about 1885. HEDRICK 1908; C45M, E1 {SC}, H65, J98{SC}, J98{OR}, L12, M81M

Dutchess: Fruit medium-sized, roundish to oval; skin pale yellowish-green, tough, adherent; flesh juicy, tender, vinous, sweet, of pleasant flavor; quality high; ripens in midseason; keeps and ships well. Vine moderately vigorous and productive, often not haidy. Cluster medium to large, relatively compact. Introduced about 1880. HEDRICK 1908; E1 {SC}, J98{SC}, J98{OR}

Edelweiss: Medium-sized, greenish-yellow, slipskin fruit; flesh tender, very juicy, sweet, slightly foxy; quality good for table use, juice and wine; ripens with or just after Himrod. Vine vigorous, productive; disease resistant; haidy to about -30° F. without protection. Cluster large. Introduced by the University of Minnesota. A39, A74, B74, C45M, D65, E97, F43M, G16, I49G, J98{SC}, J98{OR}, L27M, L70, NO, N24M, etc.

Eona: Small to medium fruit; skin white; flesh very sweet, lacks the tartness of purple types; table quality fair, suitable for wine; ripens mid to late September. Vine productive; very hardy; self-pollinating. Clusters loose. Originated in Brookings, South Dakota by N.E. Hansen. Introduced in 1925. BROOKS 1972; D11M, F70, G50, J98{SC}, J98{OR}, N24M

Golden Muscat: Large, round-oval fruit; skin golden-yellow; flesh very juicy, soft, sweet, aromatic, slight muscat flavor; quality excellent; ripens 2 weeks later than Concord. Vine vigorous, productive; not as hardy as Concord; susceptible to powdery mildew and bunch rot. Cluster large, well-filled; subject to cluster spoilage. BROOKS 1972; B73M, C45M, C54, E3, G49, H49, H65, I83M, J98{SC}, J98{OR}, L12, M81M

Green Mountain: (Winchell) Small to medium-sized, roundish fruit; skin light green, covered with a thin white bloom, adherent; flesh juicy, tender, sweet, very good to best in quality; ripens very early, keeps and ships well for an early grape. Vine vigorous, hardy, very productive. Clusters large, moderately compact. Introduced in 1888. HEDRICK 1908; U7J{SC}

Kay Gray: Medium to large fruit; skin greenish-yellow; flesh firm, slightly foxy, very mild, sugar usually near 20 Brix, acid .70 to .90; ripens about with Edelweiss. Good for table use, juice and wine. Vine productive; disease resistant; haidy to -40° F. unprotected. Cluster small, compact. Originated in Osceola, Wisconsin by Elmer Swenson. A74, D11M, F70, I49G, I49G{SC}, J98{SC}, J98{OR}, L27M, L70, L79, N24M

LaCrosse: Medium-sized, greenish-white fruit; flesh juicy, sweet, flavor neutral; ripens shortly after St. Croix and Kay Gr<sup>^</sup>. Sugar

content usually 18 to 19 Brix, acid 1.10 to as low as .90. Mainly a wine grape but pleasant to eat. Good disease resistance. Clusters medium-sized, moderately compact. Originated in Osceola, Wisconsin by Elmer Swenson. A74, I49G, I49G{SC}, J98{SC}, J98{OR}, N24M

Lake Emerald: (V. simpsonii x) Medium to large fruit; skin emerald green to light-golden, fairly tough; flesh soft, sweet, uniquely fragrant, agreeably flavored; juice aromatic, sweet, well-flavored, light-colored; ripens during July at Leesburg, Florida. Primarily for home gardens and local markets in the Deep South. Vine high yielding; tolerant to Pierce's disease. BROOKS 1972; I41M, K76, M95T

Niagara: (White Concord) Medium to large, slightly oval fruit; skin yellowish-green; flesh juicy, foxy, sweet, of good quality; ripens with Concord, keeps fairly well. Vine vigorous; very productive; resistant to powdery mildew. Standard green grape for home gardens and market. Produces strong, foxy-flavored wines. Introduced about 1882 by the Niagara Grape Company. HEDRICK 1908, ROBINSON, J. 1994; A82, B43M, B53, B58, B73M, C61, D59, E1M{PD}, G23, G71, I25{PD}, J2M, J83, L12, M65M, etc.

Ontario: Small to medium-sized, greenish-yellow fruit; flesh juicy, tender, very aromatic, rich, slightly foxy; quality very good; ripens 4 weeks before Concord, holds well on the vine. Vine moderately vigorous; productive. Clusters large, loose, single-shouldered. Originated in Geneva, New York. Introduced in 1908. E1{SC}, H65, J98{SC}, J98{OR}, K36, L12, M81M

Seneca: Small to medium-sized, oval fruit; skin thin, tender, yellowish-green becoming a translucent golden; flesh firm, tender, juicy, very sweet, melting, flavor rich, aromatic; quality very good to best; ripens with Ontario, hangs well on the vine. Vine vigorous, productive; hardy; susceptible to powdery mildew; requires long cane pruning. Cluster medium-sized, loose. BROOKS 1972; E1{SC}, E39, E39{SC}, H65, J98{SC}, J98{OR}

St. Pepin: Medium-sized, greenish-white fruit; flavor fruity, slightly reminiscent of muscat; ripens with LaCrosse. Makes an excellent German-style white wine, and an outstanding non-foxy white juice. Vine female; blooms with LaCrosse which makes a good pollinator for it. Large, loosely formed clusters. Originated in Osceola, Wisconsin by Elmer Swenson. A74, G4, I49G, I49G{SC}, J98{SC}, J98{OR}, N24M

Stover: Medium-large, ellipsoidal fruit; skin translucent light green to golden at maturity; sugar content averages 17 to 18%; flavor mild, free from excessive sweetness or tartness; quality good for table use; ripens in late June or early July. Vine self-fertile; tolerant to Pierce's disease and downy mildew. Cluster medium-sized. Originated in Leesburg, Florida. BROOKS 1972; F93, I41M, I53M, M95T

Suwanee: High quality light green fruit; excellent flavor much like Thompson Seedless, but with a hint of muscat; resembles Golden Muscat. Also makes a very good wine. Ripens late June to early July. Very vigorous vine; satisfactory on most soils without grafting; resistant to Pierce's disease. Large, compact clusters. Originated in Leesburg, Florida by John A. Mortensen. Introduced in 1983. G17, I41M, K76, M95T

#### *Green-Skinned/Seedless*

Himrod: Small, oval fruit; skin greenish-yellow, translucent; flesh tender, juicy, melting, vinous, quality good; small soft seeds; ripens 1 week before Fredonia. Vine vigorous, not productive, fairly hardy. Cluster large, very long, poorly filled. Ontario x Thompson Seedless, the same parentage as Interlaken, Romulus and Lakemont. BROOKS 1972; B43M, B53, C47, C61, C82, D59, E39, E39{SC}, G43, G71, G79M, J2M, J98{SC}, J98{OR}, N33, etc.

Interlaken: Fruit small; skin greenish-white, adherent; flesh crisp, sweet, entirely seedless, quality excellent; resembles Thompson Seedless but has a flavor reminiscent of Ontario; ripens early. Vine moderately vigorous, productive; semi-hardy; requires long-cane

pruning. Cluster medium-sized, loose, tapering. BROOKS 1972; B73M, C61, D59, D65, E39, E39{SC}, F53M, G23, G71, G79M, J98{SC}, J98{OR}, M65M

Lakemont: Medium-sized fruit; skin greenish-yellow; flesh crisp, tender, juicy, very sweet; quality very good for table use, makes excellent raisins; ripens 3 weeks after Himrod, keeps very well in cold storage. Vine moderately vigorous; hardy; very productive, tends to overbear; disease resistant. Clusters large, well-filled to compact. B53, B73M, D65, G23, H49, H65, 178, J98{SC}, J98{OR}, L33

Orlando Seedless: Medium-sized, round fruit; skin light golden-green, attractive; flesh firm, crisp, very sweet; flavor pleasant, vinous; ripens in early July. Excellent for table use and juice. Vine moderately vigorous, productive; resistant to powdery and downy mildew. Long, tapered, loose clusters. The first seedless grape with resistance to Pierce's disease. Introduced in 1985 by the University of Florida. F93, G17, I41M, I53M, J98{SC}, J98{OR}, L90, M83, M95T

Remaly: Medium to large fruit; skin greenish-white, adherent; flesh crisp, tender, juicy, sweet, entirely seedless; quality very good for table use; ripens in late midseason. Vine vigorous; more cold-hardy than most seedless grapes; very productive, should be cluster thinned. Clusters large, moderately compact. B43M, B53, C30M, C45M, 174, J98{SC}, J98{OR}, L33, M81M

Romulus: Small to medium-sized, roundish fruit; skin greenish-yellow; flesh melting, juicy, vinous, quality good, seedless; resembles Thompson Seedless; ripens with Concord. Vine very vigorous and productive, fairly hardy. Cane prune. Cluster large, shouldered, compact. Originated in Geneva, New York. Introduced in 1952. BROOKS 1972; C45M, E1{SC}, L12, P68M

#### *Red-Skinned/Seeded*

Agawam: Large, roundish fruit; skin purplish-red, thick, tough, adherent; flesh firm, foxy, rich, sweet, aromatic, quality good; ripens soon after Concord, keeps until mid-winter. Vine vigorous, moderately productive; hardy; self-fertile; susceptible to mildew. Clusters medium to large, moderately compact. Introduced about 1861. HEDRICK 1908; C45M, J98{SC}, J98{OR}

Brilliant: Medium-sized, roundish fruit; skin attractive bright-red, covered with abundant lilac bloom; flesh pale green, juicy, slightly stringy, fine-grained, sweetish at skin but tart near the seeds; quality very good; ripens with Delaware; keeps very well. Vine vigorous; hardy; moderately productive. Cluster large, cylindrical, medium to compact. Originated in Denison, Texas by T.V. Munson. Introduced in 1887. HEDRICK 1908; C54, F43M, I1{SC}, J98{SC}, J98{OR}, L12, N33

Caco: (Red Caco) Fruit medium to large, roundish; skin light red, thick, attractive; flesh juicy, tender, vinous, rich and sweet; quality good; ripens 7 to 10 days after Concord. Vine moderately vigorous; hardy; very productive. Cane prune. Clusters large, conical, moderately compact. B19, C45M, H44, H88, I41P, J63M, M65M, M81M

Captivator: Fruit large; skin orange-red, with a lilac bloom; flesh very sweet, slightly foxy, flavor excellent; ripens with or just after Himrod, 2 weeks before Concord. Vine vigorous, very hardy. Cluster small, moderately compact. Originated in Denison, Texas by T.V. Munson. C45M, F43M, H49, I1{SC}, L12

Catawba: Medium-sized, oval to roundish fruit; skin reddish-purple, adherent; flesh juicy, vinous, often sprightly with some foxiness, sweet and rich; quality very good; ripens late, keeps until March or later. Vine vigorous, hardy, productive. Clusters large, moderately compact. Used in roses, white wines and sparkling wines. A standard for over 150 years. Origin unknown. Introduced about 1823. HEDRICK 1908, HERBST, R.; A82, B53, B58, B73M, C45M, C61, C67{PD}, D59, E1M{PD}, E3, E39, E39{SC}, H65, I25{PD}, I49G, J2M, J63M, etc.

Daytona: Round, medium to large fruits; skin pale pink covered with a frosty white bloom, thin, attractive; flesh firm, sweet and juicy; dessert quality excellent; ripens early to mid August; resembles Tok<sup>^</sup>. Rampant growing vines produce large, loose clusters. Resistant to Pierce's disease and downy mildew. Introduced by the University of Florida in 1983. G17, I41M, I53M, K76, M95T

Delaware: Small to medium-sized, roundish fruit; skin light red, thin, adherent; flesh juicy, tender, aromatic, vinous, sprightly and refreshing, sweet, quality excellent; ripens a few days earlier than Concord, keeps well. Vine fairly vigorous and productive, hardy. Clusters small to medium-sized, compact. Was the standard of excellence for American grapes after its introduction about 1851 in Delaware, Ohio. HEDRICK 1908; C45M, C54, C82, H65, J98{SC}, J98{OR}, L12

Swenson Red: Medium to large fruit; skin dark-red, non-slip-skin; flesh firm, meaty, juicy, sweet, non-foxy; table quality excellent, also makes a good white wine; ripens a month or more before Concord, keeps well in cold storage. Vine productive, hardy to about -30° F. without protection. Clusters distinctively shaped. Originated in Osceola, Wisconsin by Elmer Swenson. A74, C45M, D37, D65, G4<sub>9</sub>, G16, I49G, J61M, J98{SC}, J98{OR}, L27M, L70, NO, N24M

#### *Red-Skinned/Seedless*

Bronx Seedless: Small, oval fruit; skin red, cracks easily during wet weather; flesh soft, juicy, mild in flavor, quality good; ripens 1 week before Concord. Vine vigorous, fairly hardy; productive; susceptible to anthracnose and downy mildew. Cluster large, long conical, loose. Originated in Geneva, New York. Introduced in 1937. BROOKS 1972; E1{SC}, J98{SC}, J98{OR}

Canadice: Small to medium-sized fruit; skin bright red, thin; flesh soft, rich, vinous, sweet, of very good quality; ripens about 1 week after Himrod, holds well on the vine. Vine moderately vigorous; hardy; very productive, tends to overbear if not pruned; fairly resistant to black rot. Clusters large, well-filled, attractive. B53, B58, B73M, G23, G43, H65, J2M, J63M, J98{SC}, J98{OR}, L33, M99G, NO, N24M

Einset: Medium-sized, ovoid fruit; skin bright red with a light, waxy bloom, resistant to cracking; flesh crisp, firm, juicy. Flavor non-foxy, somewhat reminiscent of strawberry, quality excellent; ripens early, stores well. Vine productive, extremely hardy for a seedless grape; resistant to botrytis, susceptible to powdery mildew. Cluster medium-small. Introduced by the New York State Agricultural Experiment Station. B74, C34, C45M, I49M, J2M, J61M, J98{SC}, J98{OR}, M81M, NO

Reliance: Medium-sized, round fruit; skin pinkish-red; flesh firm, tender, melting, sweet; quality excellent for table use; ripens about 2 1/2 weeks before Concord; stores and ships well. Vine vigorous, productive; widely adapted; very hardy, to about -23° F; susceptible to black rot. Clusters large, compact. Developed by Dr. James N. Moore at the University of Arkansas. A39, B22, B43M, B73M, C45M, D65, E97, F93, G16, G23, H65, J2M, J98{SC}, J98{OR}, L33, N33, etc.

Saturn: Large, oblong fruit; skin bright red, deeper red than Reliance, adherent; flesh firm, very crisp, sweet; vinifera in character; ripens in early September in Zone 6. Fruit quality and appearance are maintained well in storage. Vine moderately vigorous and hardy; precocious, may tend to overbear when young. Clusters medium-sized, compact. Introduced in 1987 by the University of Arkansas. C45M, H65

Suffolk Red: Fruit large, round; skin bright red, attractive; flesh crisp, meaty, juicy, non-foxy, vinous, entirely seedless, quality excellent; ripens early, 2 to 3 weeks before Concord. Vine very vigorous, fairly hardy; productive; disease resistant. Cluster medium to large, long, loose. Introduced in 1972. B53, C45M, C61, G23, G79M, J63M, J98{SC}, J98{OR}, M65M, M81M

Vanessa: Medium-sized, oval fruit; skin deep red, adherent, very attractive; flesh crisp, firm, juicy, very sweet and aromatic; superior flavor reminiscent of Seneca; dessert quality excellent; ripens early, 7 to 10 days after Himrod. Vine vigorous, moderately hardy and productive. Clusters medium-sized, loose to well filled. Originated in Vineland, Ontario, Canada. Introduced in 1984. B22, B43M, B75, C30M, C45M, F16, H65, J2M, J61M, J98{SC}, J98{OR}, L12, NO

**FRENCH HYBRID** Developed by French breeders to combine the wine quality of Vinifera grapes and the durability of American grapes. They have the necessary disease resistance, winter hardiness and the ability to meet adverse conditions while still yielding good red and white table wines. Most were bred as wine grapes but some have excellent dessert qualities.

#### *Blue-Skinned/Seeded*

Dattier de Conzieu: (Landot 2832) Large to very large, pale blue fruits with a neutral flavor. Excellent for dessert; also makes delicious jellies and fresh juice. Vine somewhat particular about growing conditions, but worthy of trial. U7G{SC}

#### *Green-Skinned/Seeded*

Dattier de St Vallier: (Seyve-Villard 20-365) Large, elongated fruit; skin greenish-yellow, thin; flesh tender, meaty, sweet, flavor neutral, dessert quality very good; subject to rot. Vine vigorous, very productive, buds out late; highly tolerant to downy mildew. Must not be allowed to overbear or quality will be indifferent. Cluster large, short conic, loose. BROOKS 1972; J98{SC}, J98{OR}

Verdelet: (Seibel 9110) Medium-sized, oval fruit; skin golden-yellow often tinged with pink, very attractive, tender, adherent; flesh firm and crisp, flavor neutral but pleasing. Vine moderately vigorous, productive when short cane-pruned. Cluster medium-sized, cylindrical, well filled to compact. An excellent table grape. Also produces an above average wine with a delicate aroma, good balance, and attractive flavor. BROOKS 1972, WAGNER; B43M, C45M, C54, G79M, I49G, I49G{SC}, J98{SC}, J98{OR}, L90, M83, N33

**VINIFERA** These produce the choicest dessert grapes, characterized by non-slip skin, firm flesh and a relatively mild flavor. Most premium wines are also made from Vinifera grapes. Less hardy than American or French Hybrid grapes, they require a long, warm, drier growing season. More susceptible to insect pests and diseases. The vines are more vigorous and upright growing. (V. vinifera)

#### *Blue-Skinned/Seeded*

Black Hamburg: Medium to large, roundish to slightly oval fruit; skin dark purplish-red or purplish-black, bloom heavy; flesh juicy, sweet, of fair flavor and quality; ripens in midseason. Vine of good to moderate vigor. Cluster medium-sized, compact. Of German or Italian origin. Introduced into England in 1720. SIMMONS 1978; N84, 081, R77, R83

Blackrose: Fruit large; skin jet black with a light grayish bloom, tender, very attractive; flesh sweet, juicy, more flavorful than Ribier; quality high; ripens in early midseason. Vine vigorous, productive. Spur or cane prune. Cluster large, conical, well-filled but not usually compact unless girdled. Originated in Fresno, California. Introduced in 1951. BROOKS 1972; E1{SC}, E39, E39{SC}, J98{SC}, J98{OR}, LIM, LIM{SC}

Exotic: Medium-large, spherical fruit; skin black, splits badly in some localities; flesh firm, crisp, quality good; ripens in midseason, about 10 days later than Cardinal. Vine vigorous and productive; should be spur pruned. Cluster very large, long, well-filled. Originated in Fresno, California. BROOKS 1972; E1 {SC}, L/Af, LIM{SC}

Gros Colman: Large to very large, round fruit; skin blackish-blue with a delicate bloom, thick but tender, attractive; flesh moderately

firm, juicy, sweet, flavor good; ripens very late, keeps well on the vine. Vine vigorous and productive, prefers rather heavy soils. Cluster large, cylindrical, well-filled. SIMMONS 1978, WICKSON; N84, R77

Mrs. Prince's Black Muscat: A very good late cultivar that will ripen in a cool greenhouse. With care will keep until February. Large bunches which hang well. An easy to grow but superb grape. N84, R77

Muscat Hamburg: Large, roundish-oval fruit; skin black, covered with a heavy bloom; flesh sweet; excellent for dessert, also makes a good red wine; ripens in midseason. Vine moderately vigorous; productive. Cluster medium-long, loose, does not require thinning. One of the best black muscat-flavored grapes. Used in California for making *Elysium* dessert wine. SIMMONS 1978; E1{SC}, E39, E39{SC}, J53M{PD}, J98{SC}, J98{OR}, LIM, LIM{SC}, 081, R77

Purple Cornichon: (Olivette Noir) Fruit large, long, with a distinctive more or less curved shape; skin thick, dark-purple with a light bloom, attractive; flesh firm, sweet, of good quality; ripens late, ships exceptionally well. Vine a vigorous grower, spur pruned. Cluster very large, loose, on long stems. WICKSON; S59

Ribier: (Alphonse Lavallee) Large to very large, round fruit; skin nearly black, moderately tough; flesh juicy, sweet, flavor mild, mildly astringent; ripens in early midseason; holds well on the vine. Vine moderately vigorous; very productive. Spur prune. Cluster medium-sized, short-conical, loose. Widely used as a shipping grape in California. A88M, B93M, C54, E1 {SC}, E39, E39{SC}, K96M{PR}, N20

Teinturier:<sup>2</sup> (Purpurea) Unusual, purple-leaved grape. Mostly grown as an ornamental. Produces small, subacid-fruits that make a very good jelly. Ripens late in the season. Vigorous, highly decorative vine with claret-colored leaves, deepening to purple; striking autumn coloring. At one time widely used in France for dyeing wines to prevent discoloration during storage. SIMMONS 1978; C2, D95, E87, N84, 081, R77, R83

Tressot Panache:<sup>1</sup> Distinctive cultivar with skin that is mottled or blotched with purple and white. Dessert quality only average, of value mostly as a novelty. An old classic French grape. Probably a chimera of the wine-grape cultivar Tressot Negra. U7G{SC}

#### *Blue-Skinned/Seedless*

Beauty Seedless: Small to medium-sized, ovoid fruit; skin bluish-black, waxy; flesh firm, tender, flavor spicy; quality good at full maturity; ripens very early, with Perlette. Vine very vigorous; very productive as spur-pruned cordon. Cluster large, conical, heavily shouldered. Originated in Davis, California by H.P. Olmo. The first black seedless cultivar produced by breeding. BROOKS 1972; E1{SC}, E39, E39{SC}, J98{SC}, J98{OR}, LiM, ZJM{SC}

Black Emerald: Early ripening, seedless black grape for fresh markets and raisins. Medium-sized, round to slightly oval fruits; flavor sweet and neutral. Ripens early, between Perlette and Flame Seedless. Moderately vigorous vine, productive when cane pruned. Cluster medium-sized, conical, shouldered, well-filled to slightly compact. Originated in Fresno, California. Introduced in 1994. BROOKS 1997; C54, E1{SC}, 168

Black Monukka: Medium-sized, elongated fruit; skin reddish-purple, thin and tender; flesh yellow, crisp, sweet and juicy; ripens in early midseason. Excellent for dessert and raisins, also used for juice and wine. Requires less heat to ripen than Thompson Seedless. Spur or cane prune. Cluster large, very long, loose to well filled. One of the hardiest vinifera grapes. A88M, C54, D3M{DF}, D59, E39, E39{SC}, E97P{DF}, F97M{DF}, G49, LI, L15M{DF}, L47, L97G{DF}, N20

Fantasy: Large, oval fruit; skin bluish-black; flesh pale green, sweet, quality very good to excellent. Ripens in midseason, slightly

before Ribier. Very vigorous, moderately productive vine; cane pruned. Cluster medium large, moderately compact to loose. Recommended for fresh markets. Originated in Fresno, California. Introduced in 1994. BROOKS 1997; A63, A88M, C54, DJ9, E1 {SC}, G49,168, J31M, J98{SC}, J98{OR}, LI, LIM, LIM{SC}, N20

Marroo Seedless: Carolina Black Rose x Ruby Seedless. Medium-large, short-elliptic fruit; skin bluish-black; flesh firm, juicy, neutral in flavor. Ripens about 2 weeks before Ruby Seedless. Very vigorous vine, similar to Ruby Seedless. Uniform, large, loose clusters. Originated in Merbein, Victoria, Australia. Introduced in 1990. BROOKS 1997; E1 {SC}

#### *Green-Skinned/Seeded*

Calmeria: Fruit large, ovoid-elongated; skin greenish-white, tough; flesh white, meaty, sugar content medium, acidity low. Vine moderately vigorous; very productive. Cluster large, well-filled. A very late maturing cultivar; well adapted for cold storage. Originated in Fresno, California. Introduced in 1950. BROOKS 1972; E1 {SC}, L47

Cannon Hall Muscat: Fruit medium to large, round to slightly oval; skin thick and firm, pale amber with a heavy bloom; flesh firm, with a strong muscat flavor, quality very good; ripens mid-season to late. Vine vigorous, an irregular bearer, spur pruned. Cluster very large, tapering, cylindrical. SIMMONS 1978; N84, R77, S59

Chaouch: An early fruitful cultivar with juicy, sweet, perfumed berries. The favorite grape of the Sultan of Turkey in the 19th century. N84, R77

Chasselas d'Or: Small to medium, round fruit; skin pale amber with a golden tinge, tawny-gold when fully ripe, firm but tender; flesh very juicy, sweet, of pleasant flavor, at first crisp but becoming soft with full maturity. Vine moderately^ vigorous, bears well. Cluster medium to above medium, long and cylindrical. A famous French dessert grape of the 16th century. SIMMONS 1978, WICKSON; E1{SC}, N84

Ciotat: (Parsley Leaved) Small, round fruit; skin thin, very pale green; flesh firm, sweet; ripens early. Vine vigorous, very productive; of ornamental value because of its parsley-shaped leaves. Cluster small and long, berries loose in the cluster. Known in France since the beginning of the last century. SIMMONS 1978; N84, 081, R77

Early Muscat: Medium-sized, uniform fruit; skin dull yellow; flesh white, firm, meaty, with a distinct muscat flavor; seeds small; ripens very early, just after Perlette and Pearl de Casaba; ships well. Quality excellent for dessert and raisins, also makes a sweet, varietal muscat wine. Vine moderately vigorous; very productive; should be girdled to increase berry size. Cluster large, loose, pyramidal. Originated in Davis, California by H.P. Olmo. BROOKS 1972; E1{SC}, J98{SC}, J98{OR}, LIM, LiM{SC}

Foster's Seedling: Medium-sized, roundish-oval fruit; skin pale greenish-white; flesh soft, sweet, of good flavor, quality excellent; ripens very early. Vine moderately vigorous, heavy bearing; very suitable for forcing in a greenhouse. Cluster fairly long. Originated about 1835. SIMMONS 1978; N84, 081, R77

Gold: Large, oval fruit; skin tender, with a golden sheen; flesh firm, meaty, with a light but distinct muscat flavor; quality excellent for table use, also used for the production of a light muscat wine; seeds few, small; ripens in early August. Vine moderately vigorous; very productive; canes short. Cluster medium-sized, short, conical, well-filled. Originated in Davis, California by H.P. Olmo. Introduced in 1958. BROOKS 1972; E1{SC}, J98{SC}, J98{OR}, LIM, LIM{SC}

Italia: (Italian Muscat) Very large fruit; skin golden-yellow, tender; flesh juicy, with a mild muscat flavor; dessert quality excel-

lent, also used for wine; ripens in midseason. Vine moderately vigorous; very productive. Spur prune. Cluster large, loose, conical. Bicané x Muscat Hamburg. Originated in Rome, Italy by A. Pirovano, Institute of Fruit Culture. BROOKS 1972; B93M, E1 {SC}, E39, E39{SC}, LIM, LIM{SC}

July Muscat: Medium-sized, sub-ovoid fruit; skin whitish-yellow, resistant to weather; flesh greenish-yellow, firm, with a strong muscat flavor; ripens in late July, ships well. Vine vigorous; moderately productive. Cluster loose. Originated in Davis, California by H.P. Olmo. Introduced in 1958. BROOKS 1972; E1{SC}, E39, E39{SC}, LIM, LIM{SC}

Lady Finger: Large, slender, very elongated fruit; skin bright green to greenish-white, sometimes blushed with pink, thin, easily bruised; flesh firm, tender, low in acid, with a mild, neutral flavor; ripens in midseason. Vine very vigorous and productive. Spur or cane prune. Cluster conical, compact. C54

Madeleine Angevine: Medium-sized, oblong fruit; skin yellowish-green to golden, transparent, rather thick; flesh sweet and juicy, non-muscat in flavor; ripens very early. Vine moderately vigorous, heavy yielding. Cluster medium, compact, shouldered. Suitable for table use, juice and wine. C34, J61M, N84, 081, R77

Monte Senario: Reportedly blessed by Christ when he stayed at the home of a poor farmer in Jerusalem, and brought to Italy by the Crusaders. A start was taken to the Sanctuary of Our Sorrowful Mother in Portland, Oregon in 1933. Vines are offered free in return for a donation to the Sanctuary, which is in need of repairs and updating of buildings. J98{SC}, J98{OR}

Muscat of Alexandria: (Muscat) Large, oblong fruit; skin light-yellow, tinged with copper when well ripened, transparent, covered with white bloom; flesh very sweet, strongly aromatic, with a decidedly musky flavor; ripens in late midseason; excellent for dessert, also used for raisins and aromatic, somewhat spicy wines. Vine vigorous; moderately productive. Spur or cane prune. Cluster very long, loose, heavily shouldered. Of North African origin; first recorded in 1584. A88M, B93M, C54, C60D{PD}, E1 {SC}, E39, E39{SC}, J9P, LI, LIM, LIM{SC}, N20

Olivette Blanche: (Lady Finger) Long, slender fruit, broader than Rish Baba; skin darker green than Rish Baba, sometimes tinged with pink, easily bruised; flesh firm and tender, neutral in flavor, quality very good for table use or raisins; ripens in late midseason. Vine very vigorous and productive if cane pruned. Cluster very large, irregular conical, well filled. WINKLER; B93M

Pearl of Casaba: (Perle de Czaba) Small to medium-sized, round fruit; skin light golden-yellow, thin, adherent; flesh crisp, meaty, sweet, aromatic, with a light but distinct muscat flavor, contains a single small seed; ripens very early. Vine moderately vigorous; fairly productive; hardy in Michigan. Spur prune. Cluster medium-sized. Originated in Hungary. J98{SC}, J98{OR}, N84, R77

Queen of the Vineyard: (Scolokertek Kiralynoje) Medium to large, oval fruit; skin greenish-yellow; flesh crisp, meaty, with a delicate muscat-like flavor; ripens with Delight. Originated in Hungary. Widely used for breeding at Davis, California; one of the parents of Perlette, Delight, July Muscat, Gold, Early Muscat and Beauty Seedless. J98{SC}, J98{OR}

Rish Baba: (Lady Finger) Long, slender fruit, sometimes slightly curved; skin pale greenish-white to light yellow, tender, easily bruised; flesh firm but tender, very low in acid, neutral in flavor; ripens in early midseason. Vine vigorous, moderately productive when cane pruned. Cluster small-medium, long cylindrical, very loose. Originated in Persia. WINKLER; E39, E39{SC}, LIM, L7M{SC}

White Malaga: Large, oval fruit; skin yellowish-green, covered with a white bloom, moderately tough; flesh sweet and tender, quality good for table use, also used for raisins; ripens August into September. Vine a strong grower, very productive. Spur or cane

prune. Cluster very large, loose shouldered, long. Grown in southern California in situations where the muscat does not do well. WICKSON; B93M

#### *Green-Skinned/Seedless*

Delight: Medium-sized, oval fruit; skin dark greenish-yellow, thick, resists bruising; flesh firm, crisp, flavor distinct, slightly muscat-like, sometimes astringent; ripens early, just after Perlette; very good for table and raisin use; resembles Thompson Seedless. Vine moderately vigorous; very fruitful when spur pruned. Cluster large, conical, well-filled to compact. C54, D59, E1 {SC}, E39, E39{SC}, J98{SC}, J98{OR}, LI, LIM, LIM{SC}

Emerald Seedless: Medium-large, obovoid fruit; skin greenish-yellow, tender; flesh moderately firm, light green, seedless; ripens in midseason, 2 weeks before Thompson Seedless. Recommended for fancy raisins and as a table grape. Vine vigorous, moderately productive. Cluster large, conical, loose to well-filled. BROOKS 1972; E1 {SC}, LIM, LIM{SC}

Fiesta: Medium-sized, oval fruit; skin greenish-white; flesh firm, juicy, sweet, quality very good for dessert or raisins; ripens 1 to 2 weeks before Concord. Vine vigorous and productive. Cluster large. Appears less prone to bunch rot than some vinifera cultivars in rainy Pacific Northwest fall weather. D59, E1 {SC}, E39, E39{SC}, J31M, LIM, LIM{SC}

Perlette: Medium-sized, spherical fruit; skin white to yellowish, translucent, thin, very tender; flesh translucent, crisp, juicy, flavor mild but distinctive, low in sugar and acidity; ripens very early, 1 month before Thompson Seedless. Vine vigorous; more fruitful than Thompson Seedless; requires less heat than most vinifera grapes. Spur or cane prune. Cluster large, compact to very compact, requires heavy thinning. A88M, C54, E39, E39{SC}, G49, I68, J31M, L47, N20

Thompson Seedless: (Sultanina) Small to medium, elongated fruit; skin greenish-white to golden-yellow, thin; flesh crisp, juicy, flavor sweet but mild; ripens early to midseason. Vine very vigorous and productive; does best in hot areas. Cane prune. Cluster large to very large, well-filled. Most popular grape for table use and raisins in California. World's leading raisin grape. Named after W. Thompson of Yuba City, who introduced it into California in 1878. WICKSON; A88M, D59, E39, E39{SC}, F93, G49, K75Z{DF}, K96M{PR}, L7M, LIM{SC}, L47, N33

Thomuscat: (Seedless Muscat) Somewhat small fruit, mostly seedless, with a muscat-like flavor when fully ripe. Vine low in vigor; sets irregularly; tends to over produce. Cluster rather loose, not uniform. Primarily for home gardens. Muscat of Alexandria x Thompson Seedless. Originated in Fresno, California. Introduced in 1949. BROOKS 1972; E1{SC}, E39, E39{SC}, LIM, LIM{SC}

#### *Red-Skinned/Seeded*

Cardinal: Fruit large; spherical to oblate, often lobed or creased; skin dark red to reddish-black, thin; flesh greenish, firm, crisp, with a slight muscat flavor; seeds few; ripens very early. Vine very vigorous to rampant; very productive; requires heavy flower cluster removal to increase cluster size. Spur or short cane prune. Cluster medium-sized, short conical, well-filled. Flame Tokay x Ribier. BROOKS 1972; B93M, E1{SC}, E39, E39{SC}, LIM, LiM{SC}, N84, R77

Emperor: Large, oval fruit; skin light red to reddish-purple, thick, tough; flesh very firm and crisp, meaty; ripens late; quality good for table use and raisins; ships and stores extremely well. Vine a strong, vigorous grower; very productive; does well in hot interior areas of California. Spur or cane prune. Cluster very large, long-conical, loose. Leading red table grape in California. B93M, E1 {SC}, E39, E39{SC}

Queen: Large, uniform, ellipsoidal fruits; skin dark red; flesh firm at maturity, but not as firm as Flame Totey, sugar and acid content

medium; ripens in midseason, just after Red Malaga, stores and ships well. Vine moderately vigorous, fruitful when spur pruned. Cluster large, loosely winged. BROOKS 1972; E1{SC}, LIM, LIM{SC}

Red Malaga: (Molinera) Large, oval fruits; skin pink to reddish-purple with blue bloom, tender; flesh very crisp and firm, flavor neutral; ripens in early midseason, just before White Malaga; good shipping and keeping qualities. Vine vigorous, well suited for growing on an arbor. Spur or cane prune. Cluster very large, irregular, loose to well filled. WINKLER; B93M, E1{SC}, E39, E39{SC}

Redglobe: Late-season shipping grape widely grown in California. Very large, roundish fruits, often weighing 13 grams or more; skin dark-red, thick; flesh whitish, meaty, flavor neutral; seeds large, readily separating from pulp. Vine resembles Emperor, but more productive. Excellent for long periods of cold storage. Originated in Davis, California ty H.P. Olmo. BROOKS 1997; D19, E1{SC}, I68, J9P, LiM, LIM{SC}

Tokay: (Flame Tokay) Large to very large, oblong fruit; skin brilliant red to dark red, covered with fine lilac bloom; flesh crisp, juicy, sweet, with a distinctive wine-like flavor; dessert quality good, also used for wine; ripens in late midseason; keeps and ships well. Vine vigorous; grows best where summer nights are cool. Spur or cane prune. Cluster very large, moderately compact, shouldered. One of the leading commercial grapes in California. A88M, B93M, C54, E1{SC}, LIM, LIM{SC}

#### *Red-Skinned/Seedless*

Crimson Seedless: Medium-sized, cylindrical to oval fruits; skin bright red, thick, moderately tough; flesh light yellow, translucent, crisp, firm, meaty; flavor sweet, neutral, quality excellent. Ripens late, slightly before Emperor. Very vigorous vine; cane pruned. Cluster well-filled to slightly compact. Originated in Fresno, California. Introduced in 1989. BROOKS 1997; A88M, C54, D19, E1{SC}, G49, J9P, J21M{PR}, J31M, LIM, LIM{SC}, N20

Flame Seedless: (Red Flame) Small to medium-sized, round fruit; skin light pinkish-red, attractive; flesh firm, crisp, meaty, very sweet; excellent for table use and raisins; ripens early, before Thompson Seedless; hangs well on the vine without loss of quality. Vine very vigorous; very productive. Spur or cane prune. Cluster medium-sized, conical, loose. A88M, D59, E39{SC}, E56{DF}, F93, I83M, K75Z{DF}, LIM, LIM{SC}, L33, L47, L56M{DF}, M63M{DF}, N33, N40{DF}, etc.

Ruby Seedless: (King's Ruby) Medium-sized, ovoid fruit; skin reddish-black to dark red, tender; flesh firm, crisp, meaty, sweet; quality excellent for table use or raisins; ripens in late midseason; stores well. Vine very vigorous; very productive. Spur or cane prune. Cluster very large, conical, well-filled, shouldered. Originated in Davis, California ty H.P. Olmo. BROOKS 1972; A88M, C54, E39, E39{SC}, I83M, J31M, J98{SC}, J98{OR}, LIM, LIM{SC}, L47, N20

### WINE GRAPES

#### AMERICAN

##### *Red-Wine Grapes*

Cynthiana: Small, roundish, purplish-black fruit; ripens in late midseason. Vine vigorous and rampant in growth, of less than average productivity. Cluster small to medium. Yields wine that has intense color, and a distinct, agreeable, non-foxy aroma. Can acquire bouquet with aging. Until the appearance of the French hybrids, was considered perhaps the best of the American red-wine hybrids. WAGNER; J2M

##### *White-Wine Grapes*

Blanc du Bois: Round, light green, slipskin fruit; flesh juicy, with a slight muscat flavor. Vigorous, semi-erect vine; resistant to Pierce's disease and downy mildew, tolerant of root-knot nematodes. Cluster moderately compact. Makes a spicy white wine of very good quality. Maintains its fruity quality and delicate sugar/acid balance through fermentation and into the bottle. Released by the University of Florida in 1987. G17, I41M, M95T, N33

Cayuga White: (GW-3) Medium-sized, greenish-white fruit; ripens with Concord. Vine large, vigorous, very productive, moderately hardy; somewhat susceptible to wind damage. Resistant to mildew and bunch rot. Cluster large, compact. Produces an excellent light, fruity wine that resembles White Riesling. Originated in Geneva, New York. Introduced in 1972. B43M, C45M, E1M{PD}, F87, H65, J2M, J98{SC}, J98{OR}

Elvira: Medium-sized, round, yellowish-green fruit; susceptible to cracking; ripens with Concord, does not keep well. Vine vigorous and productive, hardy, somewhat resistant to diseases. Cluster small to medium, cylindrical, compact. Produces a light wine with a sharp aroma and a slightly foxy flavor. Originated in Morrison, Missouri by Jacob Rommel. Introduced in 1874. HEDRICK 1908, WAGNER; C45M, G4

Horizon: Fruit greenish-white; ripens in late September at Geneva, New York. Vine vigorous, very productive, hardy; responds favorably to grafting. Produces a neutral wine that is fruity, clean, and tart with good body and balance. Lacks any of the flavors associated with native grape cultivars. Introduced in 1983 by the New York State Agricultural Experiment Station. C45M, J98{SC}, J98{OR}

Melody: Fruit greenish-white; ripens in early October at Geneva, New York. Vine vigorous, productive, moderately hardy; apparently resistance to powdery mildew and botrytis. Yields an excellent Vinifera-type wine of neutral fruitiness, slightly floral, with good body and balance. Introduced in 1985 by the New York State Agricultural Experiment Station. C45M, H65

#### FRENCH HYBRID

##### *Red-Wine Grapes*

Baco Noir: (Baco 1) Small, round fruit; skin jet black; flesh soft; ripens early. Vine rampant, resistant to downy mildew, somewhat susceptible to powdery mildew; useful for arbor type plantings. Cluster very small, cylindrical, compact. Produces wine that is highly colored, heavy, bitter and herbaceous in character, requiring long aging to improve. Originated in Belus, Landes, France by Francois Baco. BROOKS 1972; C45M, G71, H49, H65, J98{SC}, J98{OR}, L12

Chambourcin: (Joannes Seyve 26-205) Medium-sized, nearly black fruit; ripens in mid-October at Geneva, New York. Vine medium in vigor, moderately hardy, practically disease free; productive when short cane-pruned. Cluster large. Yields a wine without pronounced aroma but with the "seve" or body that many of the hybrid wines lack. Popular in France, especially in the Loie Valley and the Touraine WAGNER; C45M, C67{PD}, I25{PD}, J2M, J98{SC}, J98{OR}, N33

Chancellor: (Seibel 7053) Roundish, jet black fruit; flesh very firm, not juicy; ripens 2 weeks before Concord. Vine moderately vigorous and productive, upright; susceptible to downy and powdery mildews. Cluster medium-sized, cylindrical, fairly compact. Produces very agreeable dark red wines of good body. In France, one of the most popular of all hybrids. Originated in Aubenas, Ardeche, France by Albert Seibel. BROOKS 1972; C45M, C67{PD}, G79M, J98{SC}, J98{OR}, M13M{PD}

Chelois: (Seibel 10878) Small, round, firm black fruit; ripens medium early, a week before Concord; may crack in some years. Vine moderately vigorous and productive, susceptible to winter damage and fungal diseases, buds out late. Cluster medium-sized,

elongate, compact. Makes a fruity, dry red wine somewhat reminiscent of Buigundy. Best when produced in a hearty style and aged 3 or 4 years. BROOKS 1972; J98{SC}, J98{OR}

De Chaunac: (Seibel 9549) Medium-sized, bluish-black fruit; ripens with Concord. Vine vigorous, productive, hardier and more resistant to disease than many other French hybrids. Cluster medium to large, somewhat loose. Yields pleasant, fruity, well-balanced red wines with good tannin and color. One of the most widely planted French hybrids in New York state. BROOKS 1972; B43M, C45M, H65, 125{PD}, J98{SC}, J98{OR}

Leon Millot: (Millot, Kuhlmann 194-2) Small, bluish-black fruit; ripens very early, about 1 week before Marechal Foch. Vine somewhat more vigorous and productive than Marechal Foch; does well even in the climate of Minnesota. Cane pruning. Produces a wine similar to Marechal Foch, but deeper in color. Will develop a Burgundy-like bouquet with bottle aging. WAGNER; C45M, H65, J98{SC}, J98{OR}, N84, 081, R77

Marechal Foch: (Foch, Kuhlmann 188-2) Very small, bluish-black fruit; ripens very early. Vine very vigorous, not very productive; disease resistant; best adapted to difficult areas with short growing seasons. Cluster small, cylindrical, loose. Produces deep-violet, hearty, Burgundy type wines without blending. Originated in Colmar, Alsace, France by Eugene Kuhlmann. BROOKS 1972; A74, C45M, D69, F87, G50, H65, I49G, I49G{SC}, J98{SC}, J98{OR}, L12

Villard Noir: (Seyve Villard 18-315) Small to medium, bluish-black fruit; ripens late. Vine moderately vigorous, very productive when spur pruned. Produces a very good heavy-bodied wine that is deep-colored and somewhat astringent. Also excellent for blending. The most widely grown red-wine hybrid in southern France. Well adapted in North America in all but short-season areas WAGNER; C45M

#### Rose-Wine Grapes

Cascade: (Seibel 13053) Medium-sized, black fruit; ripens very early, with or before Marechal Foch. Vine vigorous, hardy; very productive; adapted to moist areas with short growing seasons; susceptible to downy mildew. Cluster small. Wine low in color, makes a fine rose or "blush" wine, blends well with other red French Hybrids. BROOKS 1972; E1{SC}, N84, 081, R77

Seyve-Villard 52-47: Light blue fruit; ripens early. Vine very vigorous, productive when short cane-pruned; hardy and disease resistant. Cluster large, compact. Produces a light-bodied red wine of good quality and a still better rose. Also used for blending. Fermented free of the skins, the free-run juice makes a delightful *vin gris*. WAGNER; J98{SC}, J98{OR}

#### White-Wine Grapes

Aurore: (Aurora, Seibel 5279) Small to medium, spherical fruit; skin golden to light pink; pulp soft and juicy, very good for dessert and juice; ripens very early. Vine vigorous and productive, hardy, subject to black rot. Cluster long, loose to well filled. Makes a light, delicate wine with a neutral to foxy flavor. Often used as a base for champagne and ice wines. The leading wine grape in New York state. BROOKS 1972; A91, B43M, E1M{PD}, G79M, H49, H65, J2M, L12

Joannes Seyve 23-416: Small, very oval fruit; skin pale pink; flesh pulpy, has a good sugar/acid balance; ripens in early midseason. Vine vigorous, moderately hardy, resistant to downy mildew. Cluster large, narrow, loose. Produces a delicately aromatic wine. Considered one of the best of its series. Recommended throughout the Northeast and Middle West. GALET; J98{SC}, J98{OR}

Seyval Blanc: (Seyve-Villard 5-276) Small, round, golden-yellow fruit; ripens early to midseason; subject to spoilage. Vine moderately vigorous, hardy; highly productive; fairly resistant to downy mildew. Cluster small, cylindrical, compact. Makes a light, fruity,

aromatic wine of superior quality. Widely cultivated in France and the United States. Originated in Saint Vallier, Drôme, France by Seyve-Villard. BROOKS 1972; A74, B43M, C45M, D69, G50, G79M, H65, 125{PE}, J2M, N84, 081, R77

Vidal Blanc: (Vidal 256) Medium-sized, roundish, greenish-white fruit; ripens in midseason, shortly after Concord. Vine very vigorous, productive when spur- or short cane-pruned, moderately hardy; resistant to mildew. Cluster large to very large, compact. Yields a high quality, clean, neutral wine with good aroma. Originated in the Cognac region of France WAGNER; B43M, C45M, 125{PD}, J2M, M13M{PD}

Vignoles: (Ravat 51) Fruit greenish-white; ripens in early midseason, with or before Concord; prone to cracking. Vine vigorous and hardy, only moderately productive when cane-pruned. Cluster small; very tight, quite susceptible to botrytis. Produces a clean, crisp wine with a touch of tartness, recalling *petit chablis*. Also suitable for champagne. WAGNER; C45M, 125{PD}, J2M

Villard Blanc: (Seyve-Villard 12-375) Medium-sized, golden yellow, meaty fruit; matures in late midseason. Vine very vigorous and productive; tolerant to phylloxera, resistant to powdery and downy mildews; does best in areas with a relatively long growing season. Cluster large, loose, compact. Makes a light bodied, fruity, highly aromatic wine of good quality. The most widely planted white hybrid in France. BROOKS 1972; C45M, D37, G79M, J98{SC}, J98{OR}, N33

#### VINIFERA

##### Red-Wine Grapes

Alicante Bouschet: Medium-sized, round fruit; skin brilliant-black; juice dark red; ripens in September and October. Vine moderately vigorous, semi-erect, productive. Cluster medium to large, well filled to compact. Used in blends of standard red table and port wines because of its color. Popular with home winemakers. E1{SC}, E39, E39{SC}

Barbera: Medium-sized, long oval fruit; black with abundant color in the skin; high in acid content; ripens in September and October. Vine vigorous and productive. Cluster medium-sized, well filled but not excessively compact. Used to produce quality red table wines that are full bodied, high in acid and tannin, and deeply colored when young. Originated in the Piedmont region of Italy. B93M, D19, E1{SC}, E39, E39{SC}, J31M, LIM, LIM{SC}

Cabernet Franc: Small, round, blue-black, juicy fruit; ripens in midseason. Vine vigorous, fairly productive, usually long-cane pruned. Cluster small, cylindrical-conical, loose. Susceptible to downy and powdery mildews. Produces very aromatic red wines which have the aroma of raspberry in Touraine and of violet in Chinon and Bordeaux, and are softer and more subtle than the wines of Cabernet Sauvignon. Originally from Bordeaux, France. GALET; C45M, D19, D59, E1{SC}, E39, E39{SC}, LIM, LIM{SC}, N5

Cabernet Sauvignon: Small, black, very seedy fruit; flavor pronounced and characteristic; ripens in late midseason. Vine very vigorous and productive when cane pruned. Cluster small to medium, loose to well filled. Yields a wine of pronounced varietal flavor, good acidity, good color and excellent balance. Has produced some of the most expensive and highly sought-after red wines of California. WINKLER; A88M, B23P{PD}, C54, D76, D81P{PD}, E39, E39{SC}, I49M{PD}, I83M, J9P{B0}, K39M{PD}, LI, LIM, LIM{SC}, N5, N20, N33, etc.

Carignane: Medium-sized, oval, black fruit; ripens in September and October. Vine vigorous, highly productive. Cluster fairly large, well filled to compact. Yields standard, well-balanced red table wines. An important fresh shipping cultivar for home winemaking. Of Spanish origin, but has been grown for centuries in the south of France. B93M, D19, E1{SC}, E39, E39{SC}, LIM, LIM{SC}

**Gamay Beaujolais:** Small to medium, short-oval, black fruits. Vine more vigorous and productive than Pinot Noir. Cluster small-medium, conical, compact. Produces either a light or medium-bodied red wine of excellent quality. A clone of Pinot Noir, apparently introduced into California from the Beaujolais region of France. WINKLER; 7)59, E1 {SC}, E39, E39{SC}, J9P, J9P{BO}

**Malbec:** (Auxerrois) Fruit moderately acid; ripens early. Vine vigorous, only moderately productive in California, not troubled by disease. Traditionally blended with Cabernet Sauvignon, primarily to soften it and reduce the time required for aging. An ancient French cultivar that is perhaps more widely distributed in France than any other cultivar capable of producing superior wine WAGNER; D79, E1 {SC}, LIM, L7Af{SC}

**Merlot:** Medium-sized, round, bluish-black fruits. Vine fairly productive with head-training and either long spur- or cane-pruning. Cluster medium-large, long conical, loose to compact. Yields wines of fine bouquet that are softer, more supple in texture, and age more rapidly than those of Cabernet Sauvignon. Next in importance to Cabernet Sauvignon in the Bordeaux region of France. WINKLER; A88M, C45M, 7)59, E1{SC}, E39, E39{SC}, I68, I99M, J9P, J9P{BO}, J31M, LI, LIM, L7Af{SC}, N5, etc.

**Mission:** Medium-sized, round to oblate fruit; skin brownish-red to reddish-black; flesh firm but juicy, flavor neutral; ripens in late midseason. Vine vigorous, very productive. Cluster large, loose to well filled. Used to produce average or better quality sweet dessert wines, including *Angelica* and sherry. Introduced into California during the later part of the 18th century by the Jesuit missionaries. C60D{PQ}, E1 {SC}

**Napa Gamay:** (Gamay) Medium-sized, round fruit; skin thick and tough; ripens in late midseason. Vine vigorous, very productive when head-trained and spur-pruned. Cluster large-medium, conical, well filled. Yields simple but fruity red wines. Also produces fruity roses of bright pink to slightly orange color. WINKLER; E1 {SC}, E39, E39{SC}, LIM, LIM{SC}

**Nebbiolo:** Fruit high in acid; ripens late; tends to lack color in California, especially in the hotter districts. Vine moderately vigorous, requires short cane or long spur pruning for reliable crops. Yields the very best wines of the Piedmont district of Italy, including the famous dry wines *barolo* and *gattinara*, and *freisa*—a sweet, sparkling wine. CAMPBELL-PLATT, WAGNER; D19, E1{SC}, E39, E39{SC}, LIM, L7Af{SC}

**Petite Sirah:** Medium-sized, oval fruit; skin black covered with a light silvery bloom; flesh juicy, neutral in flavor; ripens in early midseason. Vine moderately vigorous and productive. Cluster medium-sized, compact. Used for standard red table wines because of its good, stable color. Also used for blended Burgundies and for port type wines. Introduced into California from the Rhone Valley of southern France. 7)79, E1 {SC}, E39, E39{SC}, LIM, LIM{SC}

**Pinot Noir:** Small to medium, oval, black fruits; ripens very early, sunburns badly in warmer districts. Vine moderately vigorous and of low productivity in California. Cluster small, cylindrical, well filled. Recognized as one of the outstanding red wine cultivars of the world, it produces the fine Burgundy wines of France. WINKLER; C34, C45M, 7)59, E1M{PD}, E39, I24{PD}, I49M, I99M, J3{PD}, J9P{BO}, J31M, LI, LIM, LIM{SC}, N5

**Ruby Cabernet:** Medium-sized, black, juicy fruit; ripens in September and October. Vine vigorous, more productive than Cabernet Sauvignon, more adapted to regions too hot for best quality of Cabernet Sauvignon. Cluster medium-sized, loose to well filled. Produces table wine of high quality, similar to Cabernet Sauvignon but of more intense color and earlier maturation. Carignane x Cabernet Sauvignon. Originated in Davis, California by H.P. Olmo. Introduced in 1948. BROOKS 1972; B93M, E1 {SC}, E39, E39{SC}, J31M, LIM, LIM{SC}

**Sangiovese:** Medium-sized fruits; thin, bluish-black skin. Ripens late and over a long season. Very vigorous and productive vine.

Cluster very large, broad, well-filled. Produces the high quality red wines of Tuscany such as *Chianti*. Often blended with Cabernet Sauvignon. An ancient grape, possibly even known to the Etruscans. The most commonly planted grape in Italy. Becoming popular in California. ROBINSON, J. 1994; 7)79, E1{SC}, E39, E39{SC}, J31M, LIM, LIM{SC}

**Syrah:** (Shiraz) Small to medium-sized, bluish-black fruits. Vigorous vine, reliably productive and disease resistant. Medium to long, shouldered clusters. Produces the classic, long-lived *Hermitage* wines of France's Rhone region. Very popular in Australia for making varietal wines. Becoming popular in California. May have originated in Shiraz, Iran. ROBINSON, J. 1994; 7)79, 7)59, E1 {SC}, E39, E39{SC}, J31M, LIM, L7Af{SC}

**Tempranillo:** Medium-sized, glossy black fruits with thick skins, low in tannin. Ripens early, up to 2 weeks before Grenache. Vigorous, upright vine, traditionally grown as widely spaced bushes. Long, well-filled clusters. Produces the famous, deep-colored, long lasting, *Rioja* wines of Spain. Commonly blended with Grenache. In Portugal, it is sometimes used in Port blends. ROBINSON, J. 1994; E1 {SC}, LIM, LIM{SC}

**Tinta Madeira:** Medium-sized, long-oval jet black fruit; thick but tender skin; ripens in August and September. Vine moderately vigorous and productive. Cluster medium-large, well filled to compact. Used in premium port wine production because of its rich flavor and deep color. Principally grown in the Madeira Islands of Portugal. E1 {SC}, E39, E39{SC}, L7M, L7M{SC}

**Zinfandel:** Medium-large, round, reddish-black to black fruit; ripens in September and October. Vine moderately vigorous and productive. Cluster medium-large, well filled to very compact. Widely used in red table wine blends and for full-bodied, intensely flavored varietal wines. An important fresh shipping grape for home wine making. Apparently introduced into California from Hungary about 1860. A88M, B23P{ED}, B93M, C54,7)59, E39, E39{SC}, I83M, J9P{BO}, J31M, LI, L7M, L7M{SC}, L47, N20, etc.

#### Rose-Wine Grapes

**Grenache:** Small to medium, round, reddish-purple to black fruit; ripens in September and October. Vine very vigorous and productive. Cluster large, fairly compact. Used for blending in generic rosé wines where it contributes a sweet, somewhat strawberry-like aroma. In France, it yields the famous rose wine, *Tavel*. Popular with home winemakers. A Spanish cultivar that is grown extensively in southern France and in Spain. B93M, 7)79, E1 {SC}, E39, E39{SC}, J31M, LIM, LIM{SC}

**Grignolino:** Small to medium, oval, reddish-brown fruits. Vine moderately vigorous and productive when head-trained and spur-pruned. Cluster medium-sized, long conical, well filled to compact. Normally produces an orange-pink wine that is distinctly different from most rose wines. Originated in the Piedmont district of Italy. WINKLER; L7M, L7M{SC}, S59

#### White-Wine Grapes

**Burger:** Medium to large, round fruit; skin waxy-yellow, easily broken; flesh soft, very juicy, flavor lacking; ripens late September to early October. Vine moderately vigorous, hardy, very productive. Cluster large, long. Produces a light, neutral wine of fair quality, which is primarily used in blending. Once the most widely planted white Vinifera in California. 7)79, E1 {SC}, E39, E39{SC}, L7M, LIM{SC}

**Chardonnay:** (Pinot Chardonnay) Small, round fruit with an almost ideal balance of sugar and acid. Vine vigorous, moderately productive when cane- and spur-pruned. Cluster small, cylindrical, loose to well filled. Produces some of the best dry white wines of California, having a highly characteristic bouquet and a delicious "stony" flavor. Also yields the famous white Burgundy wines of France. WAGNER, WINKLER; A88M, A91, C54, D76, E39,



E39{SC}, H90G{PD}, I24{PD}, I49M, I83M, J9P{B0}, K39M{PD}, LI, 7,7M, 7,7M{SC}, N5, N20, etc.

Chenin Blanc: Medium-sized, oval fruit; skin greenish-yellow, tough; flesh juicy; ripens late August to mid-September. Vine vigorous, very productive. Cluster medium to large, compact. Used to produce quality white table wines. Can also be used in sparkling wine production, in blending, and for sweet table wines. A leading cultivar of the middle Loire region of France. B93M, 7)79, D59, El {SC}, E39, E39{SC}, I83M, J31M, LIM, LIM{SC}, N20

French Colombard: (Colombard) Medium-sized, yellowish-green fruit; neutral in flavor and high in acid; ripens in September. Vine very vigorous and productive. Cluster medium-large, well filled. Widely used in California for blending and as the base for some inexpensive champagnes. An important cultivar in the Cognac region of France where it is used in the production of brandy. A88M, B93M, C54, 7)79, El {SC}, E39, E39{SC}, I83M, J31M, LIM, LIM{SC}, N20

Gewürztraminer: Small, oval fruits; skin tough, pink to bluish-brown; flesh firm, with a characteristic spicy flavor. Vine moderately vigorous, produces well with cane-pruning. Cluster small, cylindrical, compact. Produces slightly sweet to very sweet wines with a pronounced, spicy, aromatic flavor. Has been grown in Germany for several centuries. WINKLER; A91, 7)59, E39, E39{SC}, I24{PD}, LI, LIM, L7M{SC}, N5, N84, 081

Gray Riesling: Medium-sized, dull reddish-tan, very firm fruit; ripens in August and September. Vine strong, vigorous, moderately productive. Cluster small to medium, conical, compact. Produces a dry, medium-acid varietal wine with a light fruity flavor. Sometimes blended with Sylvaner or Chenin Blanc to uplift its character. Grown in the Arbois region of France where it is known as Chauche Gris. El {SC}, E39, E39{SC}, N33

Muller Thurgau: Medium-sized, oval fruit; skin green to grayish; pulp firm, fleshy, aromatic; ripens early. Yields wine rated between Riesling and Sylvaner. Vine vigorous, productive, blooms late. Cluster medium to large. Susceptible to powdery mildew and botrytis. Said to be a cross between Riesling and Sylvaner obtained in 1891 in Switzerland. Grown in cool, northerly regions including Alsace, Germany, England and the Pacific Northwest. GALET; J61M, N84, 081, R77

Muscat Blanc: (Muscat Canelli, Muscat of Frontignan) Medium-sized, yellowish fruit with a pronounced yet delicate muscat flavor; ripens in August and September. Vine moderately vigorous and productive. Cluster medium-sized, well filled to compact. An important cultivar in southern France where it is renowned in the production of French *muscatels*, and in northern Italy, to produce the *Asti Spumante* wines. 7)79,7)59, El {SC}, E39, E39{SC}, J98{SC}, J98{OR}, L7Af, L7M{SC}

Orange Muscat: Medium-sized, oblate to round, firm, orange fruits. Vine moderately vigorous and productive. Cluster medium-sized, short conical, compact. Yields wines that are rich in muscat aroma, but not as delicate and rich as those of Muscat Blanc. In California, it is used for making *Essensia* and *Electra* dessert wines. Originated in Italy where it is known as Muscato Fior d'Arancio. WINKLER; El {SC}, E39, E39{SC}, J53M{PD}, J98{SC}, J98{OR}, LI, L7M, LIM{SC}

Palomino: (Golden Chasselas) Medium-small, oblate fruit; skin greenish-yellow, somewhat tough; pulp firm, juicy and sweet; ripens late August to early September. Vine moderately vigorous and productive. Cluster large, loose, irregular in shape. The principal sherry grape of Jerez, Spain. In California, it is also important for sherry production, and for blending in champagne or for white table wine. El {SC}, E39, E59{SC}, 081

Pinot Blanc: Small, round fruits. Vine below average in vigor; moderately productive, fruits well with head-training and short cane-pruning. Cluster small to small-medium, long conical, compact. Produces wines that are distinct in aroma and flavor, smooth, and of

good balance, though prone to darken. Grown rather extensively in France. WINKLER; 7)79, El {SC}, L7Af, L7Af{SC}, N84

Pinot Gris: Sport of Pinot Noir with distinctive grayish-blue to brownish-pink fruits, often on the same bunch. Vine and cluster characteristics similar to Pinot Noir. May be somewhat of an erratic yielder, especially with older clones. Produces deep-colored, soft, gently perfumed, dry white wines. In France, it is most revered in the Alsace region. ROBINSON, J. 1994; 7)79, 7)59, El {SC}, I49M, J98{SC}, J98{OR}, LIM, L7M{SC}, 081

Rkatsiteli: Russian white grape which is one of the most widely planted in the world. Grown in all the wine-producing republics of the former Soviet Union, with the exception of Turkmenistan. Also popular in Eastern Europe and China. Adapted to particularly cold winters. Produces a wide range of wine styles, including brandy and fortified wines. Becoming better known in the United States. ROBINSON, J. 1994; El {SC}, L7M, L7M{SC}

Sauvignon Blanc: Small, oval to round fruit; skin moderately thin; flavor strong and distinct; ripens in August and September. Vine extremely vigorous, relatively productive. Cluster small, well filled to compact. Used for high quality, varietal dry white wines or natural sweet wines. In the proper blend with Semilion it is considered to be superior to the wine of either cultivar used alone. WINKLER; C54, 7)79, 7)59, D81P{EQ}, E39, E39{SC}, I49M{PD}, J9P, J9P{B0}, J31M, LI, LIM, L7M{SC}, N5

Semilion: Medium-sized, round fruit; skin yellow, fairly thin; flesh soft, tender, juicy; ripens in August. Vine moderately vigorous, semi-erect, productive. Cluster medium-large, conical. Produces a dry, white, medium-bodied table wine with a fig-like perfume. The most important cultivar in the famous Sauternes district of southwestern France. 7)79,7)59, El {SC}, E39, E39{SC}, H25M{PD}, J98{SC}, J98{OR}, LIM, LIM{SC}

Sylvaner: Medium-sized, round, bluish to yellow-green fruit. Vine medium in vigor, moderately productive, very susceptible to powdery mildew. Cluster small, cylindrical, compact. Yields wines that possess a delicate, lightly spicy, distinct character. Best known as the source of the Stein wines of Franconia, Germany. WINKLER; B74, El {SC}, E39, E39{SC}

Ugni Blanc: (Trebbiano, Tiebbiano Toscano, Saint-Emilion) Medium-sized, roundish fruits; skin golden-yellow. Moderately vigorous vine, very productive; spur pruned; resistant to powdery mildew and gray rot. Large, long clusters. Produces light, crisp white wines of moderate quality. More commonly used for brandies such as *Cognac*, *Armangac* and *Grappa*. The principle grape used in Italy for making *balsamic vinegar*. One of the most widely planted grapes in the world. KASPER, ROBINSON, J. 1994, WINKLER; 7)79, El {SC}, E39, E39{SC}, LIM, L7M{SC}, N84, R77

White Riesling: (Riesling, Johannisberg Riesling) Small to medium-sized, spherical fruit; skin greenish-yellow, speckled with russet dots; flesh juicy, sprightly, somewhat aromatic in flavor. Vine moderately vigorous and productive. Cluster small, cylindrical, well filled. Produces bone dry to very sweet wines with a strong varietal flavor and bouquet. Yields the famous white wines of the Rhine and Moselle valleys of Germany such as *Beerenauslese*, *Trockenbeerenauslese*, and *Eiswein*. ROBINSON, J. 1994, WINKLER; A91,7)59, E39, E39{SC}, I23M{m}, I49M, I99M, LIM, L7M{SC}, N5, N54{PD}

#### CODES FOR SPECIAL TYPES

1. Mottled
2. Purple-Leaved

## GRAPEFRUIT {GR}

### CITRUS X PARADISI

## PINK-FLESHED

Flame: Promising new red-fleshed grapefruit. Globose fruits, slightly blushed with pinkish-red on the skin; reddish flesh, darker than Ray Ruby but not as dark as Star Ruby; seedless. Holds its color later than Ray Ruby. Tree resembles Henderson. Seedling of Henderson, released in 1987. Selected by C.J. Hearn. SAUNT; A63, A71, G17, I77G

Foster: Medium-large, roundish fruit; skin moderately thick, pale to light yellow, blushed with pink under favorable conditions; flesh tender, juicy, seedy, flavor good; flesh color chamois, but under favorable conditions pink. Medium early in maturity. Tree large, vigorous, productive. The first pigmented grapefruit cultivar of record in Florida. REUTHER; N84, R77

Henderson: Similar to Red Blush in time of maturity and juice quality. Has better internal and external pigmentation than Red Blush, and flesh color is retained much better with age. Discovered in 1973 as a bud sport of Fawcett Red, a little known mutation of Pink Marsh. SAUNT; A63, C29M{SC}

Ray Ruby: Branch sport of Red Blush first propagated in Texas and introduced into Florida in the 1970's. The peel is redder than that of Ruby Red and the pulp is red though not as intense as Star Ruby throughout the season. MORTON 1987a; C29M{SC}

Red Blush: (Ruby Red, Ruby Blush) Fruit similar to Thompson in all respects except for much deeper pigmentation in the flesh (but not in the juice); crimson blush on the rind, especially at points of contact between fruit. Holds on tree as well as Marsh or Thompson but with some fading of flesh color. Bud mutation of Thompson discovered in McAllen, Texas. Introduced in 1934. REUTHER; A71, B23P{PR}, B73M{DW}, C89{PR}, E99G{PR}, G17, G58D{PR}, H69{PR}, I59{PR}, I83M, J21M{PR}, J21M{PD}, N18{SC}

Rio Red: One of the newest cultivars. Large to very large, pyriform fruit; nearly seedless. Relatively thick rind. Deep-red flesh, darker in color than Ray Ruby. Very good quality. Maintains its red pigmentation all the way through the ripening season. Ripens November to May in Texas. Develops color well in coastal areas. Developed at the Texas A & I Citrus Center. A63, A71, D13, D23M, D23M{ES}, E3M{DW}, E8M, G49, G58D{PR}, I83M, J22

Shambar: Fruit seedless; rind and flesh pink; resembles Red Blush. Considered by some to be superior to Marsh in juiciness, flavor, and long storage life. Tree similar to Marsh and Red Blush. Bud mutation of Marsh. Originated in Corona, California. Discovered in 1936. C29M{SC}, N18{OR}

Smooth Seville: (Smooth Flat Seville) Hybrid. Parentage unknown. Medium-large, somewhat flattened fruit; color reddish-orange at maturity. Rind medium-thick, surface very smooth. Flesh reddish-orange, coarse-textured, juicy; flavor pleasantly subacid with a trace of bitterness. Has a lower heat requirement for maturity than the grapefruit and hence ripens earlier and serves as a satisfactory substitute. Tree vigorous, large, and prolific. REUTHER; J73M{S}, S59

Star Ruby: Fruit with a yellow peel, distinctly red-blushed; intensely red pulp and juice, 3 times more colorful than Ruby Red. Though the color decreases with maturity, it is maintained throughout the season. The pulp is smooth and firmer than that of Ruby Red and has a bit more sugar and acid. Seedless or no more than 9 seeds. A branch mutation of the Foster cultivar discovered in San Benito, Texas in the 1930's. Only introduced into cultivation in 1971. MORTON 1987a; A63, A71, B58M{SC}, C89{PR}, D23M, D23M{ES}, E29, G49, I83M, J22, L50G{PR}, N18{SC}

Thompson: (Pink Marsh) Medium-sized, oblate to spherical fruit; seeds few or none; pale to light yellow at maturity. Rind medium-thin, tough, surface very smooth. Flesh light to deep-buff more or less flushed with pink, tender and juicy; juice colorless; flavor good, similar to Marsh. Holds on tree unusually well, but with consider-

able fading of color. Midseason in maturity. Tree vigorous, large, and productive. G2M, J17, S59

## WHITE-FLESHED

Bloomsweet: Grapefruit-sized fruit, 3 to 4 3/4 inches in diameter, distinctly pyriform; thin, fairly smooth yellow rind; fairly juice, pale straw colored flesh, low in bitterness, moderately sweet and flavorful; segments 10 to 12; seedy. Narrcw, upright tree, vigorous but slow to come into bearing. Likely of hybrid origin. NAGLE; K67

Duncan: Large, round or slightly obovate fruit. Color pale to very light yellow. Rind medium-thick, surface smooth and even. Flesh buff to chamois-colored, tender, very juicy; flavor pronounced and excellent. Medium-early in maturity. Tree vigorous, large, very productive. At one time the leading cultivar in Florida and Texas. Introduced in 1892. G17

Golden Special: Fruit of good size, thin skinned, pale yellow; comparatively seedless with a juicy tangy flavor. Once established the plants become heavy bearing, but like most grapefruit cultivars can develop biennial bearing tendencies. A New Zealand selection much grown in the home garden and also used extensively for commercial production. N84, O97, R77

Marsh: (Marsh Seedless, White Marsh) Medium-sized, oblate to spherical fruit. Color pale to light yellow at maturity. Rind medium-thin, tough, surface very smooth and even. Flesh buff-colored, tender, very juicy; flavor good but not so pronounced as in some seedy varieties. Holds unusually well on the tree. Tree vigorous, spreading, large, and productive. The leading grapefruit cultivar worldwide. REUTHER; A71, B23P{PR}, C89{PR}, D23M, D23M{ES}, E99G{PR}, G49, I77G, I77, J22, N18{SC}, N24M{DW}, Q93

Wheeny: (Wheeny Grapefruit) Hybrid. Parentage unknown. Fruit large, oblate or broadly obovate to globose; color pale to light yellow. Rind medium-thin, with moderately rugose surface. Flesh straw-colored, coarse-textured but very juicy. Flavor good but acid, virtually indistinguishable from some grapefruits. Medium early in maturity. Tree vigorous with tendency to alternation in bearing. Ripens in climates too cool for any of the true grapefruits. REUTHER; Q93

## GUAVA {GR}

## PSIDIUM GUAJAVA

## PINK/RED-FLESHED

Beaumont: Leading commercial cultivars in Hawaii. Medium to large, roundish fruit; weight 8 ounces; flesh pink, moderately thick, mildly acid; seedy. Excellent for processing. Somewhat susceptible to fruit rots. Tree vigorous, wide spreading, very productive. Selected from a seedling population derived from fruits found in Halemanu, Oahu, Hawaii. D23M, D57{PL}, G49, I74{PL}, N84{S}, P5{S}

Blood Guava: (GA11-56) Large, roundish fruit, 4 to 5 inches long; remains green when ripening; dark-red flesh with few seeds. Excellent for eating fresh or processing. Originated in Hawaii. O19{S}

Hong Kong Pink: Medium to large, roundish fruit; weight 6 to 8 ounces; flesh pinkish-red, very thick, smooth-textured; flavor subacid to sweet, very pleasant; seeds few. Tree spreading, high yielding. Selected at Poamoho Experimental Farm, Oahu, Hawaii from seeds obtained from a clone grown in Hong Kong. D57{PL}, E8M

Ka Hua Kula: Large fruit with thick, relatively tart, deep-pink flesh. Darker pink flesh, higher acidity, and with fewer seeds than Beaumont. Also a heavier bearer. Recommended for commercial

guava puree. Selected in Hawaii from a planting of 1,200 Beaumont seedlings. Introduced in 1978. MORTON 1987a; J22

Mardi Red:<sup>1</sup> Medium-sized fruit, 2 to 4 inches in diameter; skin yellow, highly blushed with red; flesh deep red, of excellent flavor, seed cavity small. Tree an attractive ornamental with wine red leaves and pink flowers. Originated in Mardi, Malaysia. I83M{PL}

Maroon:<sup>1</sup> Attractive purple-fruited guava. Small to medium-sized fruits; skin, smooth purple-green; flesh magenta, flavor deliciously sweet with a subacid tang. Tree upright; very ornamental with distinct, purple-green leaves and pinkish or purplish flowers. Originated in Java. D57{PL}, J29M{S}

Red Indian: Medium-large, roundish fruit, of strong odor; skin yellow, often with pink blush; flesh medium thick, red, sweet, quality good; ascorbic acid content averages 195 mg. per 100 grams fresh fruit; total sugars average 7 to 10%; seeds numerous but small. Good for eating out of hand. Originated in Dade County, Florida by Fred Lenz. Introduced in 1946. BROOKS 1952, MORTON 1987a; D57{PL}, 174{PL}, I83M, S97M

Ruby X: (Ruby Supreme) Small, roundish fruit; skin greenish-yellow; flesh dark pinkish-orange, flavor delicious, sweet; seed cavity 33% of pulp. Tree bushy, low growing, with vigorous branches drooping outward. Hybrid of the Florida cultivars Ruby and Supreme. D57{PL}, G2M, I77G, J22

Salvador Bahia: Medium to large, oblong fruits; skin bright yellow; flesh subacid, an attractive pinkish-orange in color; seed cavity 33% of pulp. Tree with a distinct low drooping canopy. Originated in Brazil. D57{PL}

Uma: Small to medium-sized fruit, 2 to 3 inches in diameter; flesh deep pink, sweet, of excellent flavor; lacking in heavy, musk-like aroma; good pulp to seed ratio. Very vigorous, heavy yielding tree. Seedling originating in San Diego, California, near San Diego State University. I83M

#### WHITE-FLESHED

Allahabadi: Large, white-fleshed fruit of good quality; cavity small; seeds few, medium-sized, fairly hard. Considered one of the best eating dessert guavas of India. MORTON 1987a; D57{PL}, Q12{S}

Donrom: (Bangkok Apple, Thai Apple, Giant Bangkok, China White) Fruit large to extremely large, up to 1 pound or more, rounded with slight elongation at the stem end; skin light greenish, rough textured; flesh greenish-white, firm, reminiscent of an apple in texture, pleasantly sweet; seed cavity very small. Tree dwarfish, bears when 4 feet tall. Originated in Thailand. D57{PL}, E8M, G49, I74{PL}, M17

Giant Pear: (GA-03) Large, pyriform fruit, 4 to 5 inches long; skin light green to yellow when ripe; pale yellow to white flesh; quite sweet. Excellent for eating out of hand. Usually not used for processing. Originated in Hawaii. 019{S}

Glom Toon Klau: Medium to large fruit; weight 3 to 8 ounces; smooth, greenish-yellow skin; flesh whitish, flavor mildly sweet, refreshing; seed cavity 25% of pulp. Can be eaten when still firm and crunchy. Tree very small; bears fruit in clusters; begins producing when 4 feet tall and up. Originally from Thailand. D57{PL}

Indonesian Seedless:<sup>2</sup> Virtually seedless dessert guava from Indonesia. Medium-sized fruit, 2 3/4 inches in diameter, weight about 6 1/2 ounces. Sweet, thick white flesh, low in acid; seeds few to none. Excellent for eating out of hand. Vigorous and relatively productive. Reportedly a triploid. E8M, I77G

Lucknow 49: Medium to large fruit; weight 8 ounces; flesh cream-white, thick, sweet, relatively smooth-textured; flavor sweet, slightly musky; seeds relatively few. Dessert quality excellent but tends to develop a mushy flavor when fully ripe. High in pectin and therefore desirable for jelly; halves are good for canning. Tree

spreading, productive. Ruby x Supreme. Originated in India. MORTON 1987a; R0

Mexican Cream: Small to medium-small, roundish fruits; skin light yellow, slightly blushed with red; flesh creamy white, thick, very sweet, fine-textured, excellent for dessert; seed cavity small, with relatively soft seeds. Tree upright, productive. Originated in Mexico. A41G, D57{PL}, G49, H53M, I74{PL}

Pear: (Pear Guava) Pear-shaped fruits with creamy white flesh. At one time this form was designated as a separate species along with the round form, which is sometimes known as Apple Guava. POPENOE, W. 1920; D23M{PL}, D57{PL}, I74{PL}, K8{S}, N84{S}, 053M{S}, 093{S}, Q32/S, S97M

Redland: Fruit very large, pyriform, lacking in musky guava odor; flesh white with relatively few seeds, flavor mild. Ascorbic acid content low. Tree a heavy cropper, susceptible to red algae spot. Developed at the University of Florida Agricultural Research Center, Homestead. Introduced in 1941. BROOKS 1972, MORTON 1987a; I77G

Susu: Rounded to obovate fruit with greenish-yellow skin, weight 4 ounces to one pound; crunchy white flesh with a good but mild flavor. Tree upright but compact in growth habit. Originated in Jakarta, Indonesia. Name translates as "milk guava". D57{PL}

Sweet White Indonesian: Large, round fruit, 4 inches or more in diameter; thin, pale yellow skin; thick, white, melting flesh of a sweet, delicious flavor. Edible seeds in cavity surrounded by juicy pulp. Vigorous, fast growing tree; bears several times a year. J22

White Indian: Small to medium-sized, roundish fruit, 2 1/2 to 3 inches in diameter; skin greenish-yellow; flesh thick, white, moderately seedy. Excellent, sprightly flavor. Bears from October through January. Tree somewhat of a shy bearer. Haidy to 26° F. Originated in Florida. G49, I83M

#### YELLOW-FLESHED

Detwiler: Medium to large, roundish fruit, about 3 inches in diameter; skin greenish-yellow, moderately thick; flesh yellowish to salmon, medium firm, relatively sweet, of pleasant flavor, quality very good. Tree a very heavy bearer. Originated in Riverside, California in the early 1900's. Selected by H. J. Webber. I83M

#### CODES FOR SPECIAL TYPES

1. Red-Leaved
2. Seedless

### HEARTNUT {GR}

#### JUGLANS AILANTIFOLIA VAR. CORDIFORMIS

Bates: Large nut, about 50 per pound; kernel weight 25% of nut; flavor very good; matures early. Tree vigorous; hardy; bears well. Pollinated by Canoka and Etter. An older standard cultivar. Originated by a Mr. Bates of Jackson, South Carolina. Introduced by J.F. Jones of Lancaster, Pennsylvania. E91M, N24M, N24M{PL}

Callander: Medium-sized nut; kernel averages 31% of nut; cracks out well; flavor very rich; matures early. Tree hardy; bears heavily; protandrous. Original tree noted for producing a large number of heartnut-butternut hybrids (buartnuts) among its seedlings. Originated in Westbank, British Columbia, Canada by J.U. Gellatly. JAYNES; A91{PL}, B99{PL}, N24M, N24M{PL}

Caloka: Small to medium-sized nut, averages 76 per pound; kernel averages 36% of nut. Originated in Westbank, British Columbia, Canada by J.U. Gellatly. A91{PL}, I60{PL}

Campbell CW3: Relatively new cultivar that is highly rated for overall performance. Medium-sized nut of good quality; cracks out

very well. Vigorous, productive tree, very handy. Originated from the Etter strain. Selected by R.D. Campbell of Niagara-on-the-Lake, Ontario, Canada. B99{PL}, E62{PL}, E62{DF}, E62{SC}, E91M, E91M{PL}

Canoka: Medium to large nut, averages 50 to 76 per pound; kernel averages 26% of nut. Tree an annual, heavy bearer; requires a relatively long growing season to mature kernels properly. One or two weeks later in vegetating than other cultivars, and thus able to escape spring freeze damage which often seriously shortens the crop of other cultivars. Originated in Westbank, British Columbia, Canada by J.U. Gellatly. JAYNES; 140

Etter: Small to medium-sized nut, about 78 per pound; kernel weight 33% of nut; flavor very good; cracks out very well. Tree exceptionally hardy; productive. Produces high quality seedlings for breeding and selection. Originated in Lemasters, Pennsylvania by Fayette Etter. B99{PL}, E91M, E91M{PL}

Fodermaier: One of the highest rated heartnuts. Large nut, averages 55 per pound; cracks well; kernel of good quality, averages 37% of nut; fine flavor. Tree vigorous; hardy; has withstood temperatures of  $-20^{\circ}$  F. and below. Originated in Dover Plains, New York by John J. Fodermaier. Introduced about 1942. BROOKS 1972; B99{PL}, E91M, I60{PL}

Frank: Medium to large nut that cracks well. Tree later vegetating than other cultivars with the exception of Canoka. A good producer. Originated in Kentucky in 1980. 140

Imshu: Relatively new cultivar with good potential. Medium-sized, flattened heart-shaped nut, about 60 or 65 per pound; kernel percentage good; excellent cracking qualities, readily splitting into halves. Overall quality good. Generally adapted from Zones 5 to 7. B99{PL}, E62{PL}, E62{DF}, E62{SC}, E91M, N24M, N24M{PL}

Marvel: Nut medium to large; cracks well; quality good; resembles Wright. Tree somewhat harder than Fodermaier; will pollinate Wright and is pollinated by that cultivar; bears well. Fodermaier x Wright. Originated in Wassaic, Dutchess County, New York by Gilbert L. Smith. Introduced in 1948. BROOKS 1972; 140

Rhodes: Medium to large nut, about 65 per pound; shell thin; kernel weight 28% of nut; cracks easily; flavor and quality excellent. Tree moderately hardy; bears heavily; flowers late, probably self-fruitful. Originated in Covington, Tennessee by George Rhodes. Introduced in the 1940's. 140

Schubert: Nut relatively large, about 53 per pound; kernel weight 33% of nut; cracks out well; flavor excellent. Tree bears heavily and vegetates early. A select seedling of Rhodes. Originated in Millstadt, Illinois by Kenneth Schubert. Introduced in the 1960's by Louis Gerardi. E62{PL}, E62{SC}, E91M, 140

Wright: Medium to large nut, about 54 per pound; kernel weight 31% of nut; very free cracking; flavor very pleasant, resembles butternut. Tree heavy bearing; not resistant to broom disease; very hardy; will pollinate Fodermaier, Marvel and Rival. Originated in Westfield, New York by P.D. Wright and R.P. Wright. Introduced in the 1930's. BROOKS 1972; 140,186{SC}

## HERBS

See Basil, Mint, Parsley and Thyme in Part II: Major Crops. See also Part I: Botanical Listings, especially Apiaceae, Asteraceae, Geraniaceae and Lamiaceae, and Flavorings, Tea Substitutes, Rennets and other appropriate headings in Appendix A: Usage and Edible Parts.

## HICAN {GR}

### CARYA X NUSSBAUMERI

### CARYA X SP.

Bixby: (C. x nussbaumeri) Pecan x shellbark hickory. Very large nut of good quality. Vigorous tree, produces heavy crops of nuts. Requires early pollen and good fertilization to fill well. Major pecan recommended as a pollinizer. Originated in Illinois. The first hican cultivar to be selected and propagated. 140

Burlington: (C. x nussbaumeri) Large nut, averaging 55 nuts per pound; quality good; ripens early. Tree productive; self-pollinating; comes into bearing slowly. Performs well in the Ohio Valley. Originated in Des Moines County, Iowa. Introduced in 1940 by Benton and Smith Nut Tree Nuisery, Millerton, New York. BROOKS 1972; B99{PL}, 140

Burton: (C. x sp.) Medium-sized nut; shell thin; cracking quality excellent, high kernel percentage; flavor excellent; early maturing. Tree productive; self-pollinating; comes into bearing in 5 to 7 years. Does well in the Midwest, South and Northwest, but not the Northeast. Originated in Kentucky around 1880. JAYNES; B99{PL}, I25M{SC}, 140

Country Club: (C. x sp.) Pecan x shagbark hickory. Medium-sized nut with more the flavor of hickory. Tree a very heavy producer. Attractive red-tinted buds. Originated in Indiana. Introduced in 1980. Original tree grows 100 feet from the Hartmann hican which is probably a good pollinator. 140

Des Moines: (C. x nussbaumeri) Pecan x shellbark hickory. Moderate producer of fertile nuts, resembling Burlington. Tree grows satisfactorily in southern Illinois. Originated in Burlington, Iowa, near the Des Moines River. Introduced in 1924. BROOKS 1972; B99{PL}

Dooley Burton: Seedling of Burton which has good potential. Apparently a cross of Burton and a shagbark pollen parent. Good quality nuts with more the character of hickory than pecan. Ornamental tree, grows 50 to 70 feet tall. Originated in Indiana. Introduced in 1980. E91M, 140, N24M

Hartmann: (Adkins) (C. x sp.) Pecan x shagbark hickory. Medium-sized, thin-shelled nut; very good hickory-like flavor. Tree a good producer; has red-tinted buds; grows 50 to 70 feet tall. Originated near and probably pollinated by Country Club. Originated in Indiana. Introduced in 1980. 140

Henke: (C. x sp.) Nut small; kernel of high quality, fills shell well; ripens early. Good flavor and cracking quality. Small, ornamental tree; self-pollinating; bears precociously and well. Originated in southern Iowa by a Mr. Henke. Introduced in 1932. BROOKS 1972; B99{PL}, E62, E62{SC}, I25M{SC}, 140,160{PL}

Hershey: (C. x sp.) Pecan x shagbark hickory. Medium-sized nut; borne in clusters of three or four; fills shell well. Kernel of high quality, has more the flavor of hickory than pecan. Vigorous tree, grows 50 to 70 feet tall. Originated in Pennsylvania. Introduced in 1980. 140

Jackson: (C. x sp.) Pecan x shagbark hickory. Medium-sized nut; kernel quite tasty, more reminiscent of hickory than pecan. Ornamental tree, grows about 60 feet tall; with pollen, should set heavy crops. Generally more productive than pecan x shellbark hybrids. Originated in Kentucky. Introduced in 1985. 140

James: Nut large, averages 36 per pound; shell thin, cracking quality very good, 52%; kernel flavorful, of high quality; ripens in late September in Zone 6; keeping quality similar to pecan. Tree hardy; productive; self-pollinating; disease resistant; comes into bearing in 5 to 6 years. For Zones 6 to 8 and warmer areas of Zone 5. Originated in Brunswick, Missouri by George James. 174

McCallister: (C. x nussbaumeri) Pecan x shellbark hickory. Very large nuts, seldom well-filled; excellent flavor, resembles hickory more than pecan. Generally produces larger nuts than pecan x shagbark hybrids. Vigorous, ornamental tree; grows about 60 feet tall; needs an early pollen source to fill well. 140

Underwood: (Jay Underwood) (C. x nussbaumeri) Nut large; shell thin; kernel plump, with a fine flavor. Tree protogynous; ornamental. Originated in Fort Scott, Kansas by Jay S. Underwood. Introduced in 1956 by Louis Gerardi Nursery. Native seedling; named by J.C. McDaniel, Illinois Agricultural Experiment Station. BROOKS 1972; B99{PL}, 140

## HICKORY {GR}

### CARYA LACINIOSA

### CARYA OVATA

#### SHAGBARK HICKORIES

Except for the bitternut, this is the hardiest of the hickory species, its range extending from southern Quebec through southern Ontario to Minnesota, south to Florida and Texas. The shagbark fruit is distinguished from the shellbark in that the latter has much larger fruits, 1 3/4 to 2 1/2 inches long. JAYNES. (C. ovata)

Abundance: Shellbark x shagbark hybrid. Nut resembles a shagbark hickory; size medium to large, weight about 7 grams; kernel white, cracks out readily; kernel averages 36% of nut; shell thin. Tree bears annually; topworked trees often bear second year after grafting. Originated in Franklin County, Pennsylvania by Fayette Etter. Introduced in 1947. BROOKS 1972; 140

Bridgewater: Very large nut, weighing up to 8.5 grams; kernel averages 46.6% of nut. Susceptible to scab in the South. Recommended by the late Carl Weschcke for the far north, where it also serves as a pollinator for the Weschcke hickory. Originated in Connecticut. 140

Cedar Rapids: Large nut, weight about 6.9 grams; matures early. Very good flavor. Slow growing tree, grows 70 to 80 feet tall; bears very well when pollinated by another variety. A good northern cultivar; susceptible to scab in the South. Originated in Iowa. 140

Davis: Medium-sized nut; kernel plump, bright, quality high; cracking quality excellent; ripens at point of origin a little later than Fox; resembles Wilcox. Tree vigorous. Originated in Duchess County, New York by Gilbert L. Smith. Introduced in 1934. Won first prize in the New York and New England Nut Contest of 1934. BROOKS 1972; E62{SC}, E91M, 140

Felger: Superior in nut qualities, with kernels averaging 30% of nut. Not precocious, nor heavy bearing. Large, slow-growing tree; begins bearing in 8 to 12 years. Originated in Smithfield, Ohio by Emmet Yoder. 140

Fox: Kernel light in color, of fine flavor; large percentage crack out whole; ripens early. Tree bears consistently. Originated in Fonda, New York by Roland Fox. Introduced in the late 1930's. First prize winner in the Northern Nutgrowers Association contest of 1934. BROOKS 1972; B99{PL}, E62{SC}, 140

Grainger: Large nut; shell thin; kernel averages high percentage of nut; cracks well; ripens late in the season. Tree vigorous. Originated on the form of J.N. Stapleton, Washburn, Grainger County, Tennessee by the Tennessee Valley Authority. Introduced in 1935. BROOKS 1972; 140

J. Yoder Na 1: (Yoder) Regular producer of very large (8.5 grams), thin-shelled nuts that crack out whole halves. Flavor and kernel filling very good. Tree precocious, hardy, bears heavy crops. Originated in Smithfield, Ohio by Emmet Yoder. E62{SC}, E91M, 140

Neilson: Large nut with good flavor and good kernel filling; matures early. Tree hardy; precocious; bears very heavily. Should be planted with another variety for best production. B99{PL}, E91M, E91M{PL}, N24M

Porter: Nut large; shell thin; yields high percentage of kernel (46.7%); cracking quality excellent. Originated in Mackeyville, Clinton County, Pennsylvania, on the farm of Ralph R. Porter. Introduced in 1960. BROOKS 1972; E62{SC}, 140

Sauber: Shellbark x shagbark hybrid, with a nut resembling a large shagbark. A productive cultivar with medium shell thickness and good cracking qualities. Originated in northern Ohio by Paul Sauber. 140

Silvis 303: Large, round nut, to 8 grams; shell thin; kernel averages 45% of nut; quality good. Tree self-pollinating and a good producer. Originated in West Richfield, Ohio by Ray Silvis. 140

Stratford: Shell thin, smooth, nearly white; cracks easily, resembling bitternut hickory; kernel hard, quite smooth, keeps very well; quality high, no bitter taste; oil content quite high, typically shagbark hickory. Tree productive; buds, flaking bark, and leaves typically shagbark hickory. Originated in Stratford, Iowa. Introduced about 1926. BROOKS 1972; I60{PL}

Weschcke: Nut papershell; kernel full and rich, cracking out in entire halves; matures September 1 to 15. Tree grafts well on wild bitternut hickory; produces consistently. Originated in Fayette, Iowa by Carl Weschcke. Introduced in 1936. BROOKS 1972; E62, E62{PL}, E62{DF}, E62{SC}, E91M, E91M{PL}, 140, K63G{S}

Wilcox: Medium-sized nut, to 4.9 grams; flavor good; cracking quality excellent, cracks out in whole halves; kernel averages 41% of nut; keeps well. Tree one of the best producers; bears early; protogynous. Originated in Geneva, Ohio by GF. Walker, H.L. Jacobs, and W.R. Fickes. Introduced about 1936. BROOKS 1972; 140

Wilmoth: Produces high quality, thin-shelled nuts. Kernel large, light-colored, flavorful. A consistent winner at the Kentucky State Fair. Originated in Glendale, Kentucky by Leslie Wilmoth. Introduced in 1978. 140

Wurth: Large, thin-shelled nut, pointed at one end; cracks out whole halves. A strong vegetative grower, with scab resistance. Original tree produces 2 to 3 bushels of nuts annually. Originated in Paducah, Kentucky on the form of Hillary and Vincent Wurth. Introduced in 1978. 140

#### SHELLBARK HICKORIES

Characterized by a shaggy trunk with even coarser plates than those of the shagbark hickory. It typically grows in lowlands and river bottoms as contrasted with the shagbark hickory which grows on upland soil for the most part. JAYNES. (C. lacinososa)

Big Cypress: Highly regarded clone discovered by Charles Spurgeon in southwestern Indiana. Winner of a second place prize in a contest sponsored by the Northern Nutgrowers Association. Introduced in 1985. 140

Bradley: Large nut; kernel large, never tight in shell; cracking quality excellent; shell thickness medium. Tree bears annually; bears precociously after grafting; requires good soil. Originated in Franklin County, Pennsylvania by Fayette Etter. Introduced in 1932. BROOKS 1972; 140

Daulton: Relatively new cultivar with good potential. Very large nuts with good flavor. Extremely vigorous growing tree producing extra large twigs and leaves. Originated in Kentucky. Introduced in 1987. 140

Dewey Moore: Moderate producer of thin-shelled nuts with 33% kernel. Very good flavor. Large, vigorous tree with good resistance to scab. Originated in southern Ohio by A.M. Cox. Introduced in 1987. 140

Fayette: Nut large; shell thin, being one of the thinnest of all cultivars; kernels crack out well, flavor good. Tree bears annually. Originated in Fanklin County, Pennsylvania by Fayette Etter. Introduced in 1932. Open-pollinated seedling of a native shellbark hickory. BROOKS 1972; B99{PL}, E62, E62{PL}, E62{DF}, E62{SC}, E91M, 140

Henry: Very large nut; relatively thick shell; flavor and kernel filling very good. Tree hardy and productive, grows 70 to 80 feet tall; resistant to scab. A vigorous growing far northern selection. B99{PL}, E62, E62{DF}, E62{SC}, E91M

Hoffeditz: Medium-sized nut, shape not always uniform; kernel of good flavor; cracking quality good. Tree bears annually. Originated in Faystte County, Pennsylvania by Fayette Etter. Introduced in 1930. BROOKS 1972; B99{PL}

Keystone: Long, thin-shelled nut. The best cracking shellbark ever found by Etter, as kernel always falls free from the shell. Tree bears annually. Originated in Franklin County, Pennsylvania by Fayette Etter. Introduced in 1955. BROOKS 1972; B99{PL}, 140

Lindauer: Very heavy producer of large nuts which crack out whole halves. Medium shell thickness. Tree reported to be precocious and resistant to weevils. Foliage has good resistance to scab. Originated in Illinois. 140

Nieman: Heavy producer of very large nuts. Shell fairly thick, but the nut cracks out well. Very good flavor. Slow growing tree, height 70 to 80 feet; begins bearing in 8 to 10 years. A good producer as far north as Iowa. Originated in Illinois. 140

Stephens: An old cultivar that produces very large nuts. Relatively thick shells, typically thicker than those of most shagbark hickories. Ripens late. Tall, ornamental tree. Originated in Kansas. 140, 160{PL}

## KALE {S}

BRASSICA NAPUS

BRASSICA OLERACEA

### CULINARY KALES

#### HYBRID

Blue Knight: 45-55 days. Hybrid Vates type. Earlier, stronger, more uniform and higher yielding. Deep blue-green, firm, curly leaves have less tendency to yellow and hold up well when cut. Uniform, strong grower; yields 7 to 8 inch plants in just 45 days; larger plants in 55 days will outyield open-pollinated types by 50%. Suited to spring or fall planting. *AI, C20M, M29*

Redbor:<sup>1</sup> 50-55 days. A completely red kale, not merely red on the midribs like other red kales. Attractive, finely curled leaves, deep mahogany red throughout in cold weather. Makes a striking salad garnish when picked young. Turns green when cooked. Vigorous, cold resistant plant, 18 to 24 inches tall. Developed in Holland. C85M, D11M, D11M{PL}, F70, F70{PL}, K50, K66, L89

Winterbor: 60 days. A tybrid Vates type, with thicker well-curved, dark bluish-green leaves. Plants are taller and more vigorous than Vates, growing to 2 or 3 feet, with much greater yield and better cold hardiness. Also yields a much higher percentage of well-curved and ruffled leaves, is slower bolting and more uniform. Excellent for market, shipping or processing. *A87M, C28, C53, D68, G6, G93M, H61,177,191, K10, K50, K73, L42, L89, N52, etc.*

#### OPEN-POLLINATED

Blue Siberian: (*B. napus*) Vigorous, very spreading plant. Large, coarse leaves; plain at the center with cut and frilled edges of a deep

bluish-green color. Grows 12 to 16 inches tall with a spread of 24 to 36 inches. Very hardy. *K49M*

Cottager's:<sup>1</sup> Ribs and leaf veins tinted with pink and purple. Excellent flavor; also produces an abundance of delicious broccoli-like sprouts in the spring. Vigorous, prolific, 3 foot tall plant; long-standing; very handy. Good for flower arrangements. Introduced prior to 1877. *S55, S61*

Dwarf Green Curled: (Dwarf Curled Scotch, Dwarf Curlies, Bloomsdale Kale) 55 days. Dwarf, low-growing plant; 12 to 18 inches tall with a spread of 24 to 28 inches. Densely curled, yellow-green leaves; tender and delicate, especially after having been exposed to frost. Very cold handy. Well suited to light soils and unsheltered sights. Heavy yields in both spring and autumn. Introduced prior to 1865. *BURR; A25, B49, C85M, C97, D27, E38, F73D, F92, G57M, G87, K27M, L42*

Dwarf Siberian: (German Sprouts) (*B. napus*) 60-70 days. A vigorous, sprawling plant, growing 12 to 15 inches high and bearing large, coarse, blue-green leaves with frilled edges Very cold handy. *AI, C92, F44, G1M, G57M, K27M*

Flanders:<sup>12</sup> (Flanders Purple Borecole, Chou Caulet de Flandre) A large cattle-feeding kale. Similar to, but somewhat smaller than the Walking Stick kale. Also distinguished by the violet-red color of its leaves and stems. Extremely cold handy. *VILMORIN; U15, X54, Z91*

Greenpeace:<sup>1</sup> (*B. napus*) A rare Russian kale from the Greenpeace Experimental Farm in British Columbia. Has purple stems and highly variegated purple and green leaves. An unusual and attractive plant which grows 2 1/2 feet tall. Has survived a winter low temperature of -20°. *K49Z*

Hanover Salad: (*B. napus*) 30 days. An extra early, fast-growing cultivar with large, smooth leaves. When used fresh, it has a strong but good flavor; mild when steamed. Harvest leaves when small and tender. Best for early spring salads before other cultivars mature. *L7M, M95M*

Harvester: 68 days. Very deeply curled leaves; hold their color without yellowing after a heavy frost. Short-stemmed, spreading plant; height 15 inches. Dwarf growth habit protects the stem from heavy frost and keeps plants healthy well into cold fall weather and snow. Hardier than Konserva but not as high yielding. *E24*

I.D. Scope:<sup>3</sup> Overwintering kale grown for the broccoli-like shoots that form in the spring, and for a harvest of leaves in fall and winter. Mixed gene pool of different leaf shapes and colors including greens, whites, reds, pinks, purples and yellows. Developed by Tim Peters of Peters Seed & Research. *J9M*

Konserva: 60 days. Broad dark-green foliage; at first medium-curved, becoming well-curved with the onset of cool fall weather. Tall, very high-yielding plant; grows to 24 or 30 inches Very cold hardy. First class Danish strain. *D68, E24, G6,177, J9M, J20*

Laciniato: (Black Cabbage, Cavolo Nero, Nero di Toscana) 100 days. A rather primitive, open kale with very dark green, serrated leaves, 2 to 3 inches wide and 10 inches long. Height 2 feet. Useful for culinary purposes as well as being ornamental. Extremely winter hardy, freezing temperatures tenderize it and bring out its full flavor (a cross between sweet cabbage and kale). Popular in Tuscany and central Italy, where it is used in soups and stews. *BIANCHINI, BUGIALLI [Re], KASPER [Re]; A2, G44M, H73{PR}, I18M, 177, K66, L13M, 089, Q34, 577, S55, S75M*

Large-Leaved Jersey:<sup>2</sup> (Sarthe Cow Cabbage, De la Sarthe) Resembles Walking Stick, but is usually not as tall. Remarkable for its very large leaves, often more than 3 feet long and 12 to 14 inches broad. Succeeds best in rich soil in a temperate climate, as it is not perfectly hardy. *VILMORIN; U15, X54*

Maris Kestrel:<sup>2</sup> A forage kale that resembles Marrow Stem. Shorter and thicker in the stem and less prone to lodging. Very

uniform plants with high dry matter and good palatability which insures almost complete utilization of the stem when grazed. B13

**Marrow Stem:**<sup>2</sup> (Chou Moellier) Tall, unbranched, very stout and thick stem; grows 5 feet or more high, 3 to 4 inches in diameter at its thickest part; swollen in the upper two-thirds of its length and filled with a sort of marrow or tender flesh. Thought to be the progenitor of kohlrabi, the flesh is preferred by some for its milder flavor. Should be cut when 2 or 3 inches in diameter. BURR, VILMORIN; C95, E83T, N81, N84, PIG

**Mosbacher:** (Mosbach Winter Kale) Resembles a cross between the Tall Green Curled kale and Portuguese cabbage. The leaves especially resemble the latter, with very stout stalks, midribs and veins; pale, almost yellowish-green in color. Stem of medium height, 2 to 2 1/3 feet tall; the leaves growing in tiers along its length and bent upwards, not downwards, from their middle. Useful as a table vegetable, and also has merit as an ornamental. VILMORIN; X54

**Palm Tree:** (Palm Tree Cabbage) Stem straight, or slightly curved; height 6 1/2 feet or more; bears a cluster of leaves at the top. Leaves entire, 2 to 2 1/2 feet long, 3 to 4 inches broad; of a dark, almost blackish, green color; finely crimped like those of Savoy cabbage; spread outward as they grow giving the plant a very elegant, palm-like appearance. Flavor excellent when picked young. Similar to Laciniato. VILMORIN; J73

**Pentland Brig:** 75 days. Medium-sized plant; 18 to 24 inches tall, 24 inches across. Produces tender, finely curled leaves from early winter through April, then broccoli-like spring sprouts. Good flavor. Very hardy and productive. Excellent for home gardens. Bred in Scotland; a cross between Thousand Headed and a curled-leaf type. B49, R32, R47, S55

**Premier:** (Early Hanover) (B. napus) 68 days. Produces thick, deep-green, serrated leaves with slightly frilled margins; more serrated than Smooth Long Standing. Main stems of over-wintered plants remain short while developing many growing points. Substantially higher yielding than most other cultivars when seeded in fall for a spring harvest. Also excellent for early spring planting. A1, A27M, C28, G1M, G57M, G93M, H54, L7M, L10, M95M

**Purple Rapini:**<sup>1</sup> (B. napus) Flatleaf form with purple stems and midribs. Overwintered plants produce an abundance of very sweet, dark purple rapini-like shoots in mid-spring. The first of these flowering shoots may be 12 to 18 inches long with a crisp, asparagus-like texture. Subsequent shoots become smaller with each picking. Smaller shoots are excellent in salads. F80, N7G

**Ragged Jack:**<sup>1</sup> An old-fashioned ornamental kale. Short, often branching stem. Long, irregularly cut oak-like leaves, variously colored with purple and blue-green. Productive, but unlike most kales, it will not withstand very low temperatures. Introduced prior to 1885. LARKCOM 1984, VILMORIN; F24G, K17M, K49M, Q34

**Red Ursa:**<sup>1</sup> (B. napus) 60 days. Heavily ribbed, broadly curled strain with extra frills and a deep reddish-purple color. Central leaves of well grown plants have excellent flavor and texture in fall and winter salads. Very vigorous, can be cut back repeatedly for continuous harvests. Developed by Frank Morton of Shoulder to Shoulder Farm. E24, K49T, N7G

**Russian Red:**<sup>1</sup> (Canadian Broccoli) (B. napus) 60 days. Lightly crinkled, oak-like leaves with an unusual purple venation. Flavor and texture very good before a frost. Height 2 1/2 to 3 feet. Not as winter hardy as Konserva. Called Canadian broccoli in reference to its early spring flower buds. Attractive specialty item. A2, B49, E24, F13, F80, G6, G6{SP}, G33, 177, J97M, K10, K23{PL}, K49T, K66, L13M, L91M, R47, etc.

**Siberian:** (Siberian Curled) (B. napus) 60-70 days. Vigorous, fast-growing plant; grows 12 to 18 inches tall; leafy and sprawling with large, blue-green leaves with frilly edges. Can withstand frost,

which actually improves the texture and flavor. The leading cultivar in the southern part of the United States. Will stand the entire winter in much of the South. Widely used as cooked greens or chopped for use in sandwiches and salads. A2, A16, C95, G79, I59M, I11, K10, K71, L10, L89, M46, M95M

**Siberian Improved:** (Improved Dwarf Siberian) (B. napus) 65 days. Hairy, spreading plant with broad, thick, grayish-green plume-like leaves that are plain at the center and slightly frilled at the edges. Stands cold especially well. Grows 12 to 16 inches tall with a spread of 24 to 36 inches. A75, A87M, C28, DIT, D12, N16

**Smooth Long Standing:** (Slow Seeding, Long Seasons, Late Hanover, Hanover Long Standing) (B. napus) 32-75 days. Slow-growing, large-leaved cultivar that stands well. Can also be used raw or as a steamed vegetable before other cultivars mature. Fresh flavor is strong with a trace of hotness; milder when steamed. Smooth, blue-green leaves. Grows 12 to 14 inches tall. Produces over a long harvest season. A2, G57M

**Spring:** (Smooth, Early Hanover Salad) (B. napus) 35 days. Large, round, smooth, thick leaves; dark green in color; mild, sweet flavor. Very fast-growing and hairy. Grows 10 to 12 inches tall. Produces an abundance of foliage in a short time. Usually sown in early spring but can be overwintered. G1M, J73, L10, M95M

**Tall Green Curled:** (Tall Green Scotch, Tall Scotch Curled) Stem stout and straight, 2 to 3 feet tall. Leaves rather narrow, 16 to 20 inches in length; clear-green; deeply curled and frilled; very tender and flavorsome after having been exposed to the action of frost. Very hardy. Tall form of Dwarf Green Curled; introduced prior to 1865. VILMORIN; C20M, K71, S61

**Thousand Headed:**<sup>2</sup> (Branching Borecole) A large forage kale, distinguished from the Walking Stick kale by the numerous side-branches emanating from the main stem. Somewhat shorter, it is generally considered more productive but not as hardy. Originated in western France, prior to 1865. BURR, VILMORIN; A2, F73D, G44M, L13M, K49M, S61

**Thousandhead Dwarf:** A dwarf low-branching strain of Thousand Headed, which develops prolific side shoots earlier and lower on the stem. Exceptionally hardy. Harvest the tender young shoots as they are produced during winter and early spring. S55

**Vates:** (Dwarf Blue Curled Scotch, Blue Curled Scotch, Dwarf Blue Vates) 55 days. Low-growing, compact, short-stemmed plants; 15 inches tall, with a spread of 24 inches; slow bolting. Finely curled, bluish-green leaves which resist yellowing. Standard dwarf cultivar. Originated in Virginia Beach, Virginia at the Virginia Truck Experiment Station, hence the name. Introduced in 1950. A75, A87M, B6, D76, E59Z, G16, G71, G93M, 139, 191, J14{PL}, K49M, K71, K73, L24G{SP}, M46, etc.

**Verdura:** 60 days. Westlandse Winter type, widely grown in that area of Holland and relished by the Dutch. Compact, vigorous, highly productive plant. Produces thick, curled, dark blue-green leaves that are very tender and sweet. Provides extended harvests throughout the winter. K66

**Walking Stick:**<sup>2</sup> (Walking Stick Cabbage, Tree Cabbage, Jersey Kale, Chou Cavalier) Stem straight, stiff and strong, comparatively slender; height 3 to 4 feet the first year, up to 12 feet after 3 years. Leaves oval-rounded, often over 2 1/2 feet long; can be picked when young and stuffed like Greek dolmas. Also used as forage. In the Channel Islands, the stems are dried and made into walking sticks. PARKER, VILMORIN; C82, C95, F80, 139, L91M, N84, 053M, PIG, Q11M, R88, S17

**Westlandse Winter:** 60 days. Deeply curled and frilled dark-green leaves; sweet, with only a hint of a cabbage-like flavor. Tall, thick stalks; can reach 24 inches in height. At the growing point the new leaves form an attractive pale-yellow rosette. C85M, L89C

**Winter Red:**<sup>1</sup> (B. napus) Dark-green leaves; irregularly cut and lobed like an oak leaf; turn to various hues of red and purple after

the fall frosts. Good raw; tender and sweet when cooked. Becomes a rich, dark-green color when cooled. Very disease resistant. Developed by Territorial Seed Company; the result of breeding work to confirm the origin of such kales. J9M, L89, N7G

#### ORNAMENTAL KALES

Also called *salad savoy*, these are grown mainly for their ornamental rather than edible qualities although they are quite palatable, especially after having been exposed to frost. Popular with chefs as a garnish or as a salad ingredient, they can also be cooked like regular kale. GESSERT [Cu], HARRINGTON, G. [Cu, Cul], LARKCOM 1984 [Cu, Cul], SCHNEIDER 1986 [Cul]; E13G{PR}, N40{PR}, Q34

**FLOWERING CABBAGE** These are the oldest forms of ornamental kales. Most have a more mounded habit than the flowering kales and the leaves are generally rounded not feathery or fringed. DI 1M, FI, F70, G87, H61,167M, K64{PL}, M95M

#### Hybrid

**Color-Up Series:** Compact, uniformly mounded plant; grows 10 inches tall, with a spread of 12 inches Very clear, intense colors. Color and habit hold up through hard winter freezes, continuing into spring. Withstands variable weather well; resists warm spells and sudden frost alike. Available in red, pink and white. 191

**Osaka Series:** Attractive wavy edged leaves form bright colored central heads extremely early. Far superior to open-pollinated strains. Vigorous, uniform growth habit; height 12 to 14 inches. Outer leaves green. Available in pink, red and white. C92, D68, E53M, E91G, G71, G82, H49, H57M, I50G, J20, K10, K57{PL}, L42, TIM

**Pink Beauty:** Attractive, round-leaved flowering cabbage with a distinctive color combination. The medium rose-pink centers contrast nicely with the bright white outer foliage for outstanding color. Outer leaves on the lower part of the plant are tipped with green. Upright plant, 10 to 12 inches in height. F13

**Tokyo Series:** Round leaf type. Uniform and more heat resistant than other strains. Grows 8 to 10 inches tall, with a spread of 15 inches. Smooth, flat, wavy edged leaves. Extremely cold tolerant. Available in red, pink and white. Colored inner leaves become more intense during cold weather. B75, C44, C92, D11M, E53M, E75{PL}, E91G, F70,139, 750G, L79, M29, TIM

#### Open-Pollinated

**Miniature:** (Miniature Japanese) 65 days. Tiny plants that look like giant roses, with lovely deep red shades on green. Needs cold weather to bring out the color. Makes an attractive, colorful addition to salads. 139

**FLOWERING KALE** Generally characterized by feathery or fringed leaves as opposed to the rounded leaves of the flowering cabbages. The leaves are also thinner which makes them more suitable for culinary purposes. C53, D11M, E24, FI, F70, F82, F92, G71, H61,167M, 184, K49M, M95M

#### Hybrid

**Chidori Series:** Heavy, dense, multi-leaved rosettes about 12 to 15 inches across. Dark-green, fringed outer leaves with ruffled edges. Tightly bunched, double savoyed centers which color up in warmer temperatures than other types. Dwarf plant habit, uniform and slow bolting. Available in red or white. D68, E53M, E91G, 177, J20, L42, N52

**Feather Red:** Long, deeply serrated and fringed leaves; the inner area solid red and the outer part dark green with red veining. Height 18 inches. Excellent for fall color. Grow with Feather White for a striking appearance. D26D, F13, E91G, 177

**Feather White:** Long, deeply serrated and fringed leaves; the inner area solid white and the outer part medium-green with white

veining. Height 18 inches. Grow with Feather Red for a striking appearance. D26D, F13, E91G, 177

**Nagoya Series:** Heavily fringed leaves develop outstanding, brilliant colors with the onset of cool weather. Height 18 inches. Excellent uniformity not found in open-pollinated cultivars. Available in red, rose, and white. Excellent for garden, container or mass plantings. A1, B75, E53M, E91G, F13, G6, H49, H57M, 750G, 191, J84, K10, K16M, K57{PL}, K73, L42, L79, etc.

**Peacock Series:** A striking new type of flowering kale. Produces deeply cut, fringed, feathery leaves on compact, robust, frost hardy plants. Height 12 inches. The leaves begin to turn colors from the plants center, with extended colored areas developing "like webs" as the winter advances, enriching their tones. Available in red and white. B6, D68, E53M, E75{PL}, £97G, G71, G82, H57M, H95, /50G, 191, J20, L42, L91M, M29, Q34, R47, etc.

**Sparrow Series:** The most dwarf of all ornamental kales. Very dense, compact plant, only 6 inches tall and 8 inches across; excellent uniformity. Deep green, fringed leaves with colored centers. Ideal for growing in pots and containers. Resembles the Chidori Series. Available in red and white. E75{PL}, £97G, G82, L42, N84

#### Open-Pollinated

**Red on Green:** Reddish-purple interior leaves with contrasting green edges; rich bluish green outer leaves. Height 15 inches. Planted in late summer, leaves begin to color at lower fall and winter temperatures. G93M, H95

**White on Green:** Green, heavily fringed leaves; creamy white centers. Height 15 inches. High temperatures and excessive amounts of fertilizer will affect the speed and degree of coloration of the leaves. C20M

**Willy's:** A distinctive ornamental, with centers of deep red fringed by curled green. Light frost improves the flavor. Used for adding color to salads or in place of cabbage in soups and stir-fries. Harvest all winter, removing the leaves. F73D, J25M

#### CODES FOR SPECIAL TYPES

1. Purple-Leaved
2. Forage
3. Multi-Colored

## KIDNEY BEAN {S}

### PHASEOLUS VULGARIS

#### DRY BEANS

Also called *field beans*, these are the principal beans of commerce. They are harvested after the pods have dried and the seeds inside have shrunk. A good dry bean is especially suited for baking, stewing or use in soups.

#### BLACK-SEEDED

##### Bush

**Black Coco:** 98 Days. First pods form early and make fine snap beans; later, fast developing shell beans form; and finally, plump, black, quick-cooking dry beans. New Mexico favorite for making *frijoles refritos*. Tall growing and productive. Heirloom with pink flowers. VILMORIN; A2, F73D, G6,199M, J39, K17M, K49T, L89

**Black Delgado:** Bushy plants bearing small black beans. A very ancient cultivar, widely used by the Zapotecs for soups, on tortillas, etc. Withstands considerable cold and drought. Also used to dye the famous black rebozos of Oaxaca. Classic staple of Mexican cuisine. F80, K46T



Black Mexican: (Frijol Negro) Small, oval black bean; tender, with a distinctive flavor; good for making a thick, rich, dark soup. Later maturing than pinto. After the pinto, the most popular bean among the Mexican Indians in California. A2, J73, L11, N84

Black Turtle Soup: (Turtle Soup) 90 days. Small, flattened, jet black seeds; 7 or 8 seeds per pod. Widely used for soups, to which they impart a distinctive flavor and a greenish color, somewhat similar to that of the green turtle soup so popular along southern sea coasts. Very old cultivar that originated in northern South America or Chile HAWKES [Re], HEDRICK 1931, ORTIZ 1973 [Re]; A90M{DF}, A90M{PD}, C94M{DF}, E56{DF}, E60P{PD}, G79, 191, J11M{DF}, J20, K10, K49M, L24G{SP}, L24M{SP}, M46

Hopi Black: (Kumvimore) 110 days. Small, glos<sup>^</sup>, tasty black seeds. Excellent for chili. Also good as a snap bean. Ripens consistently and dries quickly. Prolific, rampant bushes. Adapted to the high semi-desert, where it is planted in the spring. Prolific at oak elevation with irrigation, but dry or run-off farmed by the Hopi. Can also be used as a dye KAVASCH [Re]; A2, C95, K17M, K46T, L88J

Midnight Black Turtle Soup: 104 days. An improved, upright growing, black bean stain. Tall bush does not sprawl, keeping pods off the ground for cleaner beans and fewer problems in wet weather. Small black beans, about the size of pea beans. Good for soups, stews and refrying. Developed by Cornell Univeisity. E24, G6, K17M, K23, K66, N84

Mitla Black: 110 days. Small, slightly flattened black seeds, 3 to 5 per short pod. Excellent for black bean soup. Can also be used as a snap bean. Compact plant; produces short runners but support required; high yielding. Pre-Columbian cultivar from the Mitla Valley of Oaxaca, Mexico. 116, J25M, K46T, N84

Tarahumara Chokame: Small, round, shiny black seed. Originally collected from Jose Torres at the bottom of Batopilas Canyon in the Sierra Madres of Chihuahua, Mexico where it is planted in August and harvested in November. Has grown well in Tucson, Arizona and Madison, Wisconsin. 116, N84

#### BROWN-SEEDED

##### *Bush*

Brown Dutch: A traditional golden-brown drying bean from Holland. Floury texture and an excellent flavor. Popular for baking, boiling, soups and stews. Easy to shell. The flat, light green pods can also be used as snap beans. Very productive. B49, C85M, J39, K17M, K49M, M46, R32, S55

Ireland Creek Annie's: 80 days. Long, oval light-brown seed with white eye; pods 5 inches long, 5 seeds per pod; excellent flavor, makes its own sauce. Easy to shell. Small but prolific plant; highly resistant to mold and mildew. Does well in short season areas. Heirloom from Ireland Creek Farm in British Columbia, Canada. Introduced from England in the 1920's. A2, F73D, K17M, N84

Marfax: 85-90 days. Medium-sized, plump round seed; golden-brown color. Resembles Swedish Brown, but earlier and higher yielding. A richly flavored bean that is good for soup Very adaptable to cool climates. Heirloom originally from New England. A2, D68, F73D, K17M

Swedish Brown: (Bruna Bonor) 85 days. Seed medium to small, oblong-oval, plump; color light brown, marked with darker brown; small white eye; 4 to 5 seeds per pod; nutty flavor. Very hardy; well adapted to northern climates but will grow well in most areas. Brought by Swedish immigrants settling in the upper Mississippi Valley. Still popular in parts of northern Michigan, Wisconsin and Minnesota. HEDRICK 1931; A2, A7M{DF}, A90M{DF}, C94M{DF}, E5T, E97, J11M{DF}, J66M{DF}, K49T, K71, M46, N34{DF}

#### GREEN-SEEDED

##### *Bush*

Hutterite Soup: 100 days. Round, very plump, light-green seed; very distinctive, resembles an English rugby ball; two small, dark half-circles around the hilum. Excellent for soup, quickly dissolving into a creamy white delicacy. Early maturing. Compact, true bush-type plant; productive; easy to grow. Heirloom from the Upper Great Plains. A2, A66, D68, F24G, F73D, H15P, K17M, K46T, K49M, K49T, K49Z, L77D, N34{DF}

#### MOTTLED

##### *Bush*

Agate Pinto: 92 days. Medium-sized, broad oval, buff-mottled seeds; spicy flavor. Relatively short cooking time. Bush-type plant, without the sprawling habit of other pinto strains. Resistant to bean rust and common bean mosaic virus. Developed by Rogers Brothers Seed Company. Introduced in 1982. D68, J39, K17M

Anasazi: (Anasazi-Analog) {DF} 90-95 days. Strain of Jacob's cattle, identified as one of the few cultivated crops grown by the ancient Anasazi cliff dwellers. White seed, prominently mottled and splashed with maroon. Excellent baked, having a sweet flavor and meaty texture. In Navajo, the word anasazi translates as "the ancient ones". Recently rediscovered by the natural foods industry. COX [Re]; A2{S}, A90M, C73P, F73D{S}, F97M, I8M, 116, J11M, J25M{S}, K49Z{S}, L11{S}, L24G{SP}

Ankole: Medium large bean with a speckled, reddish russet color reminiscent of Ankole cattle, an enormously large-horned breed of northern Central Africa. Tender-skinned, nutty-flavored beans with a fluffy texture; hold their color well when cooked. Original seeds found in an archeological dig in Kenya. C60D{DF}

Appaloosa: {DF} 90-110 days. Attractive sibling of the Anasazi bean. Small, narrow, kidney-shaped seed; white with maroon-and-black mottling, like the rump of an appaloosa horse. Bush-type plant with short runners that do not require staking, but will climb a fence or cornstalk. Widely used in Southwestern cuisine. From Velarde, in northern New Mexico. A2{S}, A90M, B31, C94M, E23T, F80{S}, F86T, J25M{S}, J39{S}, K17M{S}, K18M, K46T{S}, K71{S}, N40, N55, etc.

Bolita: (Boleta, New Mexico Bolitas) 100 days. A treasured staple of the Hispanics of northern New Mexico. Pale yellow-green to light brown, veined seed, with squared ends. Cooks more quickly than Pinto beans, especially at high altitudes Very productive low bush; short runners that do not need staking. Originally grown in the highlands of Spain, and said to be the progenitor of the Pinto bean. MAYES; A90M{DF}, 116,163T{DF}, J25M, J11M{DF}, K17M, K49M, N84

Calypso: (Black Calypso) {DF} Thick, oval seeds, about 3/8 inch long; white with striking black markings on the top and sides. Has a smooth texture that is ideal for purees, and a distinctive nutty flavor. Good in salads, stuffings, soups, and stews. Popular specialty market item. MAYES; A2{S}, A7, A90M, B31, C94M, D68, D93M, E23T, E24{S}, E31, F86T, J11M, K18M, L7M{S}, M46{S}, N40, N55, etc.

Jacob's Cattle: (Trout) 85 days. Heirloom New England bean of unknown origin, but very similar to the Anasazi bean. Kidney-shaped seed; white, with deep maroon mottling and speckles; uniquely attractive. Excellent for baking, especially the traditional New England festival dish *beans-in-the-hole*; also good as a green shell bean. Does well in short season areas of the United States and Canada. GUNST [Re]; A2, A25, A90M{DF}, C94M{DF}, D68, E23T{DF}, E24, F24D, G6, J73, K17M, K49M, M46, M49, N40{DF}, N34{DF}, etc.

Jacob's Cattle Gasless: 90 days. Jacob's Cattle x Black Turtle. Developed by Sumner and Radcliffe B. Pike of Lubec, Maine at the University of New Hampshire, in the 1950's. Coloring identical to

Jacob's Cattle. Scientific tests indicate that it causes less than half the flatulence of other beans. Used primarily as a baking bean. K49M

Jumbo Pinto: Large, plump succulent bean, about 7/8 inch long; buff-colored with dark brown markings. Firm, solid texture; particularly fine flavor. Good in soups or chile. Excellent when cooked and served cold in salads. Developed by Tom Phipps MAYES; J11M{DF}

Kenearly: 95 days. A baking bean selection made at the Kentville Research Station, Nova Scotia, from the well-known Yellow Eye. White seeds with yellow-brown eye. Excellent flavor and quality. Good yields. Early maturity; well adapted to most areas of Atlantic Canada and New England. C95, M46, M49

Maine Yellow Eye: (Old-Fashioned Yellow Eye) 92 days. Medium-sized, oval, plump seed; white, blotched with a yellow-gold "eye" near the hilum. Excellent for baking and stewing. Widely grown in Maine and Vermont where it is claimed that it bakes much better and has a better flavor than other strains of yellow eye. HEDRICK 1931; A2, A90M{DF}, C94M{DF}, D68, G6, H73{DF}, K17M, L13M, L77D, M46, N34{DF}

Pebble: (Chimera) {DF} Unique sport producing a different color of seed in each pod. Pods produce uniform-sized beans in colors of white, black, russet, striped, red and brown. Planting any one of the colors produces the same effect. Tender-skinned beans that cook uniformly and maintain their color to a high degree. Excellent when cooked and used in salads. A90M, C60D, F86T

Peregion: 80 days. Highly-regarded Scotia type. Small, slightly oblong seed; tan, with black stripes and speckles; very attractive. Can also be used as a snap bean when very young. Compact, bush-type plant; very prolific. Originated in eastern Oregon. A2

Pinto: 85 days. Medium-sized, broad oval seed; pinkish buff, blotched with medium dark-brown; 5 to 6 seeds per pod; rich, spicy flavor. Essential for Mexican and Southwestern cuisine, especially chile con carne. Vine semi-trailing, spreading. Primarily grown in dry western climates. A52M{DF}, A90M{DF}, A90M{PD}, B73M, D76, E60P{PD}, G71, G79, H85M, I64, J11M{DF}, K71, M46, M95M, N16, etc.

Red Calypso: {DF} 75-85 days. Plump, creamy-white seeds, nearly half covered with a deep burgundy blotch, and with burgundy specks on the white portion. Selected from the Seed Savers Exchange's bean collection by Indian Harvest Specialties. Selected for its attractive appearance and good flavor. E56, F86T, K47{S}

Soldier: (Johnson Bean, European Soldier) 85 days. Attractive New England heirloom. Long, slender, kidney-shaped seed; white, with a reddish-brown "soldier" pattern near the hilum; soft texture, fine flavor; 6 seeds per pod. Very popular for baking and stewing. Hardy, high-yielding plant, 18 inches tall; drought resistant. Does well in cool areas. HEDRICK 1931; A2, A25, A90M{DF}, C94M{DF}, D68, E5T, F24D, F42M{DF}, G6, H73{DF}, J73, K18M{DF}, K49M, K71, L24G{SP}, M46, M49, etc.

Spanish Tolosana: (Prince) {DF} Attractive, rich reddish purple and brown seeds, 1/2 to 3/4 inch long; long, slender kidney-shaped. Excellent when cooked and served cold in salads with olive oil. Also very good for chili. Often sold in gourmet specialty food stores. Named after a village in the Basque country of Spain. MAYES; A7, A90M, C94M, E23T, F73D{S}, J11M, K17M{S}, L13P, N55

Steuben Yellow Eye: (Yellow Calypso, Butterscotch Calypso) {DF} Medium-sized, plump seeds; white with mustard-yellow markings on the keel. Has more of a solid yellow mark than other beans of this type. Holds its shape and color after cooking. Popular specialty market bean. MAYES; A7, A90M, C94M, E56, F1{S}, F86T, G44M, J11M, K17M{S}, M46

Yellow Eye: (Dot Eye, Molasses Face; Yellow-Eyed China) {DF} Medium to large, broad plump seeds, about 1/2 inch long; clear white with prominent yellow markings. Mild flavor. Mealy texture. Retains its color when cooked. Traditional New England baking

bean. Also popular in certain areas of the South for making *Hoppin' John*. HEDRICK 1931, MAYES; A7M, A90M, B31, C53{S}, E23T, E31, H86, I16, J39{S}, K17M{S}, K18M, K49M{S}, K71{S}, N40, N55, etc.

### Pole

Boy: 90 days. Striking purple-on-white cultivar from England. Medium-sized, nearly round seed, distinctively marked with sharply defined color areas of reddish-purple and off white; flat light-green pod with dark green sutures, 4 inches long, 3/4 inch in diameter. Vigorous, highly productive vine. A2

Good Mother Stallard: {DF} 97 days. Large, plump, attractive seeds; cranberry red, splashed with creamy white; excellent meaty, granular texture; very mild, almost sweet flavor. Retains color and design even after cooking. Selected for commercial production by Indian Harvest Specialties, from among 4,000 beans in the collection of the Seed Savers Exchange. B49{S}, E56, F86T, K47{S}

New Mexico Cave: 100 days. Large, flat, kidney-shaped beans; maroon splashed with white. Excellent dried or as a snap bean. Very vigorous vine, about 10 feet long, bears heavily late in the season. Southwestern heirloom reportedly discovered by archaeologists searching for pygmy elephants. Said to have been carbon-dated to about 500 AD. A2, C95, E5T, E56{DF}, F86T{DF}, K46T, N24M

Snowcap: {DF} 110 days. Large, kidney-shaped seeds, about 5/8 inch long; white splashed with pink and cream. Mottled colors are retained after cooking. Said to have a somewhat tart, tomato-like flavor. Excellent in salads; also good in minestrone and other vegetable soups. Sometimes available in specialty food stores. MAYES; A7, A90M, B31, C94M, E5T{S}, E23T, F73D{S}, F86T, H73, J11M, J39{S}, L24G{SP}, M46{S}, N40

### PINK-SEEDED

#### Bush

Pink: {DF} 85 days. Medium-sized seed, light salmon pink with a white hilum; long, narrow pod, 4 inches in length; 4 to 5 seeds per pod. Ideal chili or soup bean, holding its shape well when cooked. Also good as a green shell bean at 60 days. Highly productive. Widely grown in California, the Southwest and in Mexico. Probably originated with the Spanish conquistadors. HEDRICK 1931, ORTIZ 1973 [Re]; A52M, A90M, B31, J11M, M46{S}, M67

Santa Maria Pinquito: 90 days. Very small, square-shaped, pink bean that is low in starch and does not break up when cooked. Only grown commercially on the mesas above Santa Maria, California. Primary ingredient of the Santa Maria style barbecue, which is also unique to this area. According to Pappy's Restaurant of Santa Maria, they are traditionally simmered for 1 1/2 hours with bacon, onion, garlic and chili salsa. A90M{DF}, B75, D7{DF}, F73D, I39, J11M{DF}, J73, K17M, K49M, L94, N40{DF}, N84

### RED-SEEDED

#### Bush

Montezuma Red: 95 days. A strain of red bean that was being grown by Indians when Cortez arrived in Mexico. Identical beans have been found in pre-historic tombs, estimated to be more than 3,000 years old. Small maroon seed. Excellent for baking and chili. Tolerates a wide range of soils and growing conditions. A2, I39, J39, K17M, K46T, K49T, L3J, N24M

Red Kidney: (Chilian) 95 days. Medium to large seeds, long and broad; color ranges from pinkish crimson and reddish brown to a deep mahogany; pod 5 to 6 inches long; 4 to 5 seeds per pod. Widely used in Mexican dishes, bean salads, baked, etc. Large, runnerless plant, 14 to 16 inches tall. HEDRICK 1931; A25, B78, C44, C85M, D11M, D82, E24, E38, F70, G71, K27M, M46

Red Mexican: (Small Red Chili, Frijol Rojo) {DF} 85 days. Small to medium-sized, reddish-purple seed. Good baking bean; does not become mushy when cooked. A classic chili bean, but also provides a rich flavor for soups, salads and Creole dishes. Small plant, to 14 inches tall, with early runners. Grown and prized as a dry-land crop in California since 1855. Originated with the Indians of northern Mexico. HEDRICK 1931, MAYES; A7, A7M, A90M, B31, D26D, E31, G57M{S}, J11M, J73{S}, M46{S}

Red Peanut: 65 days. Small red seed, resembles a Spanish peanut; pod 4 inches long, green, turning red at maturity. Used both as a green shell bean and as a dry bean. True bush-type plant, 14 inches tall; very prolific; does well in dry weather. Quick maturing; plant often for a continuous yield. J39, K17M, M46

Redkloud: (Redkloud Kidney) 80 days. Heavy yielder of light red seeds. Matures one to two weeks earlier than other red kidney strains, allowing it to be grown as far north as Nova Scotia. Tolerant to halo blight. Resistant to two strains of common bean mosaic and the alpha race of anthracnose. Developed at Cornell University. D68, K50

#### WHITE-SEEDED

##### *Bush*

Duane Baptiste Potato Bean: An old Six Nations Indian bean traditionally used as a thickener in Native Canadian com soup. Large, white seeds; excellent flavor when baked. Should not be soaked as this toughens the skin. Highly adaptable; germinates well; consistently produces good crops even in cool weather. F73D, K17M, L88J

French Navy: {DF} Plump, slightly globular seeds, about 3/8 inch long, white with a green undertone. Has an outstanding texture and a unique, bacon-like flavor. Excellent in soups, salads or simply tossed with olive oil and salt. Often found in gourmet specialty food stores. MAYES; A90M, B31, C94M, E23T, E56, I8M, HIM, K18M, K49M{S}, N40, N55, S55{S}

Great Northern: 85 days. Similar to Navy, but enlarged and rather lengthened; pods 3 to 4 inches long; excellent flavor. Also used as a green shell bean at 65 days. Hardier, earlier, more productive than Navy. Originated with the Mandan Indians of North Dakota. Seed of it has been found in mounds known to be centuries old. HEDRICK 1931; A90M{DF}, B73M, B75, D65, D76, E31{DF}, E97, F97M{DF}, G16, H85M, J11M{DF}, J97M, K49M, K71, L24G{SP}, M46, etc.

Michelite: 85 days. An improved Navy type resistant to blight. Small, roundish, pearly white seeds. Excellent for pork and beans. Uniform and high yielding, ripens early and evenly. Pods are carried well off the ground for easy harvesting. Developed at Michigan State University. D11M, E38, F70

Navy: (Navy Pea, Boston Pea, White Navy) 100 days. Small, oval white seed, quite plump to somewhat flattened; short narrow pods; 6 to 7 seeds per pod. Popular for baking and stewing. Dwarf plant, 14 to 16 inches tall. Principal field bean in the United States; used extensively for the commercial canned baked bean. HAWKES [Re], HEDRICK 1931; A7M{DF}, A90M{DF}, C44, E31{DF}, G71, G79, G82, H85M, J11M{DF}, K10, K27M, L24G{SP}, M46

Rice Bean: {DF} Tiny, creamy white, kidney-shaped seeds; 1/4 to 3/8 inch long and about 1/8 inch wide. Reminiscent of a large, plump grain of rice. Quick cooking, tender and slightly sweet. Excellent in soups, casseroles, salads and side dishes. Reportedly originated in the Caribbean. A7, A90M, B31, F24D{S}, H73, J11M, K17M{S}, N40

Sanilac: 90 days. Highly improved strain of Navy, resistant to mosaic and bacterial wilt. Heavy yields of glossy white beans. Pods set high on the bush for easy harvesting, and prevent discoloration caused by contact with the ground. Developed by the Michigan Agricultural Experiment Station. B6, I59M

Seafarer: (Seafarer Navy) 92 days. Earliest strain of Navy pea beans. Small, nearly round, shiny white seed; good texture and flavor. Excellent for baking and making bean soup; also good as a green shell bean. Vigorous, highly productive plant; tolerant to halo blight, mosaic, and anthracnose. G57M

Walchese: (Walchese White, Ruckle) 95 days. Large, round white seed, much larger than Navy beans; outstanding flavor. Excellent for baking and soups, Very prolific. Popular on Salt Spring Island, British Columbia, where it has become known as Ruckle Bean. C85M, K17M

White Kidney: (Cannellini) 100 days. Large, white, kidney shaped seeds; fairly plump to somewhat flattened. Excellent for baking and in dishes where the color of red kidneys is undesirable. Vigorous, spreading plants; height 18 to 24 inches; very productive. Beans of the white kidney type appeared in U.S. catalogs as early as 1822. HAWKES [Re], HEDRICK 1931; A90M{DF}, C53, C94M{DF}, E5T, E56{DF}, F86T{DF}, G6, G57M, G82, H19M{DF}, I67M, I91, J11M{DF}, J20, J66M{DF}, L24G{SP}, L50M{DF}, L89, etc.

White Marrow: (White Marrowfat) 100 days. Rather short, plump-ovate white seeds, larger than Navy; flat, straight pods, 5 inches long or more; 5 or 6 seeds per pod. Excellent for baking and soups. Large, very spreading plant, with many long, trailing runners. HEDRICK 1931; A90M{DF}, B31{DF}, E5T, E13G{DF}, E23T{DF}, F73D, G57M, K10, L42, N40{DF}, N55{DF}

##### *Pole*

Judion de El Barco: Plump white seeds, 3/4 inch long when dry, swelling to 1 1/4 inch when soaked overnight in water. Expensive, gourmet type bean. Originates in El Barco de Avila, a district of Specific Denomination for bean culture between Avila and Salamanca, northwest of Madrid, Spain. L13P{DF}

#### YELLOW-SEEDED

##### *Bush*

Adventist: 80 days. Small, attractive, amber-colored seed; short pods; 3 to 5 seeds per pod; ripens over a long period of time. Excellent for baking or stewing. Small, compact plant with short runners; does not require support; heavy bearing. Originally from the mountains of northern Idaho. C95, K17M, L13M, L77D, N84

Ankara Yellow: Medium-sized, somewhat flattened seeds, yellow ocher to tawny over the entire surface. Excellent for baking. Dwarf, very erect plant, to 18 inches tall. Hardy and drought resistant. Introduced by Oscar H. Will from seed obtained from the Arikara Indians of the Missouri River region. HEDRICK 1931; A2, C82, J39, K17M, K46T

Sinaloa Azufrado: A bright yellow, tasty staple from irrigated farms in Sinaloa, Mexico. Makes excellent *frijoles refritos*. Adapted to low hot desert areas, where it is planted in early July. In temperate regions, plant in spring when danger of frost is passed and the soil has warmed up some. 116, N84

Sonoran Canario: Large, yellow-tan, kidney-shaped bean; quick cooking. Grown with irrigation in winter in frost-free, low hot desert areas. Good potential as a winter crop in Yuma, Arizona and San Diego, California. Originally from Mexico. 116

Squaw "fellow: 60 days. Small, golden yellow seed, about the size of the Navy bean. Good for soup. Pods are not used for snap beans. Very early maturing. Short, high-yielding plant. Does well in short season areas. A2, D82

Sulphur: (Brimstone, China Yellow) Small to medium-sized, very plump seed; cream to light sulphur yellow in color, with a faint green to brown eye-ring; pods 4 to 4 1/2 inches long; 5 seeds per pod. Distinctive flavor when baked. Also good as a snap bean. Spreading plant, 12 to 15 inches tall; very few or no runners. Popular in high elevation areas of North Carolina, Virginia and Tennessee.

see. A7{DF}, C94M{DF}, E5T, G57M, H73{DF}, /59M, K49M, L7M

Tarahumara Azufrado: Yellow, beige or ocher seed. Tender pods, 4 to 6 inches long. Tasty staple from the bottom and rim of Copper Canyon, Chihuahua, Mexico. Makes excellent refried beans. Semi-climbing bush. Adapted to low hot desert areas, where it is planted in early July. 116, K46T

#### POPPING BEANS

Also known as *nuhas* and *popbeans*, from Ecuador to northern Bolivia where they are native, they have hard-shelled seeds which are popped in a hot skillet like popcorn, rather than being boiled in hot water. The resulting product is soft and tastes somewhat like roasted peanuts. Traditionally served at main meals as a side dish, or eaten as a snack. Their culture appears limited to cool mountain climates with short daylengths. NATIONAL RESEARCH COUNCIL 1989; G47G{DF}

#### SHELL BEANS

Also called *shelly beans*, these are superior when harvested in the green, immature state when the seeds have swollen and the shell has passed the tender, fleshy state, to the point of being thin and rubbery.

#### COMMON

##### Bush

Bert Goodwin's: 75 days. New Hampshire heirloom. Large, attractive, mottled-brown seed; pods 7 inches long. Exceptionally rich flavor; excellent with butter or cream; also freezes well. Best shelled when the pod softens and begins to lighten in color. Large, vigorous bush, with some half-runners. J20, K17M

Buttergreen: 45 days. Grown for its green shell beans which have a distinctive flavor and mature 2 to 3 weeks earlier than limas. Can also be eaten young as a snap bean. Good for short season areas where other shell beans or limas can't mature. Small, spreading plant. Resistant to common bean mosaic virus. M95M

Limelight: 60 days. Small, flat white seeds; 6 seeds per pod. Excellent for shelling when greenish-white, resembling baby lima beans. Broad, flat, Italian-style pods may be picked for snap beans when 3 to 4 inches long. Also used as a dry shell bean. Short, compact, very hardy plant. Developed by Canada Agricultural Research Station, Lethbridge, Alberta. D68, D82, K17M

Low's Champion: (Dwarf Red Cranberry) 65 days. Medium to large, plump, broad-oval seed; dark reddish-maroon when dry; excellent for shelling when green, also used as a dry shell bean; 4 to 5 seeds per pod. Broad, flat pod; very tender and fleshy; good as a snap bean when young. Introduced in 1884. Still popular in New England. HEDRICK 1931; A2, F73D, G6, J39, K17M, K66, L77D, M46, PIG

##### Pole

Lazy Wife: (Hoffer Lazy Wife) 80 days. Small, very plump seed; ivory-white when mature, marked with a distinct, grayish, vein-like pattern; 5 to 7 seeds per pod. Broad, slender pod, 5 1/2 to 6 inches long; stringless. Quality below average as a snap bean; excellent for shelling. Probably brought to Bucks County, Pennsylvania by German immigrants, prior to 1810. HEDRICK 1931; D29P, F24G, K71, 089, PIG

Ohio Pole: 85 days. Large, dark-maroon seeds, frosted with white on one end. Used as a shell bean, either in the green shell or dry shell stage. Also good as a snap bean. A good producer, yielding 6 to 8 beans per pod. Indian heirloom from the Midwest. F73D, L7M

**FLAGEOLETS** {DF} Gourmet French shell beans, generally considered superior to other shell beans although their production is much lower. Indispensable for *cassoulet* dishes. B31, B91T{PD}, C3M, C94M, E23T, E31, E38M{PD}, E56, H15T, J39, J66M, K18M, L24G{SP}, N40, N55

##### Bush

Canadian Wonder: (Flageolet Red) Broad, flat pod; 5 to 6 inches long; 5 to 6 seeds per pod. Large, flattened, dark-red seeds. Should be harvested when extremely young for snap bean use. Also used as a dry shelling bean. Popular in England, Australia and New Zealand. Similar to Flageolet Rouge. Originated in Canada, sometime prior to 1873. HEDRICK 1931; B49, F73D, R32, R83, S55

Chevrier: (Chevrier Vert, Flageolet Green) Distinguished from other flageolet types by the intense green color that extends to all parts of the plant. The seeds have a very pronounced green tinge, which is maintained after cooking, and is not merely confined to the surface, but extends through the interior of the seed. Originated about 1878 at Bretigiy, France. HEDRICK 1931, VILMORIN; A90M{DF}, C20M, C53, E63D, F86T{DF}, I8M{DF}, K49M, K66, J11M{DF}, L3J, L13P{DF}, M46, S55

Flageolet Rouge: Straight or slightly kidney-shaped seed; 3/4 inches long, 1/4 inch broad, about 1/4 inch thick; wine-les red in color; highly prized as a green shell bean in France. Long, straight pods; very good as snap beans. Vigorous plant, about 18 inches tall; hardy and very productive. HEDRICK 1931, VILMORIN; A90M{DF}, G68, J11M{DF}

Flambeau: 76 days. Long, slender pods; well-filled with 8 to 10 beans; easily shelled. Small, vivid mint-green beans; tender but firm; of excellent flavor, reminiscent of fresh limas. Excellent frozen, retaining their texture and flavor well. Of gourmet quality, yet surprisingly easy to grow. G6, I18M, K17M

Flaveol: 85 days. Improved green flageolet type, developed from Chevrier. Small, mint-green seeds; tender and delicately flavored. Recommended for use as a green or dry shelling bean. Can also be used as a snap bean when young. Vigorous, highly productive plant. B75, C20M

Masterpiece: (Flagpolet Yellow) 55 days. Slender pods, 6 to 7 inches long, almost wholly stringless; fleshy and tender. Large, long-reniform, yellow-buff seeds. Excellent as a green shelling bean or dried for use in soups. Can also be used as a *filet bean* when young. Introduced as a novelty in 1910 by Sutton and Sons. HEDRICK 1931; A90M{DF}, J11M{DF}, K49M, Q45M, R50, R83, S55

Vernel: 60 days. Improved green flageolet type developed by Vilmorin of France. Long, well-filled pods; up to 6 small green seeds per pod; quality excellent. Can be used for snap, green shell and dried beans. Very productive plant; resistant to anthracnose and mosaic. Introduced in 1976. C92, G68, K49Z, S95M

**HALF RUNNERS** Intermediate between pole beans and dwarf beans, with short runners. Most are dual purpose types that can be used as snap beans when young and as dry or shell beans when older. Popular in the South.

Mountaineer Half Runner: (Old Dutch Half Runner) 60 days. Round, light-green pod, 4 to 5 inches long; tender and flavorful; becomes stringy as it matures. Small, oval white seeds. Also good as a dry shell bean for baking. High-yielding plant, with 3 foot runners that require no staking; resistant to common bean mosaic virus. Popular home garden cultivar. A 75, D12, E5T, F24M, F63, G1M, G57M, H54, I59M, 164, 191, K10, L10, M95M

Parker Half Runner: 52 days. Plump, oval, stringless pod; 5 inches long, 3/8 inch in diameter; tender and flavorful; matures over an extended harvest period. Seeds are excellent for baking, freezing and canning. Harvest snap beans in 52 days, dry shell beans in 90 days. Vigorous, bushy plant with medium length runners. I59M

Pink Half Runner: (Peanut) 60 days. Dual purpose bean, can be used as a snap bean when young and later for green and dry shelled beans. Especially good for baking or in chili. Bright red pods, 4 1/2 inches long when mature. Seeds resemble pink shelled peanuts. An old favorite in central Virginia. F73D, K27M, L7M, L10

State Half Runner: (State White Half Runner) 60 days. A strain of White Half Runner. Slightly longer and larger pod and larger seed than regular White Half Runner. Oval, slightly curved pod, 5 to 6 inches long; not stringless, but of excellent quality. Vigorous plant, with 3-foot runners that do not require staking. Resistant to common bean mosaic virus and nematodes. A75, D12, D26D, G1M, G57M, I59M, K10, K27M, L10

White Half Runner: (Mississippi Skip Bean) 60 days. Very popular in the South as a snap bean or a green or dry shelling bean. White-seeded. Round, medium light-green pods, 4 to 5 inches long; stringless if picked young. Vigorous, bushy plant, with short 3-foot runners; resists heat and drought. Not recommended for northern climates. A75, B75, D76, G27M, G57M, G82, H49, H61, J84, K27M, K71, K73, M46, M95M, N16, etc.

**HORTICULTURAL** Also called *cranberry beans*, *October beans*, or *borloto beans*, these cultivars are characterized by pods that are brilliantly splashed with carmine or red in the green shell stage, and by large white or buff-colored seeds more or less splashed and streaked with dark red. CUSUMANO [Cul, Re], GRAY, P. [Cul, Re]; A7M{DF}, A52M{DF}, B31{DF}, C94M{DF}, E5T, E23T{DF}, J66M{DF}, K66, J11M{DF}, L89, N40{PR}, N55{DF}

### Bush

Coco Rubico: Large, very attractive pods, strongly striped and splashed with bright carmine. Each pod contains 6 large seeds, striped with dark red. Suitable for use as both a green shell and dry bean. Excellent quality both fresh and frozen. Resistant to bean mosaic virus. Introduced in 1976 by Vilmorin of France. G16, J39, K49M, M29, M46, S95M

Dwarf Horticultural: (Dwarf Cranberry, Dwarf Wren's Egg) 60 days. Medium to large seed; pinkish-buff, streaked with bright red. Broad, plump pod; white, splashed with carmine in the green shell stage. Primarily used as a green shell bean, being preferred for *succotash* in many areas. Also used as a snap and dry shell bean. Of unknown origin; grown in the United States for over 150 years. HEDRICK 1931; A2, B6, B75, C85M, D76, D82, F24M, G57M, J20, J97M, K27M, K71

French Horticultural: (French's Dwarf Horticultural) 65 days. Plumb, red-speckled seed. Excellent as a green or dry shell bean; freezes and cans well. Flat, round pod; 6 to 7 inches long; turning greenish-yellow, heavily splashed or speckled with bright red; easy to shell. Vigorous plant; with semi-runners; hardy; disease resistant. Selected from Dwarf Horticultural. HEDRICK 1931; A25, A90M{DF}, F13, F65, G79, H85M, /64, J11M{DF}, J84, K10, K50, K73, L42, M46

Lingua di Fuoco Nano: 65 days. Large, straight pods; 1/2 inch in diameter, 4 1/2 to 5 inches long; striped and splashed with deep red. Large, salmon colored seeds, striped with white. Excellent fresh, frozen or canned. For home gardens or fresh market. B8, Q11M, S17

Madeira: Very large, plump, kidney-shaped cranberry type bean, about 3/4 inch long. Beige mottled with pink, but turns paler after soaking and cooking. Sometimes available at gourmet specialty food stores. Grown commercially in California. MAYES; A90M{DF}

Scarlet Beauty Elite: (Scarlet Beauty Elite 7 Pod) 70 days. Pods 7 inches long, produced in bunches of 7 per branch. Elongated seeds with attractive shades of purplish-brown and beige. Excellent cooking qualities as a shell bean, also used dried. Superior flavor and productivity compared to Jacob's Cattle. Developed by Professor E.M. Meader. F73D, J20, J39, K17M

Stregonta Nano: High-yielding, early maturing type. Very long, slightly curved pods, prominently striped and splashed with bright red; cream-colored seeds, marbled with red. Harvested when pods are still tender. One of the most popular fiesh shell beans in Italy. Q11M, S17

Taylor's Dwarf Horticultural: (Shelley Bean, Taylor Horticultural Improved) 62 days. Large, oval seed; buff-colored, splashed with red. Excellent for shelling; often used in *succotash*. Thick, flat, oval pod; 5 inches long; light green, turning cream-colored splashed with red at maturity; stringy and fibrous. Semi-running plant, 14 to 18 inches tall. A1, A2, A27M, B49, E24, E97, H33M, H54, J84, K10, K49M, K73, L7M, M46, N16, etc.

Tongue of Fire: (Tierra del Fuego, Horto) 70 days. Large, round seed; buff-colored, splashed with reddish-purple; pods 6 to 7 inches long, ivory-tan, streaked with red. Green shelled beans have excellent flavor and texture, either fresh, frozen or canned. Bicolor lavender flowers. Originally from Tierra del Fuego, Argentina, at the southern tip of South America. A2, A7{DF}, A75, A90M{DF}, B31{DF}, B49, B75, D93M{DF}, F82, G6, H73{DF}, 139, J11M{DF}, K17M, K23, K46T, K49M, K50, M46, R47, etc.

Vermont Cranberry: 60 days. Very popular heirloom bean from New England. Medium-sized, oval-shaped seed; cranberry-colored, mottled and striped with maroon; pod 5 inches long, streaked with red; 5 to 6 seeds per pod; sweet, succulent flavor; easy to shell. High-yielding plant; hardy; disease and drought resistant. Introduced prior to 1876. A90M{DF}, C53, C73P{DF}, D68, E5T, G6, J11M{DF}, J20, J39, J73, L88J, M46, N34{DF}

### Pole

King Horticultural: (Worcester Horticultural, Mammoth Podded Horticultural) Largest-podded and largest-seeded of the horticultural beans, also the most attractively colored and most showy in pod. Long, plump seeds, colored like those of Wren's Egg. Excellent for shelling. Pods 6 to 7 inches long, 7 seeds per pod. Originated near Worcester, Massachusetts. Introduced in 1894. HEDRICK 1931; A25, G93M, I59M, K49M

Lingua di Fuoco: Large, straight to slightly curved, roundish pods; 1/2 inch in diameter, 4 1/2 to 5 inches long; striped and splashed with bright red. Large, roundish, salmon colored seeds, striped with white. Fresh beans may be harvested in about 80 days, dry beans after 125 days. Excellent fresh, frozen or canned. B8, Q11M, S77, S55

Stregonta: (Sciabola Rossa) 130 days. Long, slightly curved pods, prominently striped and splashed with bright red; large bright red, marbled seeds. Vigorous, highly productive vine. Highly esteemed in Italy for fresh market and home garden use. Q11M, S17

Vermont Cranberry Pole: 60 days. Nearly identical to Vermont Cranberry, except for the climbing habit. Widely adapted plant; produces an abundant supply of tender, flavorful beans. Recommended as a green shelling bean; also very good as a dry baking bean. Very popular in Vermont. M46

Wren's Egg: (Speckled Canberry, London Horticultural, Bird's Egg) 75 days. Large, broad-oval, very plump seed; light buff, streaked with dark led. Very mealy and flavorful as a green shell bean; also good for baking and stewing when dry. Flat, carmine-streaked pod; of fair quality as a snap bean. Introduced into the United States from England, about 1825. BURR, HEDRICK 1931; A2, A90M{DF}, E5T, F24G, J11M{DF}, J39, K46T, K49M, M46

### SNAPBEANS

Also called *string beans*, although most modern cultivars are stringless or nearly so. Grown for the pods which are cooked when young or at the stage of maturity when they can rightly be called string beans.

### GREEN-PODDED

#### Bush

Baccicia: 52 days. Italian style snap bean. Semi-flat pod; 6 1/2 inches long, 3/8 inch in diameter; tender, stringless, flavor distinct. Seed dull-red, speckled with white. Good for fresh home garden use; not recommended for freezing. Also good as a dry bean, the seeds

being sold in specialty stores. Height 18 to 21 inches MAYES; A90M{DF}, C20M, G93M, K49T

**Black Valentine:** (Strigless Black Valentine) 50 days. Slender, nearly straight, light-green pod; 5 to 6 1/2 inches long; distinctive flavor. Glossy, jet black seeds. Good for shipping; not recommended for canning. Also used as a dry shell bean for soup. Very hardy plant; height 12 to 14 inches. Introduced in 1897. HEDRICK 1931; A2, A90M{DF}, E23T{DF}, F24M, F73D, F80, G1M, G57M, G71, J25M, K49M, L7M, M46

**Blue Lake Bush:** 55 days. Round, slightly curved, dark-green pod; 5 1/2 to 6 1/2 inches long; excellent texture and flavor. Seed white, slow to develop. Especially good for freezing. Popular with commercial canners and packers. Vigorous, upright plant; highly productive over a long period; sets well under adverse weather conditions. A16, A25, B75M, C44, D3M{PR}, D11M, D82, F15{PR}, F70, F82, F92, K5M, 089

**Bountiful:** 50 days. Broad, medium-round, yellowish-green pod; 6 to 7 inches long; stringless, brittle, fine-textured, of excellent quality. Good for shipping. Dull straw-yellow seeds. High yielding, dwarf plant; height 15 to 18 inches. Introduced in 1898 by Peter Henderson & Company. HEDRICK 1931; A25, A75, B73M, C44, G57M, G71, H54, J20, K49M, K71, M46, M95M, N16

**Commodore:** (Bush Kentucky Wonder) 60 days. Very similar to Kentucky Wonder, but requires no staking. Nearly round, stringless, dark-green pods; 7 to 8 inches long; brittle, meaty, flavorful. Good for canning and freezing. Brilliant, carmine-colored seeds. Upright, high-yielding plant. All America Selections Winner in 1938. A75, B6, D76, F24M, G57M, G79, 191, K27M, K49M, K71, N16

**Contender:** (Early Contender) 50 days. Oval, slightly curved, medium-green pod; 6 to 7 inches long; tender and stringless. Seed buff-colored, mottled with brown. Matures over a short period of time; ideal for canning and freezing. Vigorous, erect plant; tolerant to hot weather, mosaic and mildew. B49, B75M, E38, E59Z, F82, G71, H33M, H61, J73, K73, L7M, LIO, M95M, N16

**Daisy:**<sup>1</sup> 55 days. "Cascade" or "teepee" type. Medium-green, round pod, 6 to 7 inches long; almost completely stringless; very meaty and flavorful. White-seeded. Seeds develop slowly for an extra-long harvest season. Vigorous, high yielding plant; sets pods well above the foliage for easy picking; resistant to common bean mosaic virus. G68

**Dandy:**<sup>3</sup> 54 days. Gourmet French type "mini bean". Round, slender, straight medium dark-green pod; only 4 inches long; stringless, very tender and flavorful. Small white seed, slow to develop. Erect, compact plant; high yielding; resistant to anthracnose and bean mosaic viruses. Introduced in 1982 by Rogers Brothers Seed Company. A16, C92, FI, 139, L79, M29, N24M

**Derby:**<sup>2</sup> 57 days. Slender, attractive green pods, up to 7 inches long. Retains good flavor and texture at maximum pod length due to slow seed development. Very upright, bushy plants, height 14 to 20 inches; resistant to common bean mosaic virus. Pods slip easily from stems without the pedicels, making picking easier. All America Selections winner for 1990. B6, B8M, D11M, E97, F70, G16, G82, 139, 191, K10, K50, K71, L42, L91M, M29, M49, M95M, N16, N52, etc.

**Deuil Fin Precoc:**<sup>5</sup> (Petit Gris) An old European favorite. Steel-grey-green pod, heavily streaked with purple, of very fine flavor. Large, buff-colored seeds, mottled with purple. Compact, bush-type plant; very high yielding. Ideal for growing under frames, poly tunnels or cloches. B49, J39, N84, R32, S55

**Earliserve:** 45 days. Very early Blue Lake type. Straight, slender, dark-green pods; 4 inches long. Should be picked often for best quality. Ideal for French style beans. Sturdy, upright plant, height 18 inches. Tolerant to common bean mosaic virus. Recommended for home gardens, fresh markets and pick-your-own operations. A75,

B75M, C20M, D26D, E5T, F13, F44, F63, G82, I39M, M46, M95M

**E-Z Pick:**<sup>2</sup> 55 days. Round, straight, dark-green pods; 6 to 6 1/2 inches long. Very good flavor and texture, fresh, frozen or canned. Unique growth habit, with most of the crop set on top of the plant, on stiff upright stems. Pods hang freely, stay straight, and are easily separated from the plant. Tolerant to common bean mosaic virus. B73M, E5T, J39

**Frenchie:**<sup>3</sup> (Frenchy) 43 days. Gourmet European "mini bean"; much milder and sweeter than American types. Slender, round dark-green pod; only 3 3/4 inches long; unusually crisp and tender. Small, white seed. Compact, highly productive plant, to 12 inches high; tolerant to common bean mosaic. Featured as a special dish in 4 Star Hotels. B6, G82, K17M, PIG

**Green Ruler:** 52 days. High quality bush Romano type. Thick, flat, medium-green pods; 5 to 6 inches long; very meaty, slow to develop any toughness or fiber; distinctive "beany" flavor. Can also be used as a green shell bean. Freezes and cans well. Upright plant, 18 inches tall, highly productive. Resistant to common bean mosaic viruses. Developed by Shigemi Honma of Michigan State University. Introduced in 1977. F63, G57M, G82, S63M

**Greencrop:** 50 days. Broad, flattened, medium-green pod; 6 to 8 inches long; tender and stringless; holds up well on the vine; matures over a short harvest season. White-seeded. Vigorous, upright plant. Bred for northern areas; does not perform well in heat or drought. All America Selections winner in 1957. A27M, A75, C85M, D68, E5T, E24, G57M, K49M, K73, L42, M46, N16

**Harvester:** Medium-green, round, straight pod; 5 to 6 inches long; white-seeded. Excellent for canning and shipping. Tall, upright plant; high yielding; suitable for mechanical harvesting; resistant to common bean mosaic and the New York 15 strain of bean virus. A75, B75M, D12, G1M, G27M, G57M, M95M, N16

**Jade:** 55-60 days. Very attractive, extra long snapbean. Carries the "persistent green" gene for exceptionally rich, dark-green color. Straight, slender, round pods; 6 to 7 inches long. Very sweet and tender, flavor excellent. Pale whitish-green seeds. Strong, upright plant, multiple disease resistant. B75M, C85M, D26D, D68, G71, G71M, G6, G13M, G16, G93M, H61, H95, 191, K50, K73, L89, M46, N16, etc.

**Jumbo:** 55 days. Bush Romano type Very large, flattened, dark-green pod; strong, rich, beany flavor; of gourmet quality. Best picked when 6 to 7 inches long, but still stringless at 10 inches or longer. Excellent for freezing. Vigorous plant; tends to lodge with the weight of the pods. Romano x Kentucky Wonder. D82, E97, F13, G6, G71M, G82, 164, 191, J9M, J20, K71, L89, L91M, M46, N16, etc.

**Mini Green:**<sup>3</sup> 52 days. Gourmet "mini" or "baby bean". Produces slender, dark-green beans, only 4 inches long; very tender and flavorful; requires no snapping. Excellent fresh, frozen, canned or pickled. For longest harvests and best quality, pods should be picked just as they mature. 191

**Provider:** 50 days. Straight, round, medium-green pods; 5 to 6 inches long; tender, low in fiber, slow to wilt. Vigorous, productive plant, bears a concentrated set. Resistant to common bean mosaic virus and the N.Y. 15 stain; tolerant of powdery mildew. Germinates well in cool spring soils. Standard early market cultivar. A75, D12, E24, F13, G6, G57M, H54, H61, H85M, J20, J84, J97M, K27M, M49, M95M, etc.

**Regal Salad:**<sup>4</sup> 52 days. Unique salad bean, without the slightly fuzzy texture present in most beans. Curved pod, 5 to 6 inches long, an unusual bronze in color; excellent flavor raw, superior when cooked. Erect, productive plant. Developed by Professor Elwyn Meader. J20

**Remus:**<sup>1</sup> 45 days. Produces clusters of pods well above the foliage, making harvesting easy and providing protection from dirt. Long,

straight, round pods; up to 10 inches in length; fiberless, tender and flavorful. Vigorous plant, 18 to 20 inches tall; resistant to common bean mosaic virus. 191, K17M

Roma: (Romano) 59 days. Broad, flat, straight medium-green pod; 5 to 5 1/2 inches long; stringless, fleshy, strong distinctive flavor; holds its quality well on the vine. White-seeded. Excellent for French-style sliced beans. Upright plant; productive over a long season; tolerant to bean rust. A25, A75, B6, D76, E97, G79, 167M

Roma II: 59 days. Bush Romano type; more uniform and higher yielding than other cultivars. Broad, flat, very straight pod; 5 inches long, 3/4 inch in diameter; same distinctive flavor as the traditional pole Romano; holds its quality well. Upright plant, with a concentrated pod set; tolerant to common bean mosaic and several races of bean rust. Introduced in 1979. A16, B8M, B75, C44, D11M, E38, F1, F70, G16, G71, G93M, H61, K66, K71, K73, L79, M29, M49, N16, etc.

Romanette: 60 days. Bush Romano strain with straighter pods than most Romano types. Broad, flat, medium-green pods, 5 to 6 inches long; crisp and tender with a rich, distinctive flavor. Sturdy, upright plant, 16 to 18 inches tall. Resistant to common bean mosaic viruses. C69, C92, D27, G57M, L10, M95M

Slenderette: 53 days. Slender, straight, glossy dark-green pod; 5 inches long; stringless, tender and flavorful. Small white seed; slow to develop. Vigorous plant, to 20 inches tall; highly productive over a long period; resistant to common bean mosaic, pod mottle, and curly top virus. B6, G87, H33M, H85M, H95, 164, 167M, 184, 191, J25M, J97M, K10, K66, K71, M46, M95M, etc.

Spartan Arrow: 52 days. Straight, slender, medium-green pods; 5 1/2 to 6 1/2 inches long; meaty, tender, stringless. Excellent for freezing and French style beans. Vigorous, upright plant, height 22 to 24 inches; produces a heavy, concentrated set. Resistant to common bean mosaic virus and the N.Y. 15 strain. Developed at Michigan State University. F63, G13M, G57M, J84

Stringless Green Pod: (Burpee's Stringless Green Pod) 50 days. Broad, slightly curved, medium dark-green pod; 5 to 6 inches long; fleshy, very brittle, of excellent flavor and quality. Light coffee-brown seed. High yielding plant; height 12 to 15 inches. Introduced in 1894 as the first entirely stringless green podded bean. HEDRICK 1931; A16, A25, B75, D65, G57M, G79, H33M, H42, K71, M46, M95M, N16

Tendercrop: 55 days. Round, medium-green, stringless pod; 5 to 6 inches long. Seed purple, mottled with tan, slow to develop. For fresh use, canning and freezing. Adapted to mechanical harvesting; also good for home gardens. Upright plant, 18 to 21 inches tall; yields up to 5 tons per acre; resistant to powdery mildew and bean mosaic virus. A75, B73M, D76, F82, G57M, G79, H85M, 139, 191, K10, K71, M46

Tendergreen: Round, slightly curved, dark-green pod; 4 1/2 to 6 1/2 inches long; stringless, fleshy, tender, brittle, fine-textured, of excellent quality. Seeds brownish-purple, mottled with buff. Good home garden cultivar. Very erect, compact plant, 14 to 18 inches tall; highly productive over a short season; resistant to bean mosaic virus. Introduced in 1922. HEDRICK 1931; A16, A25, B6, B49, B78, C44, C69, D11M, E38, F70, F92, G57M, G71, J20, N16, etc.

Tennessee Green Pod: 50 days. Broad, fairly plump, medium dark-green pod; 5 1/2 to 7 inches long; very good flavor. Should be harvested early as mature pods tend to become coarse and fibrous. Medium brown seed. Very dwarf plant, rarely over 1 foot tall. Introduced to the trade in 1904, but grown in the South for many years prior to this date. HEDRICK 1931; A75, 159M, K71, L10, M46, M95M

The Prince: 55 days. Broad, flat, straight medium-green pod; 6 1/2 inches long; fleshy, very flavorful, stringless if picked young. Seed buff-colored, mottled with reddish-brown. Excellent for freezing. Vigorous, heavy yielding plant. Very popular in England. Highly

commended by the Royal Horticultural Society in 1982. Introduced by Sutton and Sons in 1927. HEDRICK 1931; B49, G55M, F73D, 053M, R32, R83

Top Crop: 52 days. Round, straight, light medium-green pod; 6 to 7 inches long; stringiest meaty, tender. Seed buff-colored, mottled with brown, develops rapidly. Excellent for canning and freezing. High yielding plant; resistant to powdery mildew and bean mosaic virus. Developed for home garden use. All America Selections winner in 1950. A16, A75, B6, B73M, B75M, D82, G16, G57M, G79, H33M, H61, 164, L7M, M46, N16, etc.

### Pole

Berner Landfrauen:<sup>5</sup> 55-60 days. Heirloom from Switzerland that resembles Selma Zebra, but with more oval pods and more intense mottling. Long, wavy, curved pods, 5 to 7 inches in length; splashed with purple; stringless. Meaty, tender and delicious, especially when the seeds are still small. Excellent fresh, frozen or dried. I91, K17M, M46

Blue Lake Pole: 65 days. Straight, round, dark-green pod; 5 1/2 to 6 inches long, 3/8 inch in diameter; stringless, tender, fleshy, fiberless, distinct flavor. Excellent for canning and freezing. Strong climbing vine; height 5 to 6 feet; heavy yielding over a long period. Widely grown in the Pacific Northwest. A25, A75, C85M, D82, E24, F82, F92, G79, L89, M46, M49, R47

Blue Lake Stringless: 65 days. Round, slightly curved pods, 6 inches long; tender, fleshy, entirely stringless and fiberless; notable fresh, sweet, "beany" flavor. Excellent for fresh eating, canning or freezing. High yielding vine; height 5 to 6 feet; bears continuously throughout the summer. D27, F80, G57M, K5M, M95M

Caseknife: 60 days. One of the oldest cultivars in America, the name Caseknife, and its many strains or synonyms having been noted in the literature since 1820. Slender, flattened, straight, medium-green pod; 7 1/2 to 9 inches long; stringless when young. White-seeded. Strong climbing plant; height 4 to 4 1/2 feet tall; productive over a relatively long period. HEDRICK 1931; D29P, L88J

Cherokee Trail of Tears:<sup>5</sup> (Black Cherokee) 85-95 days. Cultivated by the Cherokee Nation, and taken with them over the Trail of Tears when forcibly removed from their lands by the United States Army in the 1800's. Pods 6 to 7 inches long; dark-green striped with purple, turning red when mature. Black-seeded. Also used as a green or dry shell bean. Very productive vine; requires strong support; attractive light-purple flower. A2, A66, C95, D29P, E5T, F73D, H15P, J39, K46T, L94

Garrafal Oro: (Spanish Gigantic Romano) 65 days. Broad, flattened, light medium-green pod; 9 inches long; juicy, thick-walled, excellent distinct flavor. Pale reddish-brown seed. For home gardens or market. Short vine, rarely exceeding 4 feet; needs less support than other pole types; highly prolific. J20, S61

Genuine Cornfield: (Scotia) 75 days. Round, plump, straight pod; 6 to 7 inches long; medium dark-green, shaded with purple-brown at later stages; quite stringy, fleshy, fairly brittle, of very fine texture. Seed buff-colored, mottled with pinkish-brown. Large, vigorous vine; good climbing habit, to 4 1/2 feet tall. Traditionally grown among corn plants. Introduced in 1892 by Joseph Harris Company. HEDRICK 1931; C95, F73D, G57M, 159M, J20, J26M, J73, K27M, K49M, K71, L7M, M46, M95M

Green Anellino: (Gancetto Verde) Unusual, crescent shaped pods; 1/4 to 1/2 inch in diameter, 3 1/2 to 4 1/2 inches long; rounded in form, fleshy, free of strings, rich Romano-like flavor. First harvests in about 85 days, continuing for 50 to 60 days. Italian heirloom, much in demand by American chefs due to its flavor and unique shape. C53, Q11M

Jeminez:<sup>5</sup> (Idaho Wonder) 66 days. Long, broad, straight flat-oval pod; 8 to 10 inches in length; light-green, with numerous purple-red

stripes and splashes; stringless of high quality; resembles Oregon Giant. Seed buff-colored, striped with brown. Vigorous vine; productive over an extended period. Potential specialty market item. A75, L77D, N52

Kentucky Blue: 51 days. All America Selections Winner in 1991. Combines the characteristics of Kentucky Wonder and Blue Lake, two all time favorites. Round, straight, smooth, medium-green pods; 7 to 10 inches long. Has the flavor of Kentucky Wonder, but sweeter. Excellent for fresh use, canning and freezing. Vigorous, highly productive, disease resistant vines. B49, D65, D74B, E33, E97, F82, G16, B75, F13, G71, G82, 191, J9M, J20, J97M, L91M, M29, etc.

Kentucky Wonder: (Old Homestead, Texas Pole) 70 days. Broad, curved, wrinkled light silver-green pod; 7 to 9 inches long; brittle, tender, slightly stringy, of very good quality and flavor. Buff-brown seed. Medium-sized plant; height 4 1/2 feet; productive over a relatively short period. Most popular pole bean in the United States. Introduced prior to 1864. HEDRICK 1931; A16, B73M, B75M, B78, C44, E5T, E24, E59Z, F24M, G57M, H33M, H61, K73, L7M, M46, etc.

McCaslan: 65 days. Flat, irregularly curved, dark-green pod; 7 to 8 inches long; fleshy, lairly brittle and tender, somewhat stringy, of very good flavor. White seeded. Also used as a green or dry shell bean. Highly productive over a long season. Popular in the South. Originated with the McCaslan family of Georgia. Introduced in 1912 by Hastings Seed Company. HEDRICK 1931; D12, E5T, F63, G1M, G27M, I59M, K10, K27M, K71, L7M, L10, M46, M95M

Missouri Wonder: 65 days. Round, plump, slightly curved, medium-green pod; 5 1/2 to 6 inches long; medium-fine in texture, stringless when quite young. Seed mottled tan, striped with brown. Also used as a shell bean. Large, vigorous vine; very reliable yields. Good for planting among corn. Introduced about 1931. HEDRICK 1931; A75, E5T, F73D, I59M, K10, K27M, K71, L10, M46

Mostoller Wild Goose: Reportedly grown by the Complanter Indians along the Upper Allegheny River. Eventually found in the crew of a Canadian goose shot in Somerset County, Pennsylvania by John Mostoller, in 1864. Excellent flavor when used young as a snap bean. Oval, white seeds speckled with reddish and orange-brown spots near the eye. D29P, F24G, J39, K49M

Morse's Pole No. 191: 63 days. High-yielding, white-seeded Kentucky Wonder type, resistant to certain strains of rust. Oval, attractive, straight dark-green pod; 8 to 9 inches long; stringless at marketable stage. Vigorous, productive vine with dark green leaves. For home gardens or market. G27M

Neckarkonigin: 65-70 days. An improved Phenomeen type from Germany. Very long, slender, firm green pod; to 9 inches in length; very fleshy, of excellent flavor, stringless. White-seeded. Can also be used for French-style slicing. C85M, N81

Oregon Giant:<sup>5</sup> (Paul Bunyon) 75 days. Large, broad pod; curved in an S-shape; 8 1/2 to 9 1/2 inches long; light waxy-green, strikingly marked with brownish-purple; meaty, flavorful, stringless when young. Also used as a shell bean. Vigorous climber; highly productive. Very popular in the Pacific Northwest. A2, D82, J39, K46T, K49T, L13M

Phenomeen: (Phenomenon, Phenomene) 68 days. Extra long, flat-round, nearly straight medium-green pod; 7 1/2 to 9 1/2 inches in length; very fleshy, of excellent flavor, more or less stringy when old, but not fibrous. White-seeded. Originated in Germany about 1905; introduced into the United States in 1913. HEDRICK 1931; S66M

Rattlesnake:<sup>5</sup> 75 days. Round, firm pod; 7 inches long; dark-green, streaked with purple; rich, full-flavored, stringless when small to medium-sized. Seeds light-buff, splashed with brown. Also used as a dry bean, and sold as such in gourmet specialty food stores. Strong climbing vine, to 10 feet tall; very productive; tolerant to heat

and drought. A7{DF}, A75<sub>f</sub>, A90M{DF}, C94M{DF}, D68, E5T, E31{DF}, E56{DF}, J11M{DF}, J25M, K18M{DF}, L7M, L24G{SP}

Romano: (Romano Italian Pole) 65 days. Broad, flat, thick medium-green pod; 5 1/2 to 6 inches long; stringless but slightly fibrous, meaty, rich distinctive flavor; excellent for canning and freezing. Seed buff-colored, with a white eye. Also used as a green shell bean. For home gardens and fresh market. Weak climber. A75, B73M, C44, C85M, D65, G57M, G71, 139, 164, K71, M46

Ruth Bible: 52 days. Small pods, about 3 1/2 inches long. Brownish-tan seeds. Best picked when tender and small, as larger pods may have slight strings. Vigorous, trailing vine; bears heavily. A good cornfield bean that does very well in drought. Family heirloom from Kentucky, where it has been grown since at least 1832. F73D, L7M

Selma Zebra:<sup>5</sup> 51 days. Blue-striped pole bean from Switzerland. Matures as early as a bush bean, grows only to a height of 6 feet. Round, slender light green pod, striped and splashed with purple; stringless, tender, fleshy, highly aromatic and flavorful. Turns green when cooked. Excellent fresh, dried or frozen. C20M, M46

Sultans Emerald Moon: (Sultan's Emerald Crescent) During the last century of the Ottoman Empire, strains of pole beans were developed whose pods mimicked the Crescent, the royal symbol of the Sultans. Thought to have been lost, they were recently re-discovered in the kitchen garden of a wealthy tobacco merchant in Izmir, Turkey. Delicious, subtle flavor. Vigorous and disease resistant. K49M

Turkey Crow: (Turkey Gizzard) Southeastern heirloom from Virginia, the Carolinas and Tennessee. According to folklore, it was first cultivated in 1802 by a hunter who removed a bean from the gizzard of a turkey he shot, hence the name. Pod grows 3 1/2 to 4 inches long and clings to the vine. Stringless, of excellent fresh quality; also good for drying ("leather britches on a shuck"). Often used as a cornfield bean. F73D, L4, L7M

White & Green Hull: Vigorous pole bean that has the unusual characteristic of producing two different colored pods adjacent on the same stem — a typical green one, and one that is pale yellow to white with a pink tint along the midrib. Originated in the garden of Mrs. Lonnie Davis of Sparta, North Carolina. L4

**GREEN-POPPED FILET** Called *haricot verts* in France, *filet beans* are special green-podded beans bred so that the seeds develop more slowly than in regular beans. Therefore the pods have exceptional flavor and texture; since the flavor, which researchers believe comes from the seed, has time to develop without affecting texture. D3M{PR}, E13G{PR}, N40{PR}

### Bush

Aiguille Vert: 49-57 days. Round, slender, medium dark-green pod; 7 to 8 inches long; meaty, excellent flavor, stringless when young. Best harvested immature, as gourmet "filet" bean & Yellow-buff seed. For home gardens or market. G68

Aiguillon: 55 days. An improved strain of Fin de Bagnols. Slender, dark-green pod; 7 to 8 inches long; excellent flavor, stringless when young; should be picked every 2 to 3 days. Strong, compact plant; highly productive over a long season. Easier to grow than traditional cultivars. C20M

Aramis:<sup>5</sup> 70 days. Uniform, round, very slender pods; 5 to 6 inches long; medium-green, slightly streaked with purple. Excellent flavor and texture, both raw and cooked. Rated highest in flavor in a taste test conducted by Organic Gardening magazine. Vigorous, erect, high-yielding plant; adapted to mechanical harvesting; resistant to mosaic and anthracnose. E24, G53M, J39, L91M

Bahalores: 58 days. Round, very slender, medium dark-green pod; 5 1/2 to 6 1/2 inches long; tender, fleshy, extremely flavorful, stringless when immature. Small, white seeds. Best harvested when



4 to 5 inches in length. Resistant to haloblight, anthracnose and bean Common mosaic virus 1 & 2. K49M, S61M

Decibel:<sup>3</sup> 50-55 days. Improved "baby" filet type Very slender, straight, dark-green pods; 4 to 4 1/2 inches long and 1/4 inch in diameter; tender and flavorful, completely stringless. White seeds. Resistant to bean mosaic virus and anthracnose. Recommended for home gardens and specialty markets. C20M, E63D, F63, G13M, G68, G93M, 177, K10, L42, M29

Delinel: 54 days. An improved strain of Fin de Bagnols. Very slender, straight, medium dark-green pod; 7 to 8 inches long; stringless, tender and flavorful; holds well on the vine. Small-seeded. Best picked when 1/3 inch in diameter or less. Black-seeded. Good fresh canned or frozen. Vigorous, erect, highly productive plant; resistant to common bean mosaic and anthracnose. C85M, D11M, D74B, E5T, E97, F70, H42, 164, J39, J73, K10, M46, M49, N81, S95M, etc.

Fin de Bagnols: 55 days. Traditional French "filet" bean. Round, straight, very slender, medium dark-green pod; 7 to 8 inches long, 3/8 inch in diameter; tender, sweet, delicate "beany" flavor. Buff-red mottled seed. High yielding plant; resistant to black root. Bagnols is not far from Paris, and it appears that this bean was a specialty of that region during the 19th century. C20M, C53, E63D, G68, J39, N84, Q34, 577, S55

Finaud: A true "filet" bean that is no more difficult to grow than common snap beans. Very slim, straight pods, 6 to 8 inches long. Holds well on the plant without loss of quality. Produces over 75% beans that rated grade A in taste and texture, compared to only 15 to 25% for the standard cultivars Fin de Bagnols and Triomphe de Farcy, even when picked every 3 days. Developed in Holland. K49Z

Label:<sup>3</sup> 50 days. "Mini" or "baby" filet bean. Straight, very slender pods; only 3 to 4 1/2 inches long and 1/4 inch in diameter when mature; tender and juicy, of excellent flavor. Should be harvested every other day. Sturdy, compact plant, height 2 to 2 1/2 feet; bears heavily. A favorite in upscale Continental markets. C20M, F63, 139, S95M

Marbel:<sup>5</sup> 54 days. New filet bean from Franca Very straight, slender, round pod; 7 inches long, 1/4 inch in diameter; dark-green, prominently streaked with violet; very attractive and flavorful. Seed tan, streaked with dark purple. Compact, upright plant; continuous flowering habit allows for 4 or 5 additional harvests; resistant to common mosaic and anthracnose. S95M

Masai: 60 days. Extra slender filet bean of supreme quality. Only reaches 1/4 inch in diameter. Very fine-textured; distinctive, gourmet flavor. Sturdy, upright plant, early and very high yielding. Resistant to cold weather extremes. Good disease tolerance. The variety grown in places like Kenya to supply the international restaurant trade. L91M

Maxibel: 50-60 days. Hgh quality, extra-long, stringless filet bean. Very attractive, slender, round, dark-green pods; 7 to 8 inches long; firm-textured, tender, very flavorful. Brown mottled seeds. Sturdy, upright plant, high yielding. Highly recommended for home gardens and specialty markets. B6, C20M, D68, F63, G6, G13M, G16, G93M, 177, J20, K10, K50, K71, L89, M46, S95M, etc.

Morgane: 54 days. Extra-long, smooth, solid medium-green pod; length 7 to 7 1/2 inches; slightly more slender than Marbel; very good flavor, excellent quality. Brown-seeded. Semi-concentrated harvest. Resistant to common mosaic and anthracnose. Very promising for commercial production. L94, P59M

Nerina: Filet-mangetout type, bred for both "filet" and whole bean use. Slender, glossy dark-green pod; 4 1/2 to 5 inches long; excellent flavor and quality. Should be harvested daily, before they reach 1 inch in diameter. Uniform pod set; high on the plant. K17M, P59M, Q11M

Nickel:<sup>3</sup> 50-60 days. High quality "baby" filet type. Slender, straight, dark-green pods; 4 to 4 1/2 inches long and 1/4 inch wide; stringless, tender and delicious. Slow to develop seeds. Strong, erect plant, tolerant of hot and cold temperature extremes. Resistant to foliar disease and root rot. Developed by Vilmorin. C53, F63, G13M, I18M, I67M, 177, K10, L89, M46, M49, N16, S95M

Regalfin:<sup>5</sup> Excellent French cultivar. Very long and straight, round, narrow, filet type pods; attractively marbled with violet; of fine quality. Violet-striped seeds. High yielding, produces numerous pods in clusters. Introduced by Vilmorin. C95, G68

Royalnel: Medium early, filet type. Pods exceptionally long, up to 8 inches in length, perfectly round, very slender; flesh meaty, of excellent quality. Black seeded. High yielding plant; resistant to anthracnose and bean mosaic virus; not subject to lodging. May be sown over a long season. G68, S95M

Triomphe de Farcy:<sup>5</sup> 55 days. Traditional standard in France. Round, slender, straight pod; 5 to 6 inches long, 1/4 inch in diameter; rich bright-green, feintly striped with purplish-blue; tender, extremely flavorful, of excellent quality. Seed dark-brown, mottled with purple. Highly productive plant; resistant to black root. A2, B75, C53, E63D, G6, G53M, G68, J39, K71, R47, S55

Vernandon: 55 days. Filet-mangetout type, a cross between a "filet" bean and a conventional snap bean. Round, pencil-thin, straight deep-green pod; 6 inches long; brittle, tender and flavorful. Should be harvested every 2 to 3 days, when pods are less than 1/4 inch in diameter. Vigorous, high yielding plant; resistant to common bean mosaic and anthracnose. K66

#### Pole

Emerite: 55-60 days. Smooth, pencil-thin, very straight, medium-green pods; 7 to 7 1/2 inches long; completely stringless, fleshy, tender, of excellent flavor. Black seeds. Harvest at 4 or 5 inches for best quality. Heavy bearing vine, yields about 20 pounds per square yard. Resistant to common bean mosaic virus. C53, C85M, D68, E63D, H42, I18M, J20, K49Z, K66, L42, M46, N16, S95M

Fortex: 60 days. Round, extra-long, dark green pod; up to 11 inches in length or more; firm-textured, very flavorful, completely stringless at all stages. Walnut brown seed. May be picked when 7 inches long for extra-fine grade "filet" beans. For home fresh use and freezing, and premium markets. Early and very productive. G6, H42, L89, N84, S95M

**PURPLE-PODDED** Sometimes referred to as *magic beans*, purple-podded beans have excellent flavor and turn dark green when cooked. The plants are especially resistant to cool weather conditions early in the growing season. E13G{PR}, N40{PR}

#### Bush

Purple Queen: 52 days. Round, straight, very evenly colored pod; dark purple, fairly glossy; 6 to 7 inches long; stringless, very flavorful. Seed light brown, shaded with purple. Turns dark green when cooked. Very productive plant; dark purple leaves and flowers; tolerant to bean common mosaic virus and cold soil conditions. A75, B8M, C85M, D74B, D76, F82, G13M, G93M, 177, M32, M46, N84, R47, S17

Purple Teepee:<sup>1</sup> 51 days. Round, slightly curved, smooth, dark purple pod; 5 to 6 inches long; stringless, tender and flavorful. Light brown seed. Turns an attractive deep forest-green when cooked. Good fresh, canned or frozen. Compact, high yielding plant; bears pods well above the foliage; resistant to mosaic and white and gray molds. A75, F44, 191, J39, L91M, N81, S55

Royal Burgundy: 55 days. Round, slightly curved, dark-purple pod; 5 to 6 inches long; stringless, tender, very rich flavored. Buff-colored seed. Turns bright green after 2 minutes of boiling, providing a built-in blanching indicator for home freezing. Vigorous, upright plant; height 18 to 20 inches. Developed at the University of

New Hampshire. A16, C44, C53, C85M, C92, D11M, F70, G16, G82, H42, I39, J20, K66, K71, L89, M46, etc.

Royalty: 55 days. Round, variably curved, bright-purple pod; 5 inches long; stringless, tender, brittle; quality good, both fresh and frozen. Buff-colored seed. Can be used raw to add color to salads; turns green when cooked. Purple-tinged, purple-flowered plant; produces short runners that do not require staking; germinates in cold, wet soil; resists bean beetles. Developed by Professor E.M. Meader at the University of New Hampshire. A25, B73M, D65, E24, F80, G6, G57M, G79, G82, K17M, L7M, L79, N16

Sequoia: 53 days. Bush Romano type. Attractive, flat deep purple pods, with typical Romano flavor and meatiness. Turns a deep green when cooked. Purple color makes harvesting easier. High yielding, ornamental plant with purple stems, flowers and leaves; tolerant of cool-weather conditions early in the season. A75, B75, C53, D76, G6, G16, I91, J9M, J20, K17M, K49T, M46

### **Pole**

Blue Coco: (Purple King) 55-60 days. Bluish-purple pods; 6 to 8 inches long; 7 seeds per pod. Retains its crisp texture when pickled; excellent for dill beans. Light-cocoa-colored seed, rich and meaty. Very productive plant; produces well under high temperature conditions. Known in France as early as 1775. WEAVER 1997; L7M, O89, PIG, R47

Dow Purple Pod: 85 days. Flat, deep-purple pod; 7 to 8 inches long; good "beany" flavor. Tan, kidney-shaped seeds; 5 seeds per pod. Vigorous, productive vine, requires strong support; purple-tinged leaves, purple stems and flowers. Heirloom from Illinois. A2, K49T, N84

Louisiana Purple Pod: 67 days. Attractive southern heirloom. Rounded, bright deep-purple pod; 7 to 7 1/2 inches long; stringless when young, very flavorful. Small, light to medium brown seeds. Very productive plant, with bright purple stems and flowers; tolerant to heat and drought. Does well in the North. A2, F73D, L7M

Purple Peacock: 68 days. Round, reddish-purple pod; tender, stringless, of very good quality. Turns an attractive dark-green after 2 minutes of cooking. Can also be used as a shell bean. Extremely productive vine; purple leaves and flowers. Makes an attractive, quick-growing summer screen. A75, B49, D26D, I39, J20

Purple Podded Pole: 68 days. Large, meaty, reddish-purple pods of high quality; stringless and meaty. Blanches to a light green color when cooked. Climbing plant that grows 6 feet or more and yields good crops. European heirloom discovered in the 1930's by Henry Field in an Ozark garden. Favorite of the Seed Savers Exchange. EST, J39, K47, K71

Trionfo Violetto: 62 days. Large, straight pods; 1/2 inch in diameter, 9 to 10 inches long; an attractive, deep purple color; excellent rich flavor; free of strings. Turns bright green when cooked. Straw colored seeds. Vigorous, disease resistant, highly productive vines; widely adapted. Germinates in cooler than normal soil conditions. Good for small gardens. B49, C53, F44, G6, K17M, K23, K46T, LII, L13M, Q11M, S17

Viola Cornetti: A traditional purple-podded climbing bean from Italy. Produces abundant crops of tender, stringless violet-colored pods, of excellent flavor and quality. Turns green when cooked. B49{OR}, R32, S55

Violet Podded Stringless: 67 days. Round, violet-purple pod; 7 inches long; highly refined, tender, stringless pods. Light brown seed. Retains its flavor and high quality even after it becomes very long. High yielding plant; occasionally sets pods that are not completely purple. Germinates well in cool soil; flowers early; tolerant to cool weather. L89

### **WAX-PODDED**

#### **Bush**

Beurre de Rocquencourt: (Golden Rocky) 55 days. Very attractive traditional French cultivar. Round-oval, slender, straight, dark golden-yellow pod; 5 to 6 inches long; stringless, fleshy, flavorful. Black-seeded. Excellent for home gardens and local markets. Upright, very prolific plant; resistant to cold and wet growing conditions early in the season. A2, A75, D68, E24, E63D, H42, J20, K46T, K49M, K49T, L89, M27, M46, Q11M, S55, etc.

Brittle Wax: (Round Pod Kidney Wax, Burpee's Brittle Wax) 55 days. Round, plump, slightly curved, light golden-yellow pod; 6 to 7 inches long; stringless, brittle, fleshy, fiberless, of excellent quality. Seed chalky white with a black-eye, slow to develop. Used as a cut bean and for canning whole. Height 14 to 16 inches. Introduced in 1900 as Round Pod Kidney Wax. HEDRICK 1931; A75, B75, D27, D65, F80, G57M, G87, I67M

Cherokee Wax: 50 days. Thick, oval, straight, golden-yellow pod; 6 to 7 inches long; entirely stringless at all stages, tender, flavorful. Black-seeded. Good shipper. Vigorous, productive plant; produces well during adverse weather conditions; resistant to mosaic virus. All America Selections winner in 1948. A2, C44, C69, D65, D76, G13M, G57M, G71, H33M, H61, I64, J84, K71, M46

Dorabel:<sup>3</sup> 55-60 days. Unique, French filet wax bean. Round, straight, golden-yellow pods; about 4 1/2 inches long; stringless, tender and very flavorful. Attractive and of high quality. White seeds. Resistant to bean mosaic virus, anthracnose and halo blight. Ideal for the "baby vegetable" market. B6, C53, F63, G16, G68, G93M, J20, K10, L42, M29, M46, N16, S95M

Dragon Langerie:<sup>5</sup> (Dragon Tongue, Horticultural Wax Bean, Marveille de Piemonte) 57 days. Long, flat pod; light-yellow, striped with purple, turning red when mature; 7 to 8 inches long; stringless, very flavorful. Light purple-brown seeds, striped with blue. Excellent for French-style sliced beans at the purple-striped stage. Stripes disappear during blanching, indicating freezer readiness. Also good for shelling when the pod turns red. High yielding. A2, A75, B49, B75, C53, D68, E13G{PR}, E24, G13M, H73{PR}, I77, J20, K46T, K49M, L89, M32, M46, N40{PR}, O89, etc.

Earliwax: (Earlywax Golden Yellow) 50 days. Round, straight, golden-yellow pod; 5 to 6 inches long; stringless, tender, fleshy, very flavorful; retains its high quality long after picking. White-seeded. Excellent for canning and freezing. High yielding plant; resistant to bean common mosaic virus. Popular with market gardeners and truck farmers. G79, M46

Eastern Butterwax: 55 days. Slightly curved, plump, round-oval, golden-yellow pod; 6 1/2 to 7 1/2 inches long; stringless, fleshy, brittle, tender, very flavorful. Black-seeded. Excellent for canning and freezing. Compact, high yielding plant; height 14 to 16 inches. M49

Gold Crop: 52 days. Round, slender, straight, deep golden-yellow pod; 6 to 6 1/2 inches in diameter; stringless, fiberless, of excellent quality and flavor. White seeded. Tolerant to mosaic and curly top viruses, and to blossom drop in hot weather. All America Selections winner in 1974. Developed by the USDA and Washington State University. B75, D65, F63, G13M, G16, G82, H85M, L42, L91M

Golden Wax: (Stringless Golden Wax) 50 days. Straight, narrow, oval to flat, golden-yellow pod; 5 to 5 1/2 inches long; stringless, very brittle, of very good flavor and quality. Seed white, with a brownish-purple eye. Good fresh, canned or frozen. Compact, productive plant; height 10 to 14 inches. Popular home garden cultivar. A16, B3M, B73M, C20M, D76, D82, E38, F92, G71, H49, I67M, N16

Goldkist: 50-60 days. Improved Slenderwax type. Round, medium-slender, bright yellow pods; 5 1/2 to 6 inches long; tender, stringless and flavorful. Slow to develop seeds. White seeded.

Suitable for fresh use and freezing. Erect, vigorous, heavy yielding plant. Resistant to rust and common bean mosaic virus. A16, B6, B8M, B73M, D26D, *E91G*, FI, F13, *F63*, F82, G6, G75M, G71, J97M, K10, K73, L42, M49, etc.

Kinghorn Wax: (Resistant Kinghorn Wax) 53 days. Round, nearly straight, bright golden-yellow pod; 6 inches long, 3/8 inch in diameter; stringless, tender, flavorful. White-seeded. Good for processing, canning and freezing. Vigorous, highly prolific plant; height 19 to 22 inches; resistant to bean mosaic virus. 475, C69, C85M, E97, G79, G93M, H95, 167M, K49M

Mini<sup>1</sup>ellow:<sup>3</sup> 52 days. Gourmet "mini" or "baby bean". Produces slender yellow pods, only 4 inches long; very tender and flavorful; requires no snapping. Excellent fresh, frozen, canned or pickled. For longest harvests and best quality, pods should be picked just as they mature. 191

Mont d'Or: (Golden Butter) 57 days. Slightly curved, flat, pale yellow pod; 5 to 6 inches long; entirely stringless when young, fleshy, tender, very flavorful, of excellent quality. Black-seeded. High yielding plant, 12 to 16 inches tall; resistant to mosaic and anthracnose. Originated in France prior to 1885. VILMORIN; B49, *G53M*, R32, R83, S55

Pencil Pod: (Pencil R) d Black Wax) 55 days. Round, narrow, curved, clear yellow pod; 6 to 7 inches long; stringless, very brittle, fiberless, of excellent flavor and quality. Black-seeded. Vigorous, productive, widely adapted plant; height 12 to 15 inches. Very popular traditional cultivar. Introduced in 1900. HEDRICK 1931; A16, A25, 475, C44, C69, C85M, D65, FI, F92, G57M, G79, J20, L7M, M46, M95M, etc.

Roc d'Or: (Rocdor) 55 days. Gourmet French type. Rounded, very slender, straight, bright golden-yellow pod; 6 1/2 to 7 inches long, 1/3 inch in diameter; stringless, of superior texture and flavor. Black-seeded. Excellent fresh, frozen or canned. Upright, highly productive plant; resistant to anthracnose and mosaic virus; tolerant to cool, wet conditions. C85M, D76, E24, *E91G*, E97, G6, 139, 177, J73, K49T, K66, K71, L42, M46, *S95M*, etc.

Roma Gold: 55 days. Yellow-podded Roma type. Long, flat, golden-yellow pod; stringless, fleshy, tender, of excellent flavor; retains its quality and flavor even when large and plump. Upright, bush-type plant; easy to pick; very productive over a long season. 191, L79

Slenderwax: 56 days. Uniform, straight, medium-round pods; 5 inches long; stringless, fiber less, of very good flavor. Contains the "instant wax" gene, which turns the pod from green to golden-yellow very early in its development. White-seeded. High yielding plant; height 20 inches; resistant to mosaic, tolerant to heat and white mold. Released by Cornell University. *C20M*, F13, G57M, G87, *H33M*, K71, *L10*, M29, M46

Sungold: 55 days. Straight, round, bright yellow pods; 5 to 6 inches long; tender, rich in flavor, stringless, quality excellent. Attains good color early. White seeds that develop slowly. Upright, compact plant; height 18 to 20 inches. Resistant to common bean mosaic and the N. Y. 15 strain. *C20M*, *G13M*, G57M

Topnotch Golden Wax: (Improved Golden Wax) 50 days. Straight, semi-round to flattened pods, 5 1/2 inches in length; pale yellow in color; very meaty, brittle, with a rich buttery flavor; stringless. White-seeded. Compact, productive plant; very disease resistant. Improved strain of Golden Wax. 475, D65, FI, G57M, G79, H54, J9M, K27M, M46, M95M

Wax Romano 264: 55-60 days. Yellow podded version of Roma II. Broad, flat, light golden-yellow pods; 5 1/2 to 6 inches long. Very crisp and succulent. Has a meatier texture and is more flavorful than other wax beans. White seeds. Vigorous and productive, resistant to bean mosaic virus. E97, F13, G6, G16, G82, G93M, *I64*, 167M, J20, J97M, K10, L42

White Hull Bunch:<sup>5</sup> Distinctive creamy yellow, almost white pods that develop a rich pink color along the midrib when mature. Suitable for both fresh consumption and for canning or freezing. Originated in the garden of Mrs. Lonnie Davis of Sparta, North Carolina. L4

### Pole

Burro d'Ingegnoli: Large, slightly curved, flat pods; 1/2 to 1 inch in diameter, 7 to 8 inches long; deep golden-yellow in color; fleshy and stringless with a rich, sweet, delicious flavor. First harvests in about 78 days, continuing for 50 to 60 days. Very famous in Italy. Q11M, S55

Goldmarie: 55 days. Very attractive golden Romano type. Large, slightly curved, flat, bright golden-yellow pods; 8 to 10 inches long and 3/4 inch wide; tender, crisp and delicious, quality excellent. White seeds. Vigorous plant, very high yielding, produces over a long season. Suitable for outdoor or greenhouse production. C85M, E33, F73D, G6, J9M, J39, L89, N81

Kentucky Wonder Wax: (Kentucky Wonder Yellow Wax) 68 days. Slightly curved, round-oval, light-yellow pod; 7 to 9 inches long; stringless when young, very brittle and fleshy, fiberless, of good quality and flavor. Brown-seeded. Also used as a green shell bean. Very popular traditional cultivar. Introduced in 1901. HEDRICK 1931; A25, 475, B73M, C44, D26D, D76, G16, G57M, *I64*, K49M, L42, M46, M95M

Marvel of Venice: (Wonder of Venice, Meneille de Venise, Meravigliadi Venezia) 70 days. An old traditional Italian cultivar. Yellow Romano type. Broad, flattened, medium-yellow pod; 7 to 7 1/2 inches long; brittle flesh, excellent distinct flavor. Black-seeded. Can also be used as a green shell bean. Moderately productive plant; resistant to mosaic virus. B8, Q11M, R32, *S17*, S55

Neckargold: 75 days. Similar to Neckarkonigin green-podded pole bean. Very long, round, crease-backed, deep butter-yellow pod; 7 to 8 inches in length; stringless, of excellent quality. White-seeded. Should be harvested when young. Vigorous, high yielding vine; height 8 feet; somewhat heat tolerant. C85M, N81, Q11M, S61M

Paille d'Or: (Gold Straw) 60-68 days. Long, flat, golden-yellow pods; 6 to 8 inches in length; stringless, of excellent quality. Higher yielding than Kentucky Wonder Wax. DI 1M, F70

Yellow Anellino: (Yellow Gancetto) Unique, crescent shaped, bright pale-yellow pods; 1/4 to 1/2 inch in diameter, 3 1/2 to 4 1/2 inches long; rounded in cross-section, fleshy, free of strings, rich in flavor. First harvests in about 80 days. Italian heirloom, becoming popular with American chefs. C53, G44M, L13M, Q11M, *S17*

### CODES FOR SPECIAL TYPES

1. Teepee
2. Easy-Pick
3. Mini or Baby
4. Salad Type
5. Striped

## KIWI {GR}

### ACTINIDIA SPP.

#### FUZZY KIWIS

The common kiwi, introduced into cultivation by Alexander Allison of New Zealand prior to 1910 and now marketed worldwide. Unlike the hardy kiwis, the skin must be peeled before consumption. Keeps extremely well, up to four months in cool storage. (A. deliciosa)

**FEMALE**

Abbott: Small to medium-sized, oblong fruit; skin brownish, with especially dense, long, coarse hairs; flesh light-green, flavor good; ripens in early M<sup>^</sup>, keeps well. Resembles Allison. Vine vigorous and productive; precocious; early flowering; produces small fruit unless thinned. Medium chilling requirement. Originated in New Zealand. Introduced in the 1930's. MORTON 1987a, SALE; H4, H53M{SC}, J51P{SC}, *M81M*, 097

Allison: Fruit oblong, slightly broader than Abbott; of medium size, with densely hairy, brownish-skin; flesh light-green, of good flavor; ripens in early May; keeps well. Vine very vigorous, prolific; blooms later than Abbott. Formerly very popular but has lost ground to Hayward. Originated in New Zealand. Introduced in the early 1930's. MORTON 1987a; H4, H53M{SC}

Bruno: Fruit large; elongated cylindrical, broadest at apex; skin darker brown than other cultivars with dense, short, bristly hairs; flesh light-green, of good flavor; ripens in early May. Vine vigorous and productive, blooms with or slightly after Allison. Preferred by some processors because a large number of even slices can be obtained from each long fruit. Relatively low chilling requirement. Also used as a rootstock. MORTON 1987a, SALE; H4, H53M{SC}, *H71{S}*, *M81M*, N84{S}, 093{S}, P17M{S}, *Q32{S}*

Chico Hayward: (Chico) Large, broad oval fruit; skin pale greenish-brown with fine, silky hairs; quality excellent; ripens late. Similar, if not identical to Hayward. Vine bears moderate crops, doesn't require as much thinning as others. Tends to produce some odd-shaped fruit. High chilling requirement. Preferred commercial cultivar in California. Originated in Chico, California by R.L. Smith, Chico Plant Introduction Station. *B58M*, D34M{PR}, E74{PR}, I83M

Dexter: Fruit similar to Hayward, only slightly more elongated; skin hairs stiff and generally come off readily during commercial packing operations. Relatively low chilling requirement; adapted to warm-winter areas. Originated in Queensland, Australia by John Dexter as a seedling of Hayward. H4, H53M{SC}

Elmwood:<sup>1</sup> Extra large fruit, many up to 9 1/2 ounces each as compared to those of Hayward which average 3 to 3 1/2 ounces each; somewhat cylindrical with a very slight narrowing at the midpoint. Vine precocious, usually bears the first year after being grafted; produces few doubles or fens; wood an unusual off-white color. Highly recommended for southern California. H4, H53M, H53M{SC}, I49M, *I49P*, I66T, J51P{SC}

Grade: Fruit elongated, tapers distinctly towards the stem end; similar to Bruno, but with more width and substance. Ripens two weeks before Hayward. Low to medium chilling requirements. A selection made by Auckland, New Zealand nurseryman John Grade. SALE; H4, H53M{SC}, J51P{SC}, 097

Hayward: Very large fruit; broad oval, with slightly flattened sides; skin light greenish-brown with dense, fine, silky hairs; flesh light-green, of superior flavor; ripens in early May; keeps better than any other current cultivar. Vine moderately vigorous and productive; blooms very late. Standard commercial cultivar in New Zealand, California, Italy and other areas. MORTON 1987a, SALE; A88M, B74, B93M, G17, H4, H53M{SC}, I49M, I83M, J51P{SC}, N84{S}, 093{S}

Koryoku: (Japan-86) An excellent new cultivar developed in Japan. The fruit is reportedly better tasting and larger than any cultivar presently marketed. It also ripens 10 days before Hayward. One of the sweetest of the true kiwis, measuring 23 to 24% brix. Has produced annually in southern California. H53M{SC}

Kramer: Large, Hayward type fruit; more solid in the shoulders; of excellent quality. Vine prolific; produces few doubles or fans. Originated in Te Puke, New Zealand by John Kramer as a selection of Hayward. Seems to have lower chilling requirements. H4, H53M{SC}, S59

Monty: Fruit small to medium-sized; oblong, tapering slightly at the stem end; skin brownish with dense hairs; flesh light-green, of indifferent quality; ripens in early M<sup>^</sup>. Vine highly vigorous and productive; has a tendency to overcrop, which can adversely affect fruit size; very late blooming. Medium chilling requirement. Originated in New Zealand. Introduced about 1957. MORTON 1987a, SALE; H4, H53M{SC}, J51P{SC}

Saanichton 12: Grown on Vancouver Island, British Columbia, Canada for over 13 years. The fruit is large and sweet and the plant has not been injured by winter temperatures that have damaged other cultivars. Recommended for the backyard grower and small orchardist. Also being tested by the Saanichton Agriculture Canada Research Station for commercial production and as breeding material. B74, C34, H53M{SC}, I49M, *I49P*, I66T, 174, J51P{SC}, J61M, NO

Tewi:<sup>1</sup> (Tenerife Kiwi) Medium-sized, oblong fruit, similar to Hayward but somewhat smaller; flesh brilliant green, of good flavor. Vine moderately vigorous; precocious; prolific, produces up to 80 pounds of fruit under ideal conditions; has a very low chilling requirement; blooms very early. Originated in the Canary Islands as a seedling of Hayward. Introduced into the United States in 1980 by Horace Whittaker of Carpenteria, California. H4, H53M{SC}, I83M

Vincent:<sup>1</sup> Medium-sized fruit; resembles Abbott and Allison; flesh sweet, flavor very good. Vine very prolific, sometimes to the point of negatively affecting fruit size. Very low chilling requirement, 200 hours or less compared with the 600 or more needed by most cultivars. Suited to warm winter areas. Originated in Yorba Linda, California by Judge Raymond Vincent. A88M, D57, E87, *G49*, H4, H53M{SC}, *H78*, I83M, LI, N20

**MALE**

California: The male most commonly used in California for pollinating the Hayward and Chico Hayward cultivars. Pollinates up to 8 females. Also suitable for pollinating Monty. Originated in Chico, California probably from seeds collected in China by E.H. Wilson. *B58M*, C34, J51P{SC}

Early CC: Several early selections which might show promise for the warmest winter sites such as southern Florida. Begins blooming in February in southern California. The early budding of these strains makes them susceptible to any spring frost, but the plant recovers and reblooming takes place as usual in May. H53M{SC}

M Series: Including clones M51, M52 and M56. Selected flowering clones of an established long-flowering ability and high pollen potential suitable for the pollination of female cultivars available at the present time. Particularly useful for pollinating Hayward. For optimum results under various climatic conditions, a small number of all three M Series clones should be planted. H53M{SC}, 097, S59

Male: (All Purpose) Non-fruiting, all purpose male used as a pollinator for female vines. Generally, one male plant is recommended for every 8 female vines. Can also be used as a pollinator for *A. arguta* hardy kiwis. A88M, I49M, *I49P*, I66T, *M81M*, NO, N20, 097

Matua:<sup>1</sup> Long-flowering type, flowers prolifically over a long period. Along with other long-flowering types, Matua is generally regarded as the best pollinator for all commercial cultivars, including Hayward. Flowers produced in groups of 1 to 5, usually 3; peduncles short-haired. Low chilling requirement, 100 hours or less. MORTON 1987a, SALE; G17, H4, H53M{SC}, I83M, J51P{SC}, J61M, P68M

Tomuri: Late-flowering type, with a relatively small number of flowers that bloom late in the season. Flowers in groups of 1 to 7, usually 5; peduncles long-haired. Originally selected as a pollinator for Hayward. The standard late season pollinizer. Low chilling requirement, 100 hours or less. MORTON 1987a, SALE; A88M,

B74, B93M, E87, *G49*, H4, H53M{SC}, H78,183M, J51P{SC}, LL, N20, N84, R77

#### SELF-FERTILE

Blake: Fruit relatively small, tends to taper near the blossom end; ripens to a 6.5 brix 6 to 8 weeks before Hayward thus substantially extending the fresh kiwifruit season for the backyard grower. Vine precocious, can produce a crop in as little as one year after being grafted; blooms very early, but is reliably pollinated by Matua; reportedly self-fertile; prolific. Originated in the San Francisco Bay area. H4, H53M{SC}, J51P{SC}, J61M, *M81M*

Jenny: The first reliably self-fertile fuzzy kiwi. Produces small fruits, about the size of a medium-sized nut, much smaller than standard cultivars. Begins ripening in November. Moderately vigorous vines. P68M

#### HARDY KIWIS

Small fruited kiwis that have the advantage of growing in areas too cold for the common kiwi. The fruit is smooth-skinned and can be eaten out of hand like a grape, without any peeling. It is also much sweeter than the common kiwi but does not keep nearly as long in storage. Sometimes called "baby" kiwis.

ARGUTA This is the Actinidia species most commonly called the hardy kiwi. It is winter hardy to Zone 4 if the vine is properly hardened off. However it has a bad habit of leafing out much too early in the spring and the whole plant is sensitive to spring frosts. This early breaking dormancy problem seems to exist in Zones 4 through 7. (*A. arguta*)

#### *Female*

74-8: Short, elliptical fruit, above average in size; flesh firm, sweet, of very good flavor and quality. Vigorous, productive vine; hardy and adaptable. One of the best of the 74 series originating at the USDA Chico Plant Introduction Station in California. M16

74-49: (Fortyniner) Large, flat attractive fruits, as short as they are wide; skin smooth; flesh aromatic with a distinctive sweet flavor; ripens in mid-season. Vine vigorous; a reliable and heavy bearer of long fruit clusters. Originated in Chico, California. Selected for productivity and high fruit quality. D37, E87, F16, H53M, H53M{SC}, *I49P*, I66T, M16

74-55: (Fifty Five) Medium to large, round, smooth fruits; flavor sweet; ripens somewhat before 74-49. Quality very good. Vine vigorous and productive. Originated at the USDA Chico Plant Introduction Station in California. D37, F16, M16

74-62: Exceptionally long, cylindrical fruits with very smooth, clear-green skin. One of the 74 series selected at the now defunct Chico, California Plant Introduction Station. Recommended for its vigor, productivity and flavor. B74

Ananasnaya: (Michurin Ananasnaya, Michurin's Pineapple, Anna) Medium-sized, oval fruit, 1 1/2 inches long and 1 inch in diameter; skin dark green, smooth; flesh light-green, juicy, sweet, has a distinct pineapple-like aroma and flavor. Vine very hardy, will tolerate temperatures of -30° F.; a reliable bearer, often produces fruit in bunches similar to grapes. Believed to be a hybrid of *A. arguta* and *A. kolomikta*. Developed by the noted Soviet plant breeder I. V. Michurin. MICHURIN; A91, B73M, B74, C34, D37, E87, F16, F43M, H53M, 146, I49M, 174, 178, 183M, J51P{SC}, K67, M16, etc.

Arbor-Eat-Um: (National Arboretum #1) Large, elongated fruit with a fine sweet flavor. Ripens in midseason. Vigorous and productive. Original plant found growing at the National Arboretum in Washington, D.C., apparently a seedling of unknown parentage. D37

Dumbarton Oaks: Originally from an old planting found in a garden in the Georgetown area of Washington, D.C. Has been growing there since 1940: The fruit has an excellent sweet flavor and

is above average in size. Early ripening. Moderately productive. C58, D37, F16, M16

Geneva #1: Small to medium-sized fruit of high quality, about 1 inch long, similar to Meader Female; ripens late. Strong, vigorous vine with good cold tolerance. Originally from the Nov York Experiment Station in Geneva, New York. E87, H4, H53M{SC}

Geneva 02: Small to medium-sized fruit of high quality, about 1 inch long, similar to Geneva #1; ripens late, in late September and October. Very vigorous and productive vine. Good cold tolerance. Originated at the Geneva, Nov York Agricultural Experiment Station, by George Slate. H4, H53M{SC}, J51P{SC}, M16

Jumbo: One of the largest-fruited of the hardy kiwi varieties. Attractive, elongated fruit, weighing up to 1 ounce; sweet and flavorful. Preferred by some for its mild flavor, milder than that of Anna. Productive vine. Has potential as a commercial variety. Originated in Italy. E87, I49M, *I49P*, I66T, 174

Langer: (Hood River) Bears medium-sized fruit of fine quality. Strong, vigorous grower. Has endured summer drought, deep snow, severe cold and wind, and other adverse conditions. Original tree is from an old homestead high in the Cascade mountains. H4,183M

Meader Female: Medium-sized fruit; sweet and flavorsome; ripens very early, at the end of August in New Hampshire. Hardy to -25° F. Introduced by Professor E.M. Meader of Rochester, New Hampshire after 20 years of selection and testing. Selected for productivity and high fruit quality. C58, F16, H53M{SC}, M16

Michigan State: (MSU) Medium to large, ribbed fruit, 1 1/2 inches long and 1 inch in diameter; flavor excellent when ripe, good even when not fully ripe. Vine vigorous; perfect flowered; reported to be partially self-fertile, but produces best when planted with a male. Originally from Michigan State University. Possibly a hybrid between *A. arguta* and *A. kolomikta*. D37, F16, H53M{SC}, 146, M16

Rosy:<sup>2</sup> New red-fruited kiwi which originated in Italy. Very large fruit, weighing up to 20 grams. Attractive reddish-green skin and flesh. Sweet and flavorful. Ready for harvesting in mid to late September. Vigorous and productive plant. Easy to grow and free of pest and disease problems. I66T

#### *Male*

74-32: One of the males selected at Chico, California to pollinate females in the 74 series. Similar to 74-8; possibly a seedling of common origin. Prolific, early bloomer. Vigorous growing vine. Prefers moist, well-drained soil and full to partial sun. Also pollinates other types, like Ken's Red and *A. arguta* var. *cordifolia*. F16, I49M

74-46: Male used to pollinate females in the 74 series. Selected for its exceptionally large number of flowers, an advantage for males because it extends the flowering season. Originated at Chico, California. F16

Kiev: Selected strain that is useful as an all-purpose pollinator. Blooms at a young age and the bloom time overlaps that of many female cultivars. Originated in Kiev, Ukraine. I66T

Male: Non-fruiting, all purpose male used a pollinator for female vines. One male can pollinate up to 8 females. Will also pollinate Hayward and other fuzzy female kiwis. B74, C34, C58, D37, F43M, H4, H53M{SC}, 146, I46{PO}, I49M, *I49P*, 174, 178, J51P{SC}, J61M, K67, *M81M*, etc.

Pacific: Male *arguta* with a long flowering period. Good pollinator for female *argutas*. Has become quite popular along the Pacific Coast where it is used in the newly developing, commercial hardy kiwi plantings. H4,183M

*Self-Fertile*

119-40-B: Self-fertile cultivar originally from the Arnold Arboretum in Massachusetts. Vigorous grower with large, waxy leaves. Will pollinate other cultivars of *A. arguta*. When using this cultivar for fruiting, it is best to have a male pollinator to extend the crop. F16, H4, H53M{SC}, 146, J51P{SC}, M16

Issai: Fruit long, up to 1 3/4 inches; sweet, of very good flavor, quality high; seedless when not pollinated. Vine short and compact; bears fruit without a male pollinator, often the first year after grafting, however planting with a male will increase yields. Ideal for the gardener with limited space. Originated in Japan. A88M, B75, D37, D76, E87, E97, F16, H4, H53M{SC}, 146, 149M, 174, 183M, L33, M16, NO, etc.

**KOLOMIKTA** Also called *arctic beauty kiwi*, this species is reportedly hardier than *A. arguta*, to Zone 3. It is also a striking ornamental, the growing tip and young leaves being covered with magenta hairs and the leaves of the adult male plant variegated with red, white and green. Growing to only 10 feet it is easier to protect in very cold climates and may be suitable for indoor culture. (*A. kolomikta*)

*Female*

Arnold Arboretum: (A/O) Small to medium-sized fruit of fine quality; very sweet; ripens early. Vigorous, early bearing and productive. Originally from the Arnold Arboretum in Massachusetts. C58, E87

Aromatnaya: Medium-sized, very sweet fruit; sugar content 20% when ripe, medium high vitamin C content; ripens early to mid-August. Vigorous and exceptionally productive vine. Selected in the former Soviet Union for good fruit characteristics. J51P{SC}, I66T, M16

Krupnoplodnaya: (Krupnaya Michurinskaya, Large Fruited, Michurin's Large) Very large, smooth-skinned fruit; sugar content 14% when ripe, high in vitamin C; flavor excellent; ripens in late August. Vine moderately vigorous, very productive; ornamental; cold hardy to -35° F. Originated in Leningrad, Russia ty I.V. Michurin. B74, C58, D37, I49M, I66T, 174, J51P{SC}, M16, N24M

Matovaya: Small to medium-sized, very sweet fruit; sugar content 16% when ripe, very high in vitamin C; ripens very early, in early to mid-August. Selected in the former Soviet Union for good fruit characteristics. I66T

Nahodka: Medium to large fruit with sweet, tender flesh; sugar content 15 1/2% when ripe, medium high in vitamin C; ripens in mid-August. Vigorous and productive vine. Selected in the former Soviet Union for good fruit characteristics. I66T

Pautske: Reportedly a large, high-quality fruit. Vine very vigorous. Originated in Lithuania by plant breeder V. Pautske. One of the most vigorous growing of the kolomikta cultivars. I49M, M16

Pozdnaya: (Leningrad Late) Medium to large fruit, of a pleasant flavor; ripens mid to late September. Bears very abundant crops. Originated in the East Siberian taiga. Introduced ty I.V. Michurin. Selected for fruit size and taste. H53M{SC}, N24M

Rannaya: (Leningrad Early) Fruit of pleasant flavor, ripens in the middle of August. Vine produces abundantly; pollinates Urozhnaya, Pozdnaya and Oluyhckos. Originated in the East Siberian taiga. Introduced ty I.V. Michurin. MICHURIN; H53M{SC}

Sentyabraskaya: (September) Medium to large fruit, very sweet and flavorful; sugar content 18% when ripe, medium high in vitamin C; ripens in late-August. Productive vine; notable for its extensive variegation. Selected in the former Soviet Union for good fruit characteristics. I49M, I66T, J51P{SC}, M16, N24M

Urozhnaya: (High-Yielding) Medium to large fruit with an excellent sweet flavor; contains 18 1/2% sugar when ripe; also high in vitamin C. Ripens early, beginning in the middle of August. Vine bears a very abundant and regular annual crop. Originated in the East Siberian taiga. Selected for fruit size and early fruiting ty I.V. Michurin. MICHURIN; U7G{SC}

*Male*

All Purpose: Non-fruiting, all purpose male used a pollinator for female vines. Pollinates up to 8 female vines. Also a fine ornamental with striking pink, white and green variegated leaves. B74, C34, C58, D37, E87, H4, H65, 146, 149M, I49P, I66T, J61M, M16

**OTHERS**

Hardy Red:<sup>2</sup> (*A. purpurea*) Striking cranberry-red fruit with a delicious sweet-tart flavor. Good sized fruit. Highly rated in taste tests. Ripens in October with *A. arguta* varieties. Vigorous and productive. Very handy, has withstood temperatures cf -25° F. Pollinated by *A. arguta* males. C34, E87, 146, 166T

Ken's Red:<sup>2</sup> (*A. arguta* var. *cordifolia* x *A. melanandra*) Unique red-fleshed kiwi. Small, oval fruit; thin, palatable red skin; mild, very sweet red flesh. Only turns red during the latter stages of maturity, indicating ripeness. Vine moderately vigorous; productive; resembles *A. arguta* var. *cordifolia*. Originated in New Zealand by Ken J. Nobbs. Good specialty market potential. B74, D37, F16, H53M{SC}, I49M, I49P, I66T, 174, J51P{SC}, J61M, K67, LI, N24M

Red Princess:<sup>2</sup> Sibling of Ken's Red developed by Ken J. Nobbs of New Zealand, by crossing an *A. arguta* var. *cordifolia* female with an *A. melanandra* male. The fruits are generally smaller than Ken's Red and have a less pronounced kiwi flavor. Tends to have a mixture of both red and green coloration, both on the skin and within the fruit. H53M{SC}, 146

**SOFTHAIR KIWIS**

A unique class of kiwi, often with distinctive colored flesh.

The fruits resemble fuzzy kiwis in outward appearance but have much finer hairs. Blooms earlier in the spring, and the fruits mature earlier in the fall. More susceptible to bud damage caused by late winter cold snaps Yellow, orange and red forms would appear to have good potential for specialty markets. (*A. chinensis*)

Canton:<sup>1 2</sup> Fuzzless fruit of typical kiwi shape, somewhat smaller than First Emperor; yellow-fleshed when ripe. Imported into the United States from Japan where it is claimed that some red colored cells can appear within the flesh. To date, this has not been observed in fruits grown in California. Low chilling requirements. H53M{SC}, H53M{S}, J51P{SC}

Ding: Excellent female cultivar. Use Dong as a pollinator. In field tests in North Carolina the plants were unharmed by temperatures just below 0° F, while the regular kiwi was killed. Originated in China. B96

Dong: Male vine used as a pollinator for Ding. In field tests in North Carolina the plants were unharmed by temperatures just below 0° F, while the regular kiwi was killed. Originated in China. B96

First Emperor:<sup>13</sup> Fuzzless fruit of typical kiwi shape; completely yellow-fleshed when ripe with a brix reading of 16 to 18. The largest fruiting of the colored *chinensis* clones, often weighing 4 ounces or more. Blooms several weeks before Hayward, and ripens about one month sooner. Low chilling requirements. H53M{SC}, H53M{S}, J51P{SC}

Male: Non-fruiting, all purpose male used a pollinator for female vines. Will generally pollinate up to 8 female vines. Will also pollinate Hayward and other fuzzy female kiwis. H53M{SC}

Mandarin:<sup>14</sup> Large fruit, sometimes with a pronounced bulge in the center. Sweeter than Canton or First Emperor, with sugar levels near 20 brix. Must be thinned by two thirds or more to reach accept-

able size. Extremely prolific, much more so than Canton or First Emperor. Low chilling requirements. H53M{SC}, H53M{S}, J51P{SC}

#### CODES FOR SPECIAL TYPES

1. Low-Chill
2. Red-Fleshed
3. Yellow-Fleshed
4. Orange-Fleshed

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## KOHLRABI {S}

### BRASSICA OLERACEA GONGYLODES GROUP

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#### HYBRID

**Express Forcer:** 43 days. Extra early forcing type. Smooth, flattened, globe-shaped bulbs; up to 4 inches in diameter; light green skin and crisp white flesh; excellent quality. Short green tops, suitable for steaming or stir-frying. Very slow bolting. Recommended for fresh market. Very popular in Europe, where it's the market leader in its class. C20M, 191, M29, N81, S63M

**Grand Duke:** 48 days. Smooth, uniform, round bulbs; can grow to 4 inches in diameter without becoming woody. Vigorous, upright plants withstand cold soils, light frost, adverse weather conditions and are tolerant to black rot. Good vigor and uniformity. Late in bolting. Will produce a larger crop in less space than Early White Vienna. All America Selections winner in 1979. A87M, C44, D11M, D65, F13, F70, G16, G71, H33M, H61, J14{PL}, K10, K73, M46

**Kolibri:** 45 -50 days. Refined purple hybrid type. Large, flattened globe-shaped bulbs with uniformly deep-purple skin; nearly fiberless, crisp, clear white flesh. Medium-sized tops. Matures to a large size without loss of interior quality. Excellent for fresh market. Very high yielding. Developed in the Netherlands. D68, G6, 118M, J20, K50, K66, N81

**Kolpak:** 38-44 days. An excellent white hybrid noted for its earliness, uniformity and sweet flavor. Tender flesh does not become pithy or fibrous. Fine-stemmed foliage; flattened-globe shape. Best harvested when 2 to 3 inches in diameter. Suitable for both transplanting and direct seeding. Tolerates dense planting. J20, L89C

**Purple Danube:** 46 days. Smooth, refined round bulbs with fine-stemmed foliage. Superior tenderness and freedom from fiber. Excellent quality. Good uniformity in plant habit, bulb shape and maturity. More vigorous and easier to grow than Early Purple Vienna with deeper and more attractive color. A87M, G13M, 191, K16M, K73

**White Danube:** 45-50 days. Early, uniform, refined hybrid type. Smooth, flat-round bulbs, pale whitish green skin; slender, upright petioles. Sweet, bright white flesh, virtually free from fibrous and pithy tissue. Interior quality holds up well as bulb matures. Slow to bolt. AI, A87M, C20M, G13M, K16M, K73, L42, N81, N84, R32

**Winner:** 60 days. Vigorous plants produce large, perfectly uniform, semi-globular pale green bulbs with few leaves and mild, tender, sweet flesh. Excellent quality and yields. Remains tender until reaching a diameter of at least 3 inches. Resists becoming woody for many months after maturity in the fall. E75{PL}, G6, G13M, G82, J20, K10, K50, S63M

#### OPEN-POLLINATED

**Early Purple Vienna:** 60 days. Globe-shaped bulbs with a purplish-red color and attractive greenish-white interior flesh. Leaves are smooth and few in number. Similar to Early White Vienna except for the color of the skin. Standard purple-skinned cultivar. Known prior to 1865. BURR; A16, A87M, B78, C44,

C85M, E24, E38, FI, F80, F82, G16, G71, H33M, 184, K49M, L7M, M49, etc.

**Early White Vienna:** 55 days. An early dwarf cultivar with short tops and glos<sup>^</sup>, white to very pale green, medium-sized bulbs. Crisp, tender, succulent white flesh with a mild turnip-like taste. Should be harvested at about 2 1/2 inches in diameter for best quality. Standard white-skinned cultivar. Known prior to 1865. BURR; A16, B75M, C44, D82, E24, E38, FI, G16, G71, G93M, H33M, H61, 139, 184, K49M, etc.

**Gigante:** \* 4 \* 1 (Gigant Winter) 130 days. Very large root, typically grows 8 to 10 inches in diameter; average weight 15 to 20 pounds, yet it remains fine-grained and is of good quality throughout. Can be used fresh or cooked at any size, from small to large. Traditionally used for sauerkraut in central Europe. Resistant to root maggots. Excellent for winter storage. Selected from a Czechoslovakian family heirloom by Professor E.M. Meader. D65, E24, F73D, 139, 181, J9M, L7M, Q34

**Granlibakken:** 45-50 days. Medium-sized, uniform, medium-green bulbs. Tender, very smooth, creamy white flesh; mild, sweet flavor. Holds its quality longer than other types when left in the ground. Does not become tough and hot. Large leaves are excellent for greens. Originally from northern Europe. C85M, D26D, D76, G87, 139, M46

**King of the Market:** 50-60 days. Produces very large, greenish bulbs of good quality. Long leaves which can be used for greens. Though slightly late in maturing, it is a very heavy bearer. One of the most popular cultivars in India. N91, Q18, R0, Q45M, R50

**Peking:** (Beijing) 50-55 days. Medium-sized bulbs with pale green skin. Very crisp, pure white flesh, low in fiber; of fine quality and mild, delicious flavor. Medium in maturity. Rare cultivar from China, where it is very popular. Suitable for growing in tropical areas, from spring through fall. D55, F80, L59, S70

**Rapid:** 45 Days. High quality early kohlrabi. Plants grow 15 to 18 inches tall and produce reddish-purple bulbs, 3 inches in diameter, with smooth, crisp, sweet white flesh. Attractive raw, for dips and salads, or cooked like turnips. Resistant to bolting and becoming woody early in the season. L89

**Superschmelz:** Very large, round, green bulb; 6 to 10 inches in diameter; up to 10 pounds, yet is long-standing, remaining tender and not becoming woody. Excellent mild, sweet flavor fresh; fair frozen. Better tasting than other very large cultivars such as Purple Speck. H42, L89, N24M

#### CODES FOR SPECIAL TYPES

1. Winter

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## LEEK {S}

### ALLIUM AMPELOPRASUM PORRUM GROUP

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**Albinstar:**<sup>2</sup> 110 days. Developed in Holland for the French "baby" leek market. Tender, succulent young leeks are harvested when they reach the thickness of a marker pen. Easy to clean as young leeks do not form bulbs. Quick growing, vigorous, strong germinating. May also be left to form mature leeks. K66, R32

**American Flag:** 130 days. Large, thick stalks; 7 to 9 inches long, 1 to 2 inches in diameter, blanching to a clear white; leaves medium blue-green. Fine, mild flavor. Strong grower; 15 to 18 inches tall; very hardy and cold resistant. Standard local market and home garden cultivar. B73M, C20M, FI, F82, G16, G71, H21, H54, 164, 177, J84, K23{PL}

**Arkansas:** 110 days. Improved late maturing, winter storage type with a high tolerance of frost. Large white shafts, about six inches

long, virtually non-bulbing; semi-upright, deep blue-green foliage. Excellent color. Very productive and has good disease tolerance. C85M, F63, 191, K10, K50, K73, L42, N52

Blue Solaise: (Bleu de Solaise) 140 days. A 19th century French heirloom with 4 to 6 inch long stems and tops that turn almost violet with cold autumn temperatures. Attractive as well as flavorsome; excellent in soups. Very hardy and cold resistant. Perfect for harvesting in early winter. C53, E63D, F73D, G68, G68{PL}, K49M, P59M, S95M

Carentan: (De Carentan, Carentan Winter) 95 days. Long, thick, tender, creamy-white stalks, 2 inches in diameter, topped by deep blue-green foliage. Mild flavor, delicate enough to be enjoyed raw in salads and garnishes. Vigorous; fast-growing; very productive and adaptable. For fall and winter use. A66, C20M, C95, G57M, Q11M

Carina: Large, cold-hardy, late fall and winter leek, developed especially for longer stalks. Rather narrow, semi-erect leaves of an attractive blue-green color. Long, tender, non-bulbous stalks of high quality. Matures in autumn and will stand in the ground through winter. Heavy yielding and tolerant of black spot and virus. *Al*, C20M, K50, K73, M29

Durabel: Non-bulbous stalks; five inches long to the first joint. Has a much milder flavor and is more tender than other winter-hardy cultivars, which are bred to endure harsh weather. Slow-growing and vigorous; exceptionally late-bolting, remaining in good condition in the garden until late April. J9M, L89

Electra: 145 days. Long, thick white stalks of fine quality. Attractive, broad, dark-green foliage. Can be harvested early, yet is one of the best for fall and winter crops. Very good for freezing. Will also store nearly all winter. Fast-growing, cold resistant, dependable and very adaptable. Of French origin. F13, P59M

Elephant: (Elefant) 85 days. A large, vigorous, fairly early cultivar with extra thick, smooth, medium length stalks without bulbous ends. Light green foliage. Recommended for late summer and fall harvest, or may be stored for winter use. Of French origin. D11M, F70, K49M, 089

Gennevilliers: (Gennevilliers Splendid) A strain of an old French cultivar selected for its long, relatively slender shaft which grows to 10 inches and is free of bulbing. Attractive, upright, dark blue-green foliage. Recommended for mild climates, where it may be left in the ground for winter use if temperatures remain above 30° F. G68, N84, S55, S95M

Giant Carentan: (Monstrueux de Carentan) 140 days. Stem short, very thick, seldom exceeding 6 to 8 inches in length, with a diameter of 3 inches or more in well-grown plants, and occasionally even larger. Leaves very dark bluish-green. Very hardy, suitable for fall and winter crops. An old traditional French cultivar, known prior to 1885. VILMORIN; A2, E24, N84, P59M, S17, S55

Kilima: 80 days. Rapid-growing early leek with medium blue-green foliage. Long, straight 10 to 12 inch stems of good thickness; free from bulbing. Mild onion-like flavor; well suited for use in salads. Excellent for summer and fall use. No winter hardiness and not suitable for storing. C20M, C85M, J84, K49T, K73, N52

King Richard: 75 days. High-yielding summer and fall cultivar. Upright, medium green leaves. Long white stems; will reach one foot or more to the first leaf under optimal conditions. Mild flavor. Not hardy enough for overwintering, but will stand heavy frosts of 32° F. to 20° F. without losing its healthy appearance. C53, D68, D82, E24, E63D, E75{PL}, F35M{PL}, F44, G6, G93M, J20, K10, L89, L91M, R32, S55, etc.

Large American Flag: (Broad London) 120 days. Stems 7 to 10 inches long, 1 to 1 1/2 inches in diameter, blanching to a clear white. Hardy, vigorous plant; 15 to 18 inches tall with medium bluish-green, semi-upright leaves. Standard shipping, fresh market and home garden cultivar. A16, B75M, F92, G68, G68{PL}, G93M, H49, J20, K10, K71, L79

Long d'Hiver de Paris: (Long Winter) Long, slender white stalks; about 12 inches long and 1 inch in diameter. Pale gray-green leaves, longer and narrower than those of other types. Withstands the winter well, and is particularly suited for planting in late autumn. An old French cultivar, popular with market gardeners for bunching. Known prior to 1885. VILMORIN; G68

Long de Mezieres: (De Mezieres Race Danube) Long, white stalks, of good quality. Semi-late in maturity. Very resistant to frost; recommended for harvesting in autumn and winter. Introduced by Vilmorin. G68

Musselburgh: (Scotch Flag, Giant Musselburgh) 130 days. Large, thick white stem, 8 1/2 to 9 inches long and 2 inches in diameter. Broad, tall, medium-green leaves, spreading in a fan-like manner. Vigorous and very hardy. Popular, widely-adapted local market and home garden cultivar. Originally selected near Edinburgh, Scotland. Introduced in 1834. B49, B75, C92, G27M, H61, 139, M49, R32, R47, TIM

Pancho: 75 days. An extra long-shafted type for summer and fall crops. Early, very uniform and of top quality. Produces a high percentage of white shafts, 12 to 15 inches long. Medium to dark green leaves. Very upright growth habit. Stores very well for an early variety. Developed in Europe. K10, K49T, K57{PL}, L94, RUM, R47, S61M, S75M, TIM

Primor: 135 days. Long, straight, non-bulbing shanks with good thickness. Attractive, deep blue-green foliage. Excellent flavor comparable to heirloom varieties. For summer and fall harvests. Well suited to short-season areas. Recommended for home gardens and fresh markets. *Al*, C20M, F63, G68, 177, J14{PL}, K49Z, M29, S61M, S95M

Schnittporree:<sup>1</sup> (Cutting Leek) 55 days. Grown for the leaves and young stems which are cut and used like chives or scallions. Good dark green color. Usually harvested in autumn and winter. N81

St. Victor: 145 days. A traditional French cultivar which is very decorative as well as being of excellent quality and flavor. Deep blue-green foliage has a purplish tinge which deepens to violet in cold weather. Thick, tender, mildly pungent stalks. Very hardy and productive. Widely adapted. Selected from Blue Solaise. A2, B49, C95, H21, K66, L3J, R32, S55, S95M

The Lyon: (Prizetaker) 135 days. Very long, thick, tender pure-white stems, free from any coarseness. Grows to a large size, yet retains its mild flavor. Very cold hardy. An old, widely adapted English cultivar introduced around 1886. B49, C95, N84, R32, S61

Titan: 70 days. Extra long early type, of uniform, vigorous growth. Medium-thick white stems; 6 to 8 inches long, 1 3/4 to 2 inches in diameter with a slightly bulbous base. Dark green leaves. Recommended for summer and early fall harvests. Not cold hardy. B75, D27, G80{PL}, K10, K49M, L42, L77D

Unique: 100 days. Combines outstanding length of 7 to 8 inches with unusual 2 inch thickness. Leaves are dark blue-green. Tolerates extreme cold. Stores very well. Usually sown from April until June. K49M, L42

Varna:<sup>2</sup> 70 days. Slender, extra-tall summer leek with upright, light-green leaves. Can reach 18 inches in length to the first leaf. Developed in Europe for processing, Varna has possibilities in U.S. specialty markets bunched like onions for "baby" leeks. May be grown with transplants or by direct seeding at higher than normal densities. A2, G6, L89, N52

Winter Giant: (Winterreuzen, Giant Winter) Very cold hardy, overwintering type. Tall, vigorous plant with long, thick white stems and dark-green leaves. Good flavor. Matures October to January. Excellent for overwintering, after which it will produce over a long period in early spring. Introduced around 1905. B49, 199M, J97M, K49M, K49T, N84, Q11M, R32, S75M



## CODES FOR SPECIAL TYPES

1. Cutting
2. Baby

## LEMON {GR}

## CITRUS XLIMON

Bears: (Sicilian) Large fruit with up to 6 seeds per fruit. Ripens between July and December; does not keep well. Susceptible to peel injury when harvested early in the season. A large part of the crop is processed for its rind. Very vigorous, thorny tree, very cold sensitive. The only lemon recommended for Florida. Originated at Bears Grove, near Lutz, Florida. SAUNT; J17

Eureka: Fruit medium-small, elliptical to oblong, commonly with a short neck. Seeds usually few to none. Color yellow at maturity. Rind medium-thick, tightly adherent. Flesh greenish-yellow, fine-grained, tender, juicy; flavor highly acid. Crop well distributed throughout the year, but mainly in late winter, spring, and early summer. Tree medium in vigor and size, spreading and open, virtually thornless. REUTHER; A63, B93M, B93M{DW}, D23M, D23M{ES}, E3M{DW}, F53M, G49, I83M, J22, N18{SC}, Q93

Femminello Ovale: (Femminello Comune) Medium-sized, short elliptical fruit; rind medium-thick, yellow, tightly adherent; flesh tender, juicy, very highly acid. Crop well distributed throughout the year but mostly in late winter and spring. Tree of medium vigor and size, nearly thornless, highly productive. Especially responsive to the forcing or "verdelli" treatment of culture. REUTHER; 04

Femminello Sfusato: (Femminello Siracusano) Medium-sized, elliptical to oblong fruit; rind medium-thick, tightly adherent, yellow; flesh firm, juicy, highly acid. Crop well distributed throughout the year but mostly in late winter and spring. Tree very vigorous and productive. Due to its pronounced everbearing, everblooming habit it responds very well to the forcing or "verdelli" treatment so distinctive of Sicilian lemon culture. REUTHER; 04

Improved Meyer: Medium-sized, juicy fruit; slightly sweet when mature, of excellent flavor; holds well on the tree. Tree small to medium, moderately vigorous, spreading; nearly thornless. Hardy, productive; nearly everblooming but with many fruit in mid-winter. Good for hedges and containers. A virus-free selection of Meyer lemon recently developed and introduced by the University of California. A71, D3M{PR}, D23M, D23M{ES}, E3M{DW}, F43M, F53M, G49, I49M{DW}, I83M, J22, J61M{DW}, N18{SC}, N40{PR}

Interdonato: (Speciale) Large, oblong fruit; rind thin, very smooth and glossy, yellow at maturity; flesh greenish-yellow, crisp and juicy, seeds very few; flavor highly acid with slight bitterness. Crop produced mainly in fall and early winter. Tree vigorous, usually thornless. Resistant to mal secco disease. Does not respond well to forcing treatment and hence grown primarily for early fruit. Probably a lemon-citron hybrid. REUTHER; 04

Lemonade: (Lemonade Fruit) Hybrid. Lemon-shaped fruits of medium size. Pale lemon-yellow skin of medium thickness, peels easily. Flesh lemon-like in texture and appearance; very juicy with a mild, grapefruit-like flavor. Excellent for eating fresh from the tree or juiced as a tangy fruit drink. Tree productive, ornamental. N84, O97, Q93, R77, S59

Lisbon: Medium-sized, elliptical to oblong fruit. Seed content usually few to none. Rind medium-thick, tightly adherent. Flesh pale greenish-yellow, fine-grained, tender, juicy; flavor very acid. Crop comes mainly in winter and early spring. Tree vigorous, upright-spreading, large, thorny. In California, the cultivar most resistant to adverse conditions such as frost, heat, wind, and neglect.

REUTHER; B93M, D75, E3M{DW}, G49, H4, I77G, N18{SC}, Q93, R77, S59

Lunario: (Amalfitano, Quatre Saisons) Distinctive, long elliptical fruit; rind medium-thin, smooth; flesh greenish-yellow, not very juicy, only moderately acid, seedy. Tree of medium vigor and size, strongly overbearing, thornless. Very responsive to forcing but the "verdelli" fruit is smaller in size, and the following winter crop is markedly reduced in size. REUTHER; 04, R77

Meyer: (Meyer Lemon) Fruit medium in size, oblong to short elliptical, sometimes faintly ribbed. Rind thin, soft; surface very smooth; tightly adherent; color yellowish-orange to orange. Flesh light orange-yellow, tender, very juicy; lemon-flavored and mildly acid. Moderately seedy. Crop distributed somewhat throughout the year but mainly in winter. Tree small to medium, spreading, nearly thornless, hardy and productive. A very good marmalade fruit when ripe. The flowers have a pleasant lemon taste. Probably a hybrid. REUTHER, STURROCK; A63, B93M{DW}, C89M, D37{DW}, G17, G96{DW}, H4, K67, L47, M82{DW}, Q93

Monachello: Fruit medium-small, elliptical but tapering at both ends; rind thin and smooth, yellow at maturity; flesh tender, somewhat lacking in juice, acid content lower than most; seeds few or none. Crop well distributed throughout the year but mostly in winter and spring. Tree slow growing, nearly thornless, moderately productive. Well adapted to forcing but with a markedly reduced winter crop. REUTHER; 04

Pink Lemonade:<sup>1 2</sup> (Spanish Pink) Medium-sized fruit; rind striped when immature, solid yellow when ripe, thick; flesh pinkish, very juicy, tart; seeds few. Attractive tri-colored foliage, with two shades of green and white variegation. Everbearing. Somewhat cold sensitive. Suitable for growing in containers. A63, D23M, D23M{ES}, D37, G2M, G17, G49, I77G, I83M

Pomona Sweet:<sup>3</sup> True sweet lemon, much sweeter than the insipid limettas. Sweet but slightly acidic flesh can be used for fresh juice. Also excellent with seafood and in salsas. Open, upright tree with attractive, pink-blushed flowers. Originated at a turn of the century orchard in Pomona, California. G49

Ponderosa: (Ponderosa Lemon, American Wonder, Wonder) Probably C. x limon x C. medica. Very large, obovoid fruit; color lemon-yellow; seedy. Rind medium-thick and fleshy; surface smooth, but slightly bumpy and indistinctly ribbed. Flesh pale green, juicy, flavor acid. Fruits mature throughout the year. Tree small, round-topped, productive. Grown mainly as a novelty and ornamental, although the fruit can be used as a lemon substitute. REUTHER; A63, D23M, D23M{ES}, G17, G49, G96{DW}, H4, I77G, I78{DW}, I83M, K22, M82{DW}, N24M{DW}

Seedless Lisbon: Seedless form of Lisbon selected in South Australia. Smooth, ellipsoid deep-yellow fruit, about 3 inches long and 2 1/2 inches in diameter; usually with a small neck at the base; segments about 10; seedless yellow flesh and juice. Moderately vigorous, spreading tree. Very tolerant of heat, cold and wind. C29M{SC}, H78, N18{SC}

Sungold:<sup>2</sup> (Sungold Variegated) Medium-sized, oblong fruit; skin moderately thick, striped with green and yellow when immature, turning solid yellow when ripe; flesh yellow, tender, juicy, very acid; seeds relatively few; resembles Eureka. In season March to September, holds well on the tree. Attractive tri-colored foliage, two shades of green splashed with yellow-gold variegation; new growth burgundy red. A63, G49, H78, I83M

Variegated Eureka:<sup>12</sup> Immature fruits green, abundantly streaked with white; slightly ridged and bright yellow when mature; pink flesh. Very ornamental tree, variegated with pink, creamy-white and green. Pink flowers and pink-tinged new growth. Produces market-quality fruits year round. Ideal home garden variety. Excellent patio or container plant. Bud mutation of Eureka. A71, C29M{SC}, H4, H78, N18{SC}

Villa Franca: Fruit medium to large, oval in shape; rind slightly rough in texture, medium-thick, yellow when ripe. Flesh very juicy, greenish-yellow, tangy and acid in flavor; few or no seeds. Tree medium-sized, lightly branched and open in character, generally thornless. Bears in midseason or continuously over a long period. A63, C29M{SC}, N84, 097, Q93, R77

#### CODES FOR SPECIAL TYPES

1. Pink-Fleshed
2. Variegated
3. Sweet

## LETTUCE{S}

### LACTUCA SATIVA

#### HEADING LETTUCE

**BATAVIAN** Very distinct French lettuces, hard to classify by American standards. Very crisp, like Romaine or Iceberg types, but sweet and juicy and without bitterness. The plants are at first open, like looseleaf lettuce, becoming more compact and heavy until the heads are densely packed at full maturity. Becoming increasingly popular in North America. Also known as Summer Crisp or French Crisp lettuces.

#### *Green/Yellow*

Batavian Loura: (Blond Batavian, White Silesian) Heads very large, but not very firm, roundish or slightly flattened; mature plant 12 to 14 inches in diameter. Outer leaves curled, undulated and broadly toothed at the edges, pale green slightly tinged with red on the margins. VILMORIN; A2, K49T, L13M, N84

Doree de Printemps: A French Batavian lettuce that produces a full, light green head with tender leaves. Similar to Red Grenoble, but without the red tinges. Can be planted in both spring and fall. P59M, Q52, RUM, S95M

Nevada: 45-50 days. High quality, bright green version of Sierra. Extra-crisp, bright, glossy green leaves; compact, medium-sized, upright head; tender, juicy, sweet and buttery, flavor excellent. Suitable for harvesting at all stages of maturity. Resists tipburn, bottom rot and bolting. Resistant to downy mildew and lettuce mosaic virus. Hardy and productive. B75, C85M, E63D, G6, G16, H61, 177, 191, J20, K10, K66, K73, L7M, M49, S95M, etc.

Victoria: 52 days. An all-green Canasta type lettuce. Forms a heavy, upright, open head of crisp leaves with a rich, deep green color. Quality excellent; crisp, juicy and notably sweet. Has a long harvest period and ability to produce in hot weather without bolting or bottom rot. Suitable for spring through fall crops. Recommended for the home garden and for specialty and quality conscious markets. L77D

#### *Red/Brown*

Batavia a Bord Rouge: 59 days. Very attractive French lettuce. Large rosettes of crumpled, dark-green leaves, uniformly tinged with deep-red along the edges; flavor initially seems bitter but mellows to a nut-like fineness. Stands for about 45 days without bolting. G68

Canasta: 50 days. An attractive French lettuce with shiry, puckered, bright green, red tinged leaves. As Canasta matures, the outer leaves form a whirl around a tall oval head with a cream-colored crisp heart. Tipburn, bottom rot, and bolt resistant. For spring, summer or fall crops. L77D, L94, SI 7

Cardinale:<sup>2</sup> 60 days. Attractive, high quality new batavian lettuce. More colorful than Sierra. Large, open, upright heads, about 12 inches tall; frilly, rich green leaves, edged with buigundy, thick and glossy; crisp, sweet, juicy, excellent flavor. Resistant to tipburn,

bottom rot, and bolting. Long shelf life. Forms more of a head under cooler growing conditions. Intense red-purple color at "baby" stage; recommended for packaged salad mixes. 177, K66, L89, S95M

Maravilla de Veiano: (Vonny) 62 days. Medium early, compact Batavia type. Crisp, deeply indented, undulated reddish-green outer leaves; firm, compact hearts Very slow bolting. Very good market grower selection for spring and early summer cropping methods. Can also be used as a cutting lettuce after the first harvest. K49Z, Q52, S95M

Red Grenoble: (Grenobloise Rouge) A very handy, red-tinted Batavian. The color of the glossy leaves ranges from light green to magenta, and can vary from plant to plant. Does equally well in warm and cold weather; exceptionally resistant to cold, and is also slow to bolt during summer heat. Excellent flavor. B49, C53, E24, E63D, 177, J20, K49M, K49T, L3J, Q52, S95M

Sierra: 45-50 days Very attractive French cultivar. Glossy, slightly wavy and puckered, bright green leaves, tinged with burgundy; forms an oval, upright head with a crisp, cream-colored heart; very sweet and flavorful; quality excellent. Resists tipburn, bottom rot and bolting; disease tolerant. Suitable for spring, summer or fall sowings. Popular specialty market item. B6, B75, C53, C85M, D68, E24, E75{PL}, F63, G6, G16, H61, 139, J9M, J20, K10, L89, M32, M49, N16, S95M, etc.

**BUTTERHEAD/BIBB** Characterized by small, round heads with loosely packed leaves that are soft and tender with a buttery texture and flavor, and a delicate, cream-colored blanched heart. The type of lettuce most prized in Europe. Almost as easy to grow as looseleaf lettuce, and much less demanding than crispheads.

#### *Green/Yellow*

Akcel:<sup>12</sup> French forcing lettuce; bred especially for growing in greenhouses, tunnels and frames in the early spring. Deep-green, compact, heavy heads. Early; should perform well for the early "baby" lettuce market. C53, M27

Australian Yellow: 54 days. Very early Butterhead lettuce, resembles loose leaf Simpson types when young. Eventually forms a loose head; 12 to 16 inches in diameter. Tender, wrinkled, light yellow-green leaves; very good, slightly sweet flavor. Suitable for growing during any season. K47, L7M, 089, SI 7

Ben Shemen: 70 days. Large, compact head, weighing 1 to 1 1/4 pounds; medium dark-green, sweet, crispy leaves. Suitable for long distance shipping. Bred for resistance to heat and bolting. Good for late spring planting and southern gardeners. Developed in Israel. F73D

Bibb: (Limestone) 60 days. A distinct butterhead type of fine table quality. Small heads with delicately flavored inner leaves that are blanched yellowish-green. Outer leaves smooth, thick, tender, deep-green tinged with brown. Should be planted early, as it bolts in hot weather. Used for greenhouse production, early local market and home gardens. A25, 475, C53, D74B, E5T, G71, G71M, G79, G83M, H49, H85M, 139, 184, N16

Big Boston: 70 days. Large Butterhead type. Solid, tightly folded heads, up to 12 inches in diameter; broad, wavy edged, bright green outer leaves slightly tinged with reddish brown; brittle, tender, buttery heart, blanching to a rich creamy yellow. Stands a great deal of cold without injury. Good for shipping and forcing. Introduced prior to 1894. C44, D12, E53M, F44, G57M

Butter King: 70 days. Improved White Boston type; selected for maturity, uniformity, disease resistance, slowness to bolt and tipburn resistance. Height 7 inches; large, loose head, 5 1/2 inches in diameter; weight 3/4 of a pound. Outstanding eating qualities; does not become bitter. Vigorous even in hot weather. All America Selections winner in 1966. G44M, K23{PL}, K49T, L13M, N84

Buttercrunch: 67 days. A highly refined, long standing Bibb type lettuce developed at Cornell University. Medium-sized, dark green

heads; smooth, soft, tender leaves; creamy yellow hearts. Plants reach 12 inches tall when mature; are slow bolting and heat resistant. All America Selections winner in 1963. Very popular for home gardens and local markets. A16, B75M, B78, C44, C53, D11M, E24, F70, G6, G16, H33M, H61, K10, L7M, L89, M46, etc.

Dark Green Boston: 75 days. Improved White Boston type with deep dark-green leaves. Larger and more solid head than other Boston types; smooth, thick, tender outer leaves; creamy yellow heart; excellent texture and flavor. Resistant to tipburn. Very popular with both home gardeners and commercial growers. *DIT*, D11M, D72, E5T, F63, F70, G82, G93M, H54, J84, K10, K50, K73

Gotte Jaune d'Or: (Golden Tennis Ball) Small, Tennis Ball type, about 8 inches in diameter. Forms a loose, wavy head, upright in the center; tender, crinkled, bright yellow-green leaves. An 18th Century heirloom, once popular as a forcing lettuce in the north of France. Thought to be a Dutch cultivar developed for wilted salads. VILMORIN, WEAVER 1997; F24D, P59M

Green Mignonette: (Manoa) 65 days. Small, round heads; deep-green, frilled leaves; firm heart, blanches almost white, very crisp, tender and sweet. Slow to bolt; very heat resistant; does well in warm, semi-tropical areas where other lettuces are not successful. Widely grown in the Manoa area of Hawaii. JOSSELIN; C20M, *DIT*, E5T, G57M, 177, K49M, M32M, PIG, R47, S63M

Grosse Blonde Paresseuse: (White Stone, Nonpareil) Mature head large and tall, flattened on the top; very light pale green, almost the color of butter or wax; outer leaves large, very much rounded, slightly crimped, not as pale-colored as the head; quality excellent. Mature plant about 12 inches in diameter. Resistant to bolting. Introduced prior to 1885. VILMORIN; G68, P59M, S66M

Kagriner Summer: (Orfeo Kagriner Summer) 60 days. French butterhead developed especially for summer crops. Mid-size, medium green heads; rather thick-leaved, with a somewhat open, firm heart. Very slow to bolt or tipburn. Good quality during the toughest season for butterhead lettuce production. Named for Kagriner, a borough of Vienna. A16, C20M, *DIT*, D12, D68, G57M, G68, J20, J25M, J82, N81, Q11M

Kinemontepas: Medium to large heads; grayish-green leaves, of excellent quality and flavor. Black-seeded. Very slow bolting; quality is maintained even under hot and dry conditions. A standard summer lettuce in France. B49, C53, G68

Kwiek:<sup>1</sup> Large, quick-growing butterhead. For winter cropping in a cold or unheated greenhouse or poly tunnel. Sow late August for a harvest in November and December. Can also be sown in October. A2, F73D, R32, S61

May Queen: (Reine de Mai, Regina di Maggio) 60 days. Quick-maturing butterhead for earliest spring sowings outdoors. Medium-sized, pale green heads tinged with reddish brown; creamy yellow hearts blushed with rouge-pink. Also good for growing in cold frames and greenhouses, and fall or late winter sowing in mild winter areas. Nineteenth century heirloom. B8, D12, F73D, J73, N84, P59M, Q11M, S17

Mescher: (Schweitzer's Mescher Bibb) 50 days. Dates back to the 1700's. Introduced to the United States from Austria in the early 1900's and maintained as a Schweitzer family heirloom. Forms small, tight, crisp heads of green leaves ringed with red. Excellent appearance and flavor. Best grown in cool weather; has survived temperatures of 28° F. A2, F24D, F24G, F73D, J39, L7M

Ostinata:<sup>1</sup> 60 days. High quality Boston type with exceptionally long shelf life. Heavy, very attractive head. Compact plant allows for close spacing, yet still yields well. Stands high temperatures in mid summer as well as short day conditions. Excellent resistance to bolting and tipburn. Can be grown under glass, tunnels, in soil or in the open. Responds well to hydroponic culture. F85G

Perella Green: A very small, open-leaf Butterhead type of good flavor and attractive appearance. Quick-growing; cold-tolerant; usually sown broadcast. Good for fall, spring and early summer plantings. Also suitable for growing in a cool greenhouse. A favorite of Joy Larkcom, author of "The Salad Garden". C20M, 111, S55

Summer Bibb: (Summer Baby Bibb) 62 days. Improved Bibb strain. Small to medium heads, more compact than Bibb; creamy white hearts; thick, tender, medium-green leaves. Slow to bolt, 2 to 3 weeks later than regular Bibb; can be grown all summer. Grows well on upland or muck soils. Also recommended for hotbed and greenhouse use. B6, FI, G93M, I18M, J84, J97M, K73

Tennis Ball: 70 days. Small to medium-sized head, very solid if grown in cool weather, often loose and open if grown during the summer months; outer leaves deep dark-green, slightly curled, broadly blistered; inner heart white and tender. Resistant to bolting. Extremely hardy. One of the oldest lettuces on record. BURR, VILMORIN; F24D, L7M, L90M

Tom Thumb:<sup>2</sup> (Wheeler's Tom Thumb) 65 days. A "baby" butterhead well suited for smaller home gardens and window boxes. Very small, solid compact heads, about the size of an apple; light to medium green, crumpled leaves; tender, sweet and of very good flavor. Ideal for serving whole as an individual salad. Introduced prior to 1885. VILMORIN; A75, B49, C44, D12, D68, D82, K23{PL}, K66, L7M, M46

Unrivalled: (Attractive) A hardy, quick-growing early cultivar. Compact 6 ounce heads; medium-sized, firm, golden-yellow hearts; few outside leaves; superb flavor. Slow to bolt; very hardy. Sow outdoors in spring and summer. Can also be sown in autumn to heart in the spring in milder climates. Introduced around 1905. B49, 053M, R32, S61

Val d'Orge: Large, vigorous, very attractive fall and overwintering butterhead with pale translucent green coloring and a soft, buttery texture. Round, smooth-edged leaves. Fine for an early fall crop, or in suitable climates it can be planted in September for a harvest in April and May. K49T, N84

White Boston: 65-70 days. Medium to large, loose, light-green heads; about 12 inches in diameter, slightly crinkled; buttery, light golden-yellow hearts; very tender and sweet, flavor excellent, of gourmet quality. Very popular heirloom cultivar. Recommended for home gardens and fresh markets. B8, B8M, C85M, C69, *DIT*, D12, D26D, E5T, F24M, G27M, G57M, G71, 167M, 184, K49M, M32, etc.

#### Red/Brown

Bon Jardinier: (Du Bon Jardinier) 55-60 days. Attractive medium to large, smooth, undulated heads; thick, medium green leaves lightly tinged with red. Very vigorous and productive. Harvested in summer and autumn. Recommended for home gardens and fresh market; also ships well. F73D, G68

Bronze Mignonette: 55-65 days. Attractive, loose, medium-sized heads; glossy, frilled, chartreuse to emerald green leaves, splashed with garnet and bronze; firm, nearly white hearts; crisp, tender and sweet. Hardy and somewhat drought resistant; slow to bolt. Adapted to hot, humid conditions. Heirloom from the late 19th Century. *DIT*, D12, D68, E5T, F73D, G57M, G68, 118M, 139, 167M, 177, K23{PL}, K49M, K49T

Bruna di Germania: (Brown German) Small, reddish-brown French lettuce for overwintering in mild climates. However, it does better with some protection, i.e. a cold frame or poly tunnel. Large, firm flavorful hearts; grows to 8 inches. Noted for its vigorous spring growth. S17, S55

Brune d'Hiver: (Brown Winter) Compact, rather thick-set plant; head medium-sized, green, overlaid with brownish-red; outer leaves coarsely crimped, much wrinkled; the whole plant seldom exceeds 7 or 8 inches in diameter. Quality excellent. Very hardy; well-

adapted to winter culture; bolts readily in hot weather. Introduced prior to 1865. BURR, VILMORIN; A2, C53, E63D, J20, K49M, K49T, K49Z, N84, P59M, S95M

Merveille des Quatre Saisons: (Marvel of Four Seasons, Meraviglia Delle Quattro Stagioni, Red Besson) 65 days. Head roundish, slightly flattened on top; forms very quickly and stays firm for a long time, even in very hot weather. Leaves short, almost round, the edges turned up in a kind of spoon-shape; tinged all over with brownish-red. Can be grown nearly all year round, but does best in spring and summer. Introduced prior to 1885. VILMORIN; B8, C53, C92, D74B, E24, E63D, G68, J20, J73, K23{PL}, K49M, K66, L13M, M32, R32, S55, etc.

Perella Red: One of the hardiest winter lettuces grown in the mountainous region of northern Italy. Has survived a temperature of 4° F. Very small, compact plant; forms a small heart or rosette. Decorative red strain of Perella Green. Sow in spring or autumn; harvest whole plant or use cut-and-come-again method. C20M, F73D, G93M, I18M, 177, J97M, K66, Q34, S55

Pirat: (Brauner Trotzkopf) 55 days. Medium-green, gently crinkled leaves, overlaid with a soft brick red. Medium large, well folded, tender hearts blanch to a creamy yellow. Reliable and well adapted to growing throughout the season, even the middle of the summer. Similar to Merveille des Quatre Saisons, but more uniform, bolt resistant and compact. D68, F73D, F80, J39, K23, K23{PL}, K49T, K57{PL}, L13M, N7G

Red Boston: 68 days. Medium frame Boston type with rose-red tinged leaves and medium green hearts. Popular novelty lettuce for hydroponic or outdoor growers for the salad bar trade. F80, N52, N84

Red Riding Hood: 65 days. A red Boston type, similar to Merveille des Quatre Saisons but with better color and bolt resistance. Very large, attractive heads with red savoyed leaves. Best harvested when 8 to 12 ounces. Stands heat and drought well. C53, D68, E5T, K49T

Rougette du Midi:<sup>2</sup> (Red Montpellier) Small French lettuce with glossy, bronze-red leaves. Very crisp and flavorful. Spring and summer sowings produce a small, unheated "baby" lettuce very quickly but they are equally quick to run to flower. Also suitable for autumn sowings to overwinter under cloches, or outdoors in mild climates. Attractive enough for the ornamental garden. C53, 177, S55

Sangria: 58 days. Medium-sized, uniform heads with large, well-folded hearts of pale yellow leaves; average weight 16 ounces. Outer leaves smooth, somewhat wavy, very thick, medium dark-green prominently tinted with a warm, rosy red color. Excellent flavor. Grows well in spring, fall and winter. Good resistant to bolting and tipburn. Tolerant to downy mildew. C20M, C85M, E33, G6, G93M, H61, 177, K17M, L42, L94, M46, N16, N81, Q34, S61M, S95M, etc.

Yugoslavian Red: 58 days. Heirloom from a peasant family in Marburg, the former Yugoslavia. Introduced by Southern Exposure Seed Exchange in 1987. Red heads, 10 inches in diameter; inner leaves an attractive creamy yellow-green dappled with red. Succulent, buttery and flavorful. Ideal for garnishes. K47, L7M

**CRISPHEAD** The most popular form of lettuce in the United States, the Iceberg lettuces being typical. Characterized by solid heads of tightly-wrapped, very crisp leaves. They take about ten days longer than butterheads to mature but stand up to hot weather better without bolting. Considered to have more flavor than butterhead types.

#### Green/Yellow

All-the-Year-Round: 65 days. Round, compact, very solid head; of a very pale, almost whitish, green color; outer leaves short, roundish, finely crimped and slightly undulated. Tender and crisp, of fine quality. Hardy and very productive; grows well in almost any

soil. Suitable for successional sowings any time of year. Introduced prior to 1885. VILMORIN; A2, B49, D12, D65, K49M, K71, 053M, R32

Anuenue: 50 days. Resembles a small iceberg lettuce, only much more heat resistant and easier to grow. Large, well-packed heart; bright glossy green outer leaves, thick, crisp, mild and juicy. Spring, summer and fall crop. Developed by the University of Hawaii. Anuenue means rainbow in Hawaiian. D33, F73D, G6, L7M, L77D, L94, M32M

Avondefiance: Medium to large, dark green heads; solid, tender hearts; semi-crisp texture. Highly resistant to mildew, making it useful for summer sowing (June through early August). Also highly resistant to root aphids, tipburn and bolting. Does well in warm climates. B49, N84, R32, S55, S61

Chou de Naples: (Couve de Napoles, Cavolo di Napoli, Neapolitan) Head large, depressed, sometimes almost flat, very pale whitish green; mature plant 12 to 14 inches in diameter. Outer leaves dark green, spreading on the ground, very much curled and undulated at the edges. Keeps the head exceptionally well. One of the original "iceberg" types, and still considered one of the finest heading lettuces in Europe. VILMORIN; Q11M, S17

Great Lakes: 80 days. A sure heading summer lettuce of the iceberg type. Medium large heads; solid even before they attain full size; dark-green fringed leaves, fold completely over the head. Widely adapted; cold hardy; resistant to tipburn and bolting. Fine for the home garden and excellent for shipping. All America Selections winner in 1944. A16, A25, E38, E53M, F82, G57M, K49M, K71, L10

Hanson: (Improved Hanson) 75 days. Very large, yellow-green heads; creamy white hearts; texture crisp and tender, flavor sweet. Relatively tolerant to heat and tipburn. Widely adapted to different growing regions. Unsuitable for overwintering or forcing. Introduced prior to 1885. A16, D1T, D12, E59Z, K49M, M95M

Iceberg: 85 days. Quite different from the shipping cultivar New York, which is commonly called Iceberg by produce shippers and green grocers. Large compact, crumpled heads, white inside, crisp and sweet; wavy, fringed light green leaves tinged with brown at the edges. Well-suited to home gardens and local markets; will not stand long distance shipping. A16, A25, B75, C85M, D12, G68, G71, G79, H21, H85M, K27M, N16

Imperial Winter: 90 days. Very hardy lettuce. One of the largest and best cultivars for sowing in the open in autumn. Very large hearts; medium green leaves of fine quality. Not recommended for spring or summer sowing, as it will bolt to seed. B49, C95, F73D, N84, R32

Ithaca: 75 days. Large, firm heads; well wrapped for good protection; attractive, dark-green, ruffled leaves. High yielding; dependable and uniform-heading. Resistant to heat, bolting, tip burn, and brown rib. Most widely grown lettuce in the Northeast and Mid Atlantic states. A1, B6, D76, E24, E38, E97, F13, F44, F63, G57M, G79, J97M, K73, L42, M29, etc.

Mini Green:<sup>2</sup> 75 days. Unusual, miniature Iceberg type. About half the size of Ithaca, or grapefruit-sized. Perfect for individual servings. Solid, very dark-green heads; small, creamy-yellow hearts. Good tolerance to bolting. Developed as a novelty for the bedding plant trade. Ideal for growing in containers on balcony or rooftop gardens. B75, C85M, C92, D65, G71, G83M, H57M, J97M, L42, M29, M49, 053M, R32, S55, S75M, etc.

Montello: 75 days. Iceberg type, widely used for shipping. Large, dark-green heads; crisp, bright green leaves. Highly tolerant to heat, splitting, tipburn, rib blight and corky root rot. Vigorous, widely adapted; does well in the North, South and West. Released by the Wisconsin Agricultural Experiment Station. A1, B6, D33, F85G, K73, M29

New York: (New York Iceberg, Wonderful) 80 days. Large, very dark-green heads; often weighing 3 to 4 pounds, nearly as solid as cabbage; crisp, tender, greenish-white hearts; of good quality. Forms good-sized heads even in hot weather. Introduced prior to 1888. C95, F92, G44M, G83M, G87, K49T, L13M, M46

New York #12: 75 days. Earlier, sure-heading strain of New York. Very large, solid globular heads, up to 12 inches in diameter, often weighing 3 pounds; crisp, yellow heart, buttery flavor; outer leaves medium-green, slightly curled at the edges and formed tightly around the head. Does well in well-drained soil, but is unsuitable for low lying muck lands. Popular with home and market gardeners. 7)72, E38, H95

Reine des Glaces: (Ice Queen, Regina dei Ghiaccia, Frisee de Beaugard) 62 days. An unusual crisphead type with very deeply cut, pointed, almost lacy leaves similar to the Cornet endives. Deep-green, crisp heads; small heart; slow bolting. Very attractive. For spring and summer sowings. Introduced prior to 1885. VILMORIN; B8, C53, D68, G68, K49T, N84, Q11M, 577, S55

Summertime: 65-70 days. High quality lettuce with unusually good heat tolerance. Medium-sized, light green heads; deep-green, coarsely frilled wrapper leaves, provide good protection from the sun. Very slow to become bitter, even when grown in mid-summer. Resistant to tipburn and rib discoloration. Good for home gardens. Developed by Dr. James Baggett at Oregon State University. A2, B6, B8M, B75, C53, D65, D68, E75{PL}, F13, G16, G71, G82, 139,191, J97M, K50, L89, M29, M49, etc.

Trocadero: (Trocadero Improved) Distinct, light green heads, tinged with red on the upper part; forms quickly and keeps its shape well; dull green leaves, margined with red. Very good for summer culture, but may be equally well grown in winter or spring. Well adapted for both field culture and the kitchen garden. Introduced prior to 1885. VILMORIN; Q11M, S77, S55

Valdor: 65 days. An excellent winter lettuce, larger and more compact than Imperial Winter. Attractive, solid-green heads; few outer leaves. Used mostly in greenhouses, but can be sown in the open for an early spring cutting. Very cold hardy; good resistance to grey mold. B49, F73D, N84, R32, S55, S61

Webb's Wonderful: 75 days. Large, solid crisp hearts, of excellent quality; outer leaves dark-green and well curled; distinctive flavor. Stands well in hot weather; recommended for southern gardens. Extremely popular home garden cultivar in Europe. B49, 7)72, E33, G53M, N84, 053M, PIG, R32, R47, S55, TIM

Winter Marvel: Large heads; clear pale-green, smooth, slightly wavy leaves; of fine quality and flavor. Very winter hardy, to 18° F. without protection. Can be sown in fall for an early spring harvest in many areas. Good for home and market gardens. An old European heirloom. A2, A66, C53, 7)72, 577

### Red/Brown

Cerise: 60 days. Medium green outer leaves, heavily overspread with warm, glossy red; typical mild, crisp, blanched interior leaves. Young, large-leaved plants can be harvested before or after heading for "red iceberg". Also excellent when harvested at the 4 week stage for adding to salad mixes. Good specialty market lettuce. G6

Continuity: 70 days. Extra early crisphead type. Compact, solid, crisp hearts; thick dark-green outside leaves, distinctly tinged with reddish-brown; of excellent flavor; very long standing. Suitable only for spring and summer sowing. Does well on dry, light soils. B49, D68, 139, K10, K49T, L13M, L89, L94, N84, R32

Rosa: 75 days. Distinctive and colorful Iceberg type. Medium-sized, firm heads, 6 inches in diameter; attractive red in color where exposed to the sun; crisp and sweet. Resistant to tipburn. For home gardens and local markets. Developed by Peters Seed & Research. J9M

Rosy: 60-75 days. A small iceberg type, similar in form to Ithaca, but with attractive red to burgundy coloring. Tolerant of adverse conditions and slow to bolt. Highly recommended for market gardens. C53

**ROMAINE** Also known as *cos lettuce*, this type has long, broad, upright leaves that form heads. The leaves are tender and green on the upper portions, and thick, crisp, and juicy near the base. They take longer to mature than other types, but stand hot and dry conditions well without going to seed. Prized for their distinctive flavor, especially in a *Caesar salad*.

### Green/Yellow

Balloon: (Ballon) Large, very vigorous plant; large, broad, roundish head, slightly flattened at the top, full and firm; outer leaves not as crimped as Paris White Cos, but greener and more rounded at the ends. Seldom runs to seed. Hardier than Paris White Cos; very suitable for autumn sowing. Introduced prior to 1885. VILMORIN; B49, C53, F73D, Q11M, 577, S55

Craquante d'Avignon: (Craquerelle du Midi) An open hearted, semi-romaine type that is especially suited to warm climates, the firm heads being harvested into early June in Florida. Deep green leaves; crisp and crunchy. Resistant to cold and also slow to bolt, making it an ideal choice for the home gardener. Can be planted January through August. C53, C95, K49T

Little Gem:<sup>2</sup> (Sugar Cos) 70 days. Intermediate in shape between a cos and a heading lettuce. Small to medium-sized, erect plant; very dark green outer leaves. Forms a very compact creamy-yellow heart, with no waste. Brittle, crisp, very sweet, superb flavor. For spring and summer sowing. Also good for forcing. B49, E24, G57M, J9M, K49Z, K66, L13M, L89, L91M, R32, S55

Lobjot's Green Cos: 65 days. Large, compact, firm hearts, closely self-folded. Tall, upright outer leaves, to 12 inches, dark-green in color. Crisp and sweet, of excellent quality. Very bolt resistant. Can be sown for successional sowing throughout the summer, or in mild climates, in the autumn for early spring cutting. B49, G44M, L13M, N84, R32, S55, S61, S75M

Paris Green Cos: 66 days. Compact, elongated head, pointed or slightly blunt; outer leaves erect, comparatively narrow, dark green; midribs very white; sweet and crisp. Blanches well without having to be tied. For spring, summer or autumn sowing; also good for forcing. Introduced prior to 1865. BURR, VILMORIN; J73

Paris White Cos: (Blonde Maraichere) 70 days. Long, cylindrical head; outer leaves large and luxuriant, of a light-green color, slightly crinkled; inner leaves very pale-green, always folded, midrib white and very prominent. Less hardy and a few days later than Paris Green Cos. Very widely adapted. Introduced prior to 1865. BURR, VILMORIN; B75, C85M, 7)72, E5T, E97, F24M, F92, G57M, H85M, K49M, M95M, Q34

Parris Island Cos: Very uniform, tall, cylindrical plants; thick, slightly crinkled, dark grayish-green outer leaves; pale green to creamy white hearts. Heads exceptionally well. Medium slow bolting. Mosaic tolerant. Developed for coastal regions of the Southeast, but widely adapted and used for shipping, local markets and home gardens. A16, A75, B75, C44, E24, F82, G57M, H33M, H61, K23{PL}, K73, M46, M49, N16

Romance: 50 days. Large uniform heads, up to 1 pound each. Upright, very smooth dark-green leaves, pale blonde at the center; crisp, sweet, tender. Fast growing. Slow to bolt. Resistant to mosaic virus and mildew. Award of Merit winner, Royal Horticultural Society, 1982. E24, K66

St. Blaise:<sup>1</sup> A special Romaine type, adapted to early spring planting under row covers. Also does well in outdoor plantings right through the summer. Small, upright, light bright-green heads with few outer leaves Very heat tolerant. Ideal for intensive gardens. Potential specialty market item. C53, L77D, M27

Sucriner: Semi-romaine type with a more or less upright growth habit. Slightly loose head; thick, medium-length green leaves. Crisp, sweet, of excellent flavor. Resistant to cold; sow in fall and winter. Very popular among European home gardeners and market growers and has found ready acceptance in many California specialty restaurants. Often used for *mesclun*. ANDREWS, C. 1996; B49, C44, G68,177, J20, K23{PL}, K49T, L94, N84, PIG, P59M, R47

Valmaine: (Valmaine Savoy) 70 days. Large self-folding type for spring and summer use. Slightly taller and more open-headed than Parris Island Cos and able to stand more adverse weather. Mildly crinkled, dark green leaves, 10 to 12 inches long, of very good flavor. Resistant to downy mildew. Heat tolerant. B49, B75M, C20M, F63, K49M, K73, L3J, L89, M46, R32, S55, S75M

Vaux's Self Folding: The first self-folding cos lettuce. Compact, erect growth habit; self-folding medium-sized, firm heart. Broad, dark-green outer leaves protect the heart. Very popular with market growers for spring and autumn sowing. Introduced around 1873. J39, R32

Verte Maraicheie: (Verte Mar) 50 days Very early French romaine. Has already become a standard for producers of *mesclun*. Tall, upright, tight heads; smooth, vibrant dark-green leaves; crisp, very sweet, flavor excellent. Can be harvested at baby size or after full maturity. Widely adapted. Recommended for commercial or specialty markets. Developed by Vilmorin. E24, E63D, I18M, 177, J20, N16, S95M

Winter Density: 65 days. Distinct type, somewhat intermediate in form between a cos and a heading lettuce. Produces large, compact, very solid hearts; outer leaves very dark-green. Crisp, sweet, of excellent flavor. Slow to bolt and also tolerates light frost. Widely used for autumn sowing. A2, B49, C53, D12, D68, E75{PL}, G6, K49M, L7M, L89, L94, O53M, R32, S75M

#### Red/Brown

Brown Golding: 70 days. Medium-sized heads; small, red tinged leaves. Very sweet and crunchy. Develops best color in cooler weather. In a test conducted by the Henry Doubleday Research Association it was found to contain 3 times the vitamin C of typical summer lettuces. C95, F73D, G44M, L3J, L13M, N84

Cimarron: 60 days. Unique bronze-red romaine. Tall, elongated leaves, about 10 inches high; deeply colored and heavily shaded; crisp, juicy and flavorful; creamy-yellow hearts Very resistant to bolting, can be harvested over an extended period. Recommended for home gardens and local markets. Reportedly dates back to the 18th Century. C44, C85M, D12, E5T, E24, F44, G13M, G57M, 139,177, J20, K10, K57{PL}, M32, N24M, etc.

Freckles: (Trout Back) Very attractive, lime-green, oblong leaves flecked with delicate, wine-red markings Tender and delicious. Ideal for adding to cut-and-come-again salad mixes. Best harvested when 4 to 6 inches tall. A specialty item that is often served at some of the best restaurants in the country. C53, E75{PL}, F13, 177, K49M, K57{PL}, L77D, Q34, S75M

Majestic Red: 60 days. Compact, very erect plant; medium-sized, tall cylindrical head; distinct, medium dark red color; crisp and sweet with excellent flavor. Adds a unique color to salads. For home gardens and fresh market; also ships well. Shows good resistance to heat and drought. Developed by Sunseeds. D68,177, J9M, L89

Red Leprechaun:<sup>2</sup> (Little Leprechaun) Savoy red romaine type, resembling Little Gem. Slightly larger, growing 8 to 12 inches tall, with mature heads that may weigh one pound or more; blanched hearts cream colored, overspread with pale pink. Succulent, puckered leaves, burgundy colored on exposed surfaces. Should be harvested at the three-quarter pound stage. F73D, L13M, L89, R32, S55

Rosalita: 62 days. Medium-large, upright plants; heads average 14 to 16 ounces in weight with a semi-firm heart of creamy yellow

leaves. Outer leaves an attractive burgundy color, fading to an emerald green at the base, crisp, sweet and juicy. Not tolerant of hot weather, recommended for spring or fall culture only. Resistant to frost and tipburn. Widely adapted. Developed by Rob Johnston Jr. C53, G6, G93M, I18M, 177, J39, K57{PL}, Q34, S55

Rouge d'Hiver: (Red Winter) Young plant deeply tinged with brownish-red; head tall, long, entirely green, with the exception of a brownish-red tinge on the top; outer leaves long, round, deeply colored with reddish brown. Heads well without being tied. Hardy; productive; remarkably slow in running to seed. Introduced prior to 1885. VILMORIN; A2, A66, B75, C53, D68, E63D, 177,199M, K46T, K49M, K49T, K66, N7G, 089

Ruben's Dwarf: (Ruben's Red) 58 days. Semi-dwarf type Very full, 12-inch heads of open upright leaves. Outer leaves an attractive and unusual deep clear cranberry-red that contrasts with the lime-green hearts. Crisp, juicy, full sweet flavor. Colors are most intense in cool spring and fall weather. A2, D11M, F70, 177, K17M, K23{PL}, K49T, K66, L94

#### LOOSELEAF LETTUCE

#### GREEN/YELLOW

Biondo a Foglie Lisce:<sup>3</sup> 25 days. Quick growing cutting lettuce. Smooth, tender leaves. Broadcast the seed thinly and cut when 2 inches high, or about a month after seeding. Can be cut several times over a long season. B8, C53, Q11M, S17, S55

Black Seeded Simpson: 45 days. Large, upright plant; broad, crumpled, light green leaves, slightly frilled at the margins. Very tolerant of hot weather. Produces a high quality crop under a wide range of conditions. Longtime home garden and local market favorite. Introduced prior to 1888. B73M, B75M, B78, C44, C53, E24, E59Z, G6, G16, H61, K23{PL}, L7M, M49, M46

Catalogna:<sup>3</sup> (Radichetta) An Italian cut-and-come-again lettuce adapted to growing in all seasons. Elongated, deeply lobed brighter green leaves; lighter green, tender, crunchy ribs. Should be planted closely and cut when about 2 or 3 inches tall. Will regrow very quickly for continuous harvests. Very hardy and rustic. B49, Q11M, R32, S17, S55

Deer Tongue: (Matchless) 55 days. Loose, upright, medium-sized heads; light-green leaves, distinctively pointed; creamy heart; tender, sweet, of very good quality and flavor. Heat resistant; slow to bolt. Sow in spring through early summer. An old heirloom cultivar that is excellent for home gardens. A2, B6, C53, D68, E24, E59Z, F24D, F24G, G6,139, J97M, K23, K23{PL}, K66, L7M, etc.

Early Curled Simpson: (Early Curled Silesian, Silica Curled) A very old cultivar that is still popular. Large, pale yellowish-green leaves, very much undulated at the margins, curled and ruffled; crisp, sweet and flavorful. Produces a cluster of leaves in the center. White seed. Slow to bolt in hot weather. Introduced prior to 1885. VILMORIN; D12, D76, F24M, G57M, G71, H33M

Feuille de Chene:<sup>3</sup> (Curly Oakleaf, Ricciolina di Quercia) Used almost exclusively as a cutting lettuce. Light green, deeply indented and curled leaves; mild and tender. Easy to grow and harvest; cut entire plant when about 2 inches high, leave to resprout. Slow bolting and heat resistant; sow in succession from early spring into autumn. Will form a loose head at maturity if thinned. C53, P59M, S17

Grand Rapids: 50 days. Large, upright, compact plants form an attractive cluster of broad, fringed and curled light-green leaves. Of high quality; crisp, tender, sweet, flavorful. Resistant to bolting and rot. Very popular for greenhouse forcing and early outdoor culture. A16, C85M, D11M, E38, FI, F70, G16, G57M, H33M, H42,164, 184, J97M, K49M, K71, etc.

Green Ice: (Burpee's Green Ice) 45 days. A fast maturing cultivar that produces large thick bunches of dark glossy green leaves,

heavily blistered with wavy, fringed leaf margins Very crisp texture, tender and mild, of excellent quality. Exceptionally uniform. One of the slowest cultivars to bolt, so it can be used longer. A25, B6, B75, C44, D11M, D68, F70, G16, G57M, G71, G87, H33M, H42,191, L79, etc.

Lingue de Canarino: Pale green leaves resemble round oak leaves and form a tight bunch. Very mild and flavorful in the spring; retains its high quality right through the summer; very resistant to bolting. Attractive shape and color. Italian name means canary tongues or canary-colored tongues, which suggests the shape and color. U63

Lollo Bionda:<sup>3</sup> (Lollo Green) A popular cutting lettuce; vigorous enough to resprout from a cut stem without loss of leaf quality. Bright yellow-green, very ruffled leaves. Cut leaf by leaf rather than using entire head. Decorative as well as useful. Sow in spring or fall. B8M, C20M, C53, L91M, N84, 089, PIG, Q34, R32, S55, S75M, TIM

Oakleaf: 45 days. Forms a compact rosette of thin, tender, light green oakleaf-shaped leaves. Excellent quality; does not become bitter with age. Stands heat well and resists bolting. Popular old-fashioned lettuce that has been rediscovered as a gourmet specialty. A25, B73M, B78, D11M, D26D, D82, E63D, F70, F80, G57M, G71, G79, K23, K23{PL}, K27M, K73, etc.

Royal Oak Leaf: Improved, high quality Oakleaf type with a much more uniform and clearly defined oakleaf shape. Also more heat tolerant and with darker green leaves. Large, deep green rosettes with thick, succulent midribs; tender, sweet and flavorful, non-bitter even in hot weather. Resistant to rib discoloration. B75, C53, C85M, D27, D68, G16, I18M, 177,191, K17M, K50, K66, 089, PIG, Q34

Salad Bowl: 50 days. Large, attractive rosette. Long, medium-green, deeply notched and curled leaves; crisp, tender, sweet. Very slow to bolt; resists heat and tipburn well. High quality home garden cultivar, sometimes used for roadside stands and local markets. All America Selections winner for 1952. A16, A25, B49, B78, C44, C53, D82, E38, E59Z, G6, G16, G93M, H85M, K27M, L89, etc.

Simpson Elite: 48 days. Improved, very slow bolting Grand Rapids type. Attractive, medium light-green leaves, broad and crumpled with curled outer leaf margins. Crisp and juicy; delicate, sweet flavor. Quick growing yet able to be harvested over a long season. Not derived from Black Seeded Simpson. Developed by Peto Seeds. A25, B6, B75, C92, D65, D68, G6, G16, G71,139, 191, J20, J97M, K71, L89, L91M, M29, M46, M49, etc.

Slobolt: (Harris' Slobolt) 48 days. Similar to Grand Rapids in appearance, but holds 2 to 3 weeks longer without bolting. Light-green, crumpled and frilled leaves; crisp, mild sweet flavor. Remains dwarf and compact even in hot weather; keeps its high quality over a long period. For greenhouse growing as well as outdoors. D11M, D68, F13, F70, H61, J84, K10, K73, L7M, L42, L89

Tango: 45 days. Uniform, attractive plants form tight, erect rosettes. Deeply cut and curled leaves; resemble endive in appearance; darker green than most cultivars; tender, tangy, vitamin rich. Cut young during warm weather as it is not very heat tolerant and will run to seed. C20M, C53, F63, H73{PR}, 139,177, K50, L7M, Q34

Waldmann's: (Waldmann's Dark Green) 50 days. Popular, high quality Grand Rapids selection. Larger, slightly heavier leaves and darker green color. Attractive, finely fringed, ruffled leaves. Vigorous, uniform, productive plants; widely adapted. Recommended for home gardens and local markets. A1, A2, DIT, D68, E24, F63, G13M, G93M, H61, J20, K10, K50, K73, L13M, L42, M29, etc.

#### RED/BROWN

Biscia Rossa:<sup>3</sup> Very attractive, smooth-leaved, red tinged cutting lettuce from Italy. Will give several cuttings when grown as a cut-and-come-again crop, or may be allowed to reach maturity. B8, G53M, Q11M, 577, S55

Bronze Arrow: (Bronze Arrowhead) Very attractive California heirloom. Large, oakleaf-shaped leaves tipped with reddish-brown. Mild flavor. Long-standing—will stay fresh and flavorful at marketable size for about 3 weeks in hot weather without going to seed. Can be sown year-round in mild climates, with September sowings lasting into May. B49, F73D, K49T

Brunia: 75 days. Large, attractive oakleaf type. Heavy, upright heads; distinctive, deeply-lobed leaves with wide midribs; dark green, tinged with reddish-bronze at the tips and edges; crisp and sweet. Develops its best color in cooler weather. Slow to bolt and tolerant of mosaic. Highly recommended for gourmet and specialty markets. C53, C92, D68, E63D, E91G, F13, G16, H61,139,191, J9M, K10, K49M, K49Z, K57{PL}, K73, L42, L89, etc.

Chadwick's Rodan: 58 days. A European heritage cultivar selected by Alan Chadwick. Medium-sized leaf lettuce that forms a loose head. Upright, paddle-shaped leaves tinged with bronze. Heat resistant. Attractive as well as flavorful. Heads produce very little seed. B49, F73D, K17M, L94

Cocarde: 46 days. A "giant red Oakleaf" type. Large, heavy, upright heads; delicate, lobed, dark-green leaves with a rusty red overlay; large pale yellow-blanching heart. Excellent flavor. Sow in spring, summer or fall. An unusual heirloom French lettuce of very good quality. G6, K23, K23{PL}, L94, Q11M, R32, S55, S75M

Grandpa Admire's: 60 days. Large, loose heads, tinged with bronze; fine, mild flavor. Slow to bolt, and stays tender longer than most others, even in extreme heat. Favorite of the Seed Savers Exchange. Given to them in 1977 by Cloe Lowrey, granddaughter of Grandpa Admire; a Civil War veteran born in 1822. E5T, F73D, K47, K49M

Lollo Rossa:<sup>3</sup> (Lollo Red) 52 days. Very attractive red strain of Lollo Bionda; especially well suited to garnishing. Small, circular rosette formed of heavily-frilled, medium green leaves tipped with a strong, warm red. Mild flavor. Very heat tolerant. Used as a cut-and-come-again lettuce, or left to head up for a single serving. For spring or fall sowings. B8M, C53, D68, E5T, F13, G6, H73{PR}, 177, J97M, K23, K23{PL}, K49M, K73, M46, 053M, Q11M, Q34, R32, S55, etc.

Mascara: 65 days Very uniform, dark purple-red oakleaf type. Retains its red color during the hottest part of summer when others tend to fade. Forms rosettes of thick, curly leaves. Mild, non-bitter flavor. Very bolt resistant. Tolerant of poor soil, neglect and unfavorable growing conditions. Excellent for mesclun. Developed in Holland. F80, L89, N7G, Q52

New Red Fire: 50-55 days. Attractive, red-leaved Grand Rapids type. Medium-large, heavy, very uniform heads; ruffled, heavily tinged leaves with wavy margins, excellent deep red color; sweet, mild flavor. Slow to bolt and widely adapted. Recommended for home gardens and specialty markets. A1, A2, D68, E24, F13, F63, G6, G82, G93M, H61, J20, K50, K57{PL}, K73, L42, L89, L91M, M29, etc.

Prizehead: 50 days. Large, upright plant; broad, crumpled, slightly frilled leaves; outer leaves moderately tinged with reddish brown, inner leaves medium green; attractive. Crisp, sweet and tender. Medium slow bolting. Resistant to mosaic virus Very popular home garden and local market cultivar. A16, D26D, D82, FI, F92, G16, G57M, H85M, H95,184, K23{PL}, K27M, M46

Red Deer Tongue: 48 days. Red-leaved strain of a popular heirloom variety. Medium-sized rosettes with distinctive, pointed leaves and thick midribs; tender and juicy; excellent, rich yet mild flavor Slow to bolt and cold resistant. Selected by an amateur seed saver in Washington state. A2, D68, E24, F73D, K17M, K49T, L7M, L13M

Red Fire: 45 days. Large, intense red leaves; crinkled and frilled at the edges, crisp and tender. Very uniform and productive. Easy to

grow; withstands heat as well as cold. Very decorative. Popular with market growers. K10, M46, N52, Q34, R32

**Red Oak Leaf:** 50 days. Deeply indented leaves, green shaded with hues of burgundy, maroon, crimson or cranberry, depending on climate and conditions. Deepest red colors are obtained when grown in full sun. Sweet and delicate in texture. Resistant to heat and bolting; also grows well in cool weather. Popular with market growers who serve the gourmet restaurant trade. Selected from Red Salad Bowl. C20M, D11M, F70,177,199M, K66, R47

**Red Sails:** 45 days. Attractive, compact, fringed heads have a bright green background heavily overlaid with deep burgundy red. Mild, non-bitter flavor. Slow bolting. Has 6 times more vitamin A and 3 times more vitamin C than other lettuces. Deep red color intensifies as the lettuce matures. All America Selections winner in 1985. A25, B75M, C53, D11M, F70, G6, G16, G57M, G93M, H95,164, K10, L7M, L89

**Red Salad Bowl:** 46 days. A wine red strain of Salad Bowl. Radiant burgundy red, deeply lobed leaves form a full rosette; leaf shape resembles Oak Leaf lettuce. Mild, non-bitter flavor. Slow to bolt; holds its quality for a long time. Color is most spectacular during cool weather but grows well in spring, summer and fall. B75, B78, C53, E24, F44, G6, G57M, H49, H85M, J20, K27M, K71, K73, M49, R32, S55, etc.

**Redina:** 45-55 days. Intensely red Grand Rapids type Very attractive and flavorful. Deeply curled, open, leafy rosettes; deep burgundy with speckled green throats; crisp, non-brittle ribs. Stays upright and open for an appealing fresh look. Suitable for spring and fall plantings. Slower growing and lighter in weight than others in its class. G6,177, J20, K66, N24M, N81

**Rossa d'Amerique:**<sup>3</sup> Pale green leaves tipped with a sparkling rose-red. Primarily used as a cutting lettuce when 4 to 6 inches tall, but will form a loose head if thinned. Imported from Italy, where this type of lettuce is known as lattughino da taglio. C53, K17M, L77D, P59M, Q11M

**Rossa di Trento:**<sup>3</sup> A broad, crinkled, red-tipped cutting lettuce imported from Milan, Italy. Can be grown nearly year round in mild climates. This type of lettuce is called lattughino da taglio in Italy. Will form a large, round, open but tightly bunched head if left to mature. C53, Q11M, S17, S55

**Ruby:** Bright green, heavily crinkled and frilled leaves, prominently shaded with intense red. Crisp, sweet, succulent. Heat resistant; will stand for a long period of time without bolting to seed. Very decorative. All America Selections winner in 1958. A16, C44, C85M, E38, F80, G13M, G68, G71, G82, H85M, 164,167M, J20, L42, N16, etc.

**Valeria:**<sup>3</sup> Improved, very attractive Lollo Rossa type. More cold tolerant and with more intense red coloration. Thick, wide, heavy leaves; extremely frilly, finely cut margins; intensely red on exposed portions; yellow-white hearts. Very popular with mesclun growers, regrowing nicely for repeated harvests. Also suitable for growing in a winter greenhouse. C53, F80, L77D, N7G, Q52

**Winter Sun:** 60 days. Remarkable red lettuce that does well in winter, a time of year when other red types normally cannot photosynthesize efficiently enough to grow well. Attractive red and green heads with a fine flavor. Easy to grow. Cold haidv. Grows well in unheated greenhouses at temperatures as low as 20° F. Developed by Bountiful Gardens. B49

#### CODES FOR SPECIAL TYPES

1. Greenhouse
2. Mini or Baby
3. Cutting

## LIMA BEAN {S}

### PHASEOLUS LUNATUS

#### BUSH LIMA BEANS

**Baby Fordhook:** 70 days. Earliest of all the Fordhook types. Slightly curved pods, 2 3/4 to 3 inches long, filled with 3 to 4 seeds. Small, plump bright-green seeds with excellent flavor. Very good for canning or freezing. Grows about 16 inches tall. Resistant to downy mildew. Heirloom. E5T, G13M, G57M, K71

**Burpee Improved:** (Burpee's Improved Bush) 75 days. Medium dark green pods, long, broad and moderately thick; 3 to 5 1/2 inches long, produced in clusters; 4 to 5 seeds per pod; seeds large, fairly plump; seed color pale creamy white. Medium to large, erect plant. Introduced in 1907. HEDRICK 1931; A25, A75, B6, B75, B75M, D65, G16, G71, H49, H85M, J97M, K10, K27M, K71, M46, etc.

**Dixie Speckled Butterpea:**<sup>1</sup> 76 days. Slightly curved, oval pods, 3 to 3 1/2 inches long; 3 to 4 seeds per pod; seed small, nearly round; seed color red, speckled with dark carmine. Similar to Dixie White Butterpea except for seed color, and more productive under hot, dry conditions. Good for home and market gardens, either fresh or when dried. A75, E5T, G1M, G57M, G71, H73{DF}, 164,191, K10, K49M, K71, M46, N16

**Dixie White Butterpea:** 70-75 days. Pods medium-sized, broad, oval, 3 1/2 inches long; seeds small, pea-shaped; seed color white; quality very good, tender, has a rich meaty flavor. Strong, vigorous plant; productive; produces well under hot weather conditions. Recommended for home and market gardens. A75, D26D, E5T, G1M, G27M, G57M, 164,191, K10, K71, L10, M46, M95M

**Early Giant:** 65 days. Large pods, 5 to 6 inches long; 4 to 5 flat, oval seeds per pod; quality very good, tender, rich and butter-flavored; a good freezer. Rugged, upright plant; height about 18 inches; will bear from July until frost. K71

**Eastland:** 75 days. Medium-sized pods, 3 to 4 inches long; 3 small, semi-flat seeds per pod; seed color greenish-white; quality excellent. Strong upright plants have excellent yield potential. Resistant to downy mildew races A, B, C and D. Does well in short season areas, the seeds having good tolerance to cold soil. F13,191, L10, L42, L91M

**Excel:** Fordhook 242 type that has not failed to produce a crop in New Hampshire for 30 years. Broad flat pods, each containing 3 to 4 large, plump greenish-white seeds. Large, spreading plant, about 20 to 24 inches tall. Highly recommended for northern regions. Does not set pods well under high heat. Developed by Professor Elwyn Meader. C95, L7M, N84

**Fordhook:** 75 days. Broad, plump pods, 3 to 4 1/2 inches long, produced in clusters; 3 to 4 large, plump seeds per pod, packed closely together for easy shelling; seed color pale creamy white with a tinge of green; quality excellent, tender and buttery. Decidedly upright, erect plant; productive. Introduced in 1907. HEDRICK 1931; A90M{DF}, B75, C20M, C44, C85M, I67M, K71, M46, M95M

**Fordhook 242:** 75 days. Uniformly curved pods, 3 to 4 inches long; 3 to 4 thick, plump seeds per pod; seed color greenish tinged with cream. Higher yielding, more heat tolerant and easier to shell than regular Fordhook. All America Selections winner in 1945. A75, B6, B73M, B75M, E38, G16, G27M, G71, G79, H61, H85M, 164, K73, M46, N16, etc.

**Geneva:** 85 days. A baby bush lima with cool soil tolerance; germinates in soil 10° cooler than limas usually require, adding about 2 weeks to the growing season. The fresh, shelled beans are



light green, flavorful and good for freezing. Also good as a dry bean. K17M

Henderson: 60 to 70 days. Pods dark green; short, broad and slender, 3 to 3 1/2 inches long; 3 to 4 small seeds per pod; seed color pale creamy white; quality good to excellent. Small plant, 12 inches or less; very early; productive over a long period. Introduced about 1883. HEDRICK 1931; A25, A75, B6, B73M, G57M, G79, H33M, H61, I64, LIO, M46, N16, N84

Hopi Beige:<sup>1</sup> (Hopi Gray, Hopi Tan) 110 days. Beige or tan seeds, mottled with black variations. Good dried or shelled fresh. Medium-sized bushy plant. Adapted to southwestern dryland culture with intermittent summer rains. Shows good resistance to Mexican bean beetle. Sometimes sprouted and used in ceremonies. C95, L3J, N84

Hopi Yellow:<sup>1</sup> (Hopi Orange) Beautiful yellow-orange and black mottled bean. Good dried or shelled fresh. During spring ceremonies, seeds are sprouted, attached to kachina dolls, rattles and bows and given to children. The sprouts are then chopped, boiled and cooked in soup for feasting. Medium bush, 3 feet tall. Adapted to southwestern dryland culture. 116, N84

Jackson Wonder:<sup>1 2</sup> (Calico) 65 days. Pods dark-green, broad and slender, 3 inches long; 3 to 4 small seeds per pod; seed color light buff, mottled purplish-black. Upright, spreading plant, 12 to 18 inches tall. Resembles Henderson, but more heat and drought tolerant. Very young pods may be used as a snap bean. Popular in the South for home and market gardens. Introduced in 1888. HEDRICK 1931; A90M{DF}, E97, G93M, H73{DF}, 191, J11M{DF}, K10, K71, K73, L7M, M46, M95M, N16, N40{DF}

Nemagreen: 68 days. A good quality home garden and fresh local market lima with very good resistance to nematodes. Medium-sized pods, 3 inches long; small, flat, pale-green seeds. Good when cooked, frozen or dried. G1M

Red Calico:<sup>1</sup> Beautiful family heirloom from South Carolina. Medium-small seeds, bright dark-red splashed with black streaks and speckles, very attractive. Plants are drought and heat resistant. Probably a sport of the Red Calico pole lima. F73D

Thorogreen: (Early Thorogreen, Allgreen, Cangreen, Green-Seeded Henderson) 65 days. Pods are 3 inches long and are set high off the ground for easy picking; 3 to 4 small, bright-green seeds per pod. Excellent for canning and freezing. Vigorous, upright plant, to 18 inches tall; bears continuously till frost. Similar to Henderson except seeds are greener. A75, B6, D65, D76, E97, G16, G71, H54, I39, K71, K73, LIO, M46, M95M, N16

Wood's Prolific: 65 days. Broad, slender pods, 3 1/2 to 4 inches long and containing 3 to 4 seeds. Small to medium-sized, pale creamy white seeds of good quality. Bears until frost. Introduced in 1899 by T.W. Wood, originator of the Henderson lima. Similar to Henderson, but with larger pods and seeds, along with increased vigor and quality. HEDRICK 1931; G1M, L10, M95M

#### POLE LIMA BEANS

Black: 80 days. Small to medium-sized beans are dark-violet at green shell stage, black when dry; 4 to 6 beans per pod; easy to shell; flavor very good. Very tall plant; prolific, produces until frost; drought resistant. F73D

Burpee's Best: 92 days. Large, straight pods, 4 to 4 3/4 inches long; 3 to 5 large, plump, tender "potato" type seeds per pod. Excellent fresh or frozen. Strong climber may grow 10 to 12 feet tall. Combines the best features of Fordhook bush, with higher yields. B75, H54

Christmas:<sup>1</sup> (Large Speckled Calico, Chestnut) 85-90 days. Broad, flat pods, 5 to 6 inches long; 3 very large, very flat seeds per pod; seed color buff with deep crimson blotches. Unique chestnut-like flavor. Swells in size and retains its colorful markings even after soaking and cooking. Excellent fresh, canned or frozen. Grows 7 to 9 feet tall; yields heavily. Popular with specialty markets. MAYES;

A75, A90M{DF}, D76, F86T{DF}, G93M, 139,191, J11M{DF}, J84, K18M{DF}, K49M, K71, L7M, M46, N16, etc.

Dr. Martin: 90 days. Produces very large seeds, with an average weight of 2.3 grams; 3 to 4 seeds per pod; quality and flavor very good to excellent. Vigorous plant, 15 to 20 feet tall; very productive-average yield 19.5 pounds of shelled beans per 25-foot row. Developed by Dr. Harold E. Martin of Philadelphia. WEAVER 1997; D71, F24G, J97M

Florida Butter:<sup>1</sup> (Florida Speckled Butter) 90 days. Medium dark-green pods, fairly broad and quite slender, 3 inches long; 3 small seeds per pod; seed color light buff, blotched and irregularly spotted with reddish-brown. Vigorous plant, 5 to 8 feet tall; a large yielder over a comparatively long bearing season. Most suitable for the southern states. HEDRICK 1931; A75, A90M{DF}, F73D, G27M, G93M, I64, J11M{DF}, K27M, K71, L10, M46

Gigantes: {DF} Extremely large, thick, oblong, whitish seeds. Commonly baked in a spicy tomato sauce, a typical Greek dish served as a main course during Lent and as an appetizer year-round. In northern Greece, they are more often flavored with dill and garlic sauce. Widely available in Greek and Mediterranean markets. KREMEZI1993 [Re]; A7M, A90M, J11M

Illinois Giant: 86 days. Hybrid of Christmas and Dr. Martin. Large, very attractive seeds, lime-green speckled and splashed with maroon-red. Very easy to shell by hand. Combines the drought and heat resistance of Christmas with the large seed size and heavy yields of Dr. Martin. Developed by Merlyn and Mary Ann Niedens. L7M

King of the Garden: 88 days. Medium green pods, broad, quite slender, 6 inches long; 4 to 6 seeds per pod; seeds large, flat; seed color cream-white to very pale green; quality excellent. Vigorous plant, grows 8 to 10 feet tall; heavily productive over a moderately long season. Introduced by Frank S. Platt in 1883. HEDRICK 1931; A75, C44, D11M, F13, F70, G16, G27M, G71, G82, H85M, I64, I91, K71, L7M, M46, M95M, etc.

Prizetaker: 90 days. Pods 6 inches or more long, 1 1/2 inches wide, borne in clusters; easy to harvest; 3 to 5 very large seeds per pod. Quality and flavor excellent both fresh and frozen. Good for home or market gardens. Also recommended for exhibiting at county fairs. B75, M95M

Sieva: (Carolina) 78 days. Small, slightly curved pods, 3 to 3 1/2 inches long; 3 to 4 small, flat, smooth seeds per pod; seed color medium green when shelled, dull white when dried. Vines productive; reliable; precocious. Excellent for home and market gardens, either fresh, shelled or dried. A75, B73M, D26D, D76, G27M, G57M, H54, I64, J20, K5M, K71, M46, M95M, N16

Willow-Leaved: (Willow Leaf) 65 days. Ornamental plant with dark glossy green leaves and long, narrow, willow-like leaflets. Pods very dark green, short, 3 inches long; 3 or 4 seeds per pod; seed color chalky white; quality fair to good, best when grown in southern states. Introduced in 1891. HEDRICK 1931; F73D, G1M, K71, L4, L7M, M46

Worcester Indian Red Pole: (Red Sabas) Medium-sized, dull red to dull maroon-red seeds. Heat and drought resistant, yielding prolific crops under adverse conditions. Will occasionally produce pods that shatter when completely dry. Introduced in 1570 from South America by Spanish or Portuguese coastal traders, between Florida and the Chesapeake. Preserved by the Nanticoke Indians of Eastern Shore, Maryland. F24D, L7M

#### TROPICAL LIMA BEANS

Also known as *Madagascar beans*, these unselected, viney type limas are well adapted to the lowland tropics, especially the highly leached, infertile soils of the more humid regions. Some little-known cultivars have given extraordinarily high yields in tropical rainforest regions. NATIONAL RESEARCH COUNCIL 1979; PIG

## CODES FOR SPECIAL TYPES

1. Mottled
2. Edible-Podded

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**LOQUAT {GR}**


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**ERIOBOTRYA JAPONICA**


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**WHITE-FLESHED**

Advance: Medium to large, pear-shaped to elliptic-round fruit; deep yellow in color; borne in large, compact clusters. Skin downy, thick and tough; flesh whitish, translucent, melting and very juicy; flavor subacid, very pleasant; quality good; ripens in midseason. Seeds commonly 4 or 5, the seed cavity not large. Tree a natural dwarf; height 5 feet; highly resistant to pear blight. Self-infertile, pollinate with Gold Nugget; a good pollinator for other cultivars. MORTON 1987a, POPENOE, W. 1920; G49,174,183M

Benlehr: Fruit oval to oblong; size medium, 1 1/2 to 1 3/4 inches long; skin thin, peels very well; flesh white and juicy, flavor sweet; quality excellent. Seeds 3 or 4. Originated as a seedling on the property of Reverend Charles E. Benlehr of Encinitas, California and is the best of the great many seedlings he grew beginning in 1941. U7D{SC}

Champagne: Fruit medium to large, oval to pyriform; fruit cluster large, loose. Surface deep yellow in color with a grayish bloom; skin thick, tough, somewhat astringent; flesh whitish, translucent, melting and very juicy; flavor mildly subacid, sprightly and pleasant; quality very good. Ripens late. Seeds 3 or 4, the seed cavity not large. Perishable; good for preserving. Tree self-infertile, prolific. MORTON 1987a; G49,174,183M, J61M, Q93

Premier: Large, oval to oblong-pyriform fruits; skin downy, medium thick, tough, yellowish-orange to salmon-orange with large white dots; flesh whitish, juicy, melting; flavor agreeably subacid; 4 or 5 seeds per fruit. Ripens late, does keep or ship well. Recommended for backyard orchards. Originated in Orange, California by C.P. Taft, in 1899. MORTON 1987a; I53M

Yista White: Small to medium-sized, roundish fruit with blunt calyx end; skin light yellow; flesh pure white, very high in sugar content; ripens 1 to 3 weeks later than Gold Nugget. Excellent for dessert. Originated in Vista, California. D57

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**YELLOW/ORANGE-FLESHED**

Bessell Brown: Large to very large fruit with a correspondingly large seed. Thick, orange skin, resistant to bruising; firm, solid orange flesh, very sweet. Ripens very late in the season. Originated in Victoria, Australia. Considered a potential commercial fruit in northern New South Wales. GLOWINSKY; Q93

Big Jim: Large, roundish to oblong fruit, 1 1/4 to 1 1/2 inches in diameter; skin pale orange-yellow, medium-thick, easy to peel; flesh orange-yellow, very sweet but with some acidity, of excellent flavor; ripens midseason, March to April. Tree vigorous, upright, highly productive. Originated in San Diego, California by Jim Neitzel. E8M, G49,183M

Early Red: Medium-large, pear shaped fruit, borne in compact clusters; skin orange-red with white dots, tough, acid; flesh orange, very juicy, sweet, of fair to excellent flavor; seeds usually 2 or 3. Ripens very early, late January or early February in California. Originated by C.P. Taft in 1909. MORTON 1987a; S97M

Gold Nugget: (Thales, Placentia) Large, round to oblong-obovate fruit; surface yellow-orange to orange in color; skin not thick, tender; flesh orange-colored, firm and meaty, juicy; flavor sweet, somewhat reminiscent of apricot; quality good. Seeds 4 to 5, the seed cavity not large. Ripens late. Fruits borne only a few to a

cluster; keep and ship well. Tree vigorous, upright, self-fertile. D23M, D57, E29, G49, H4,174,183M, J22, N84, S97M

MacBeth: Very large, ovoid fruit, 1 1/2 to 2 inches in diameter; smooth, tough, saffron yellow skin; flesh cream-colored, streaked with yellow, peach-like in texture, juicy, low in acid; flavor pleasant and mild; seeds small, 2 to 4 per fruit. Spreading tree, about 20 feet in width, bears fruit in clusters of 3 to 8. Originated in Carlsbad, California by A.R. MacBeth. BROOKS 1972; G49,183M

Mogi: Small, elliptical fruit, weight 40-50 grams; skin light yellow; flesh relatively sweet; ripens in early spring. Tree cold-sensitive; self-fertile. Constitutes 60% of the Japanese crop of loquats. Easier to peel than Tanaka, matures earlier, but is more susceptible to bruising and to cold injury. Selected from numerous seedlings planted at Mogi, Japan. Named in 1925. MORTON 1987a; E8M

Oliver: Very large fruits, 2 1/2 inches long and 1 1/2 inches in diameter, ovoid to slightly pyriform; firm, orange skin; thick, juicy, firm, orange flesh; flavor excellent; 4 to 6 seeds per fruit. Ripens February through April in Florida. Vigorous, dense rounded tree, up to 30 feet tall. Originated in Miami, Florida by George W. Oliver, about 1910. BROOKS 1997; I53M, G2M

Tanaka: Fruit very large, usually obovoid; weight 2 to 3 ounces; skin orange-yellow, attractive; flesh firm, rich orange, aromatic, slightly acidic to sweet, of excellent flavor; seeds 2 to 4; ripens very late, the beginning of May in California. Keeps unusually long, if left for a week it wrinkles and dries but does not rot. Tree vigorous and productive. Originated in Japan in the late 1800's. Named after Dr. Yoshio Tanaka. MORTON 1987a; R77, S97M

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**MACADAMIA {GR}**


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**MACADAMIA INTEGRIFOLIA  
MACADAMIA TETRAPHYLLA**
**MACADAMIA X SP.**

Beaumont: (Dr. Beaumont) (M. x sp.) Round, medium to large nut, 65 to 80 per pound; shell medium-thick; kernel 40% of nut, with a high percentage of grade A kernels; texture and flavor very good. Tree upright; ornamental; new leaves reddish; flowers bright pink, borne on long racemes. Nuts drop over a long period. Recommended for home gardens. Originated in Australia. Introduced in 1965 by the California Macadamia Society. Discovered by Dr. J.H. Beaumont. BROOKS 1972; A63, D23M, G2M, G49, I83M, J65{OR}, J65{DF}, N84{S}

Burdick: (M. tetraphylla) Large nut, averaging 40 nuts per pound; shell thin, about 1/16 inch thick, well-filled; kernel averages about 34% of total nut weight, quality good; matures in October. Tree bears annually. A good choice for certain problem climatic areas. Also used as a rootstock. Originated in Encinitas, California. BROOKS 1972, JAYNES; A63, J65{OR}, J65{DF}

Cannon: (M x sp.) Very large nuts, 1 to 2 inches in diameter; shell 1/8 inch thick; kernel weight 35 to 38% of nut; oil content 75%. Richer, nuttier flavor than most. Well suited to special candy applications and packaging. Productive, pyramidal tree, about 20 feet tall; begins bearing after 4 or 5 years; good resistance to frost. J65{OR}

Cate: (M. tetraphylla) Nuts medium to large; shell moderately thick; kernels 40% of nut, cream colored, crisp in texture, flavor good to very good; ripens in late October and November, continuing over a period of 6 to 8 weeks. Tree precocious, moderately handy, shows no alternate bearing tendencies. The most widely adapted cultivar for commercial use in California. Originated on the property of William R. Cate, Malibu, California. A63, H12{DF}, I83M, J65{OR}, J65{DF}, S97M

Cooper: Small nuts, 3/4 to 1 inch in diameter; shell 1/8 inch thick; kernel weight 38% of nut; oil content 75%. Must be hand harvested.

Attractive, compact tree, produces large clusters of nuts at each fruit stem which resemble grape clusters. Pink flowers. Begins bearing after 2 or 3 years. Selected by Thompson H. Cooper from a Beaumont hybrid. J65{OR}

Dorado: (*M. integrifolia*) Medium-sized, uniform nuts, 7/8 to 1 inch in diameter; kernel averages 35% of nut, oil content 75%. Tree medium-tall, upright, attractive; begins to bear after 5 years; self-harvesting; cold resistant. Very productive, often yielding 65 or more pounds of nuts per year. Originated in Hawaii. Introduced by Rancho Nuez Nursery. J65{OR}

Elimbah: (*M. tetraphylla*) Medium to large nut; shell medium brown, rough, thick; kernel averages about 40% of nut, quality high, flavor excellent; ripens late, harvested over a 6 to 8 month period. Tree vigorous, upright; bears well, especially in interior areas of California. Originated in Caboolture, Queensland, Australia. BROOKS 1972, JAYNES; J65{OR}, J65{DE}, S97M

Fenton: (*M. tetraphylla*) Large nut of excellent quality. Has a distinct hairline fissure in the shell, making it easier to crack than most other cultivars. Ripens over a longer period than Cate, November to March. Regularly sets good crops, about 50 pounds per year. Recommended for homeowners and commercial plantings. Originated in Chula Vista, California by Fenton Smith. I83M

James: (*M. integrifolia*) Medium-sized, uniform nuts, about 1 inch in diameter; kernel averages 40 to 42% of nut, flavor very good, oil content 75%. Tree very tall, columnar; precocious, often producing after 2 or 3 years; self-harvesting. Yields more per acre than any other California cultivar, 60 or more pounds per tree when mature. Originated in La Habra Heights, California. J65{OR}

Kau: (*M. integrifolia*) Medium-sized nut, 60 to 70 per pound; kernel weight 36 to 40%, 95% grade 1. Ripens from September to December in Hawaii. Strong, upright tree with well-formed ascending branches. Better adapted to dry, windy areas than other cultivars. Originated from a seedling found at the Hawaiian Macadamia Co. orchard. Selected in 1936. Released in 1971. BROOKS 1997; E8M, Q93

Keaau: (*M. integrifolia*) Medium-sized nut, averaging about 80 nuts per pound; shell smooth, medium brown, thin; kernel 42 to 46% of nut, color light cream; quality very good; season August to November. Tree moderately vigorous, upright; very productive. Originated in Lawai Valley, Kalaheo, Kauai, Hawaii. BROOKS 1972; J65{OR}, J65{DF}

Keauhou: (*M. integrifolia*) Medium to large nut, averaging about 54 nuts per pound; shell very slightly pebbled, medium-thick; kernel 37 to 40% of nut, quality tends to vary in different locations. Harvest season relatively short, with most of the crop maturing within about 3 months. Tree vigorous, yields well, extremely resistant to anthracnose. Originated in Kona, Hawaii by W.B. Storey. BROOKS 1972, JAYNES; J65{OR}, J65{DF}, Q93

Makai: (*M. integrifolia*) A consistent bearer of large, uniform nuts with high-quality kernels. Nuts average 59 per pound with 40% kernel and 98% grade 1. Kernel quality excellent after cooking. Broad, spreading tree; highly resistant to anthracnose. Better adapted to lower elevations than most cultivars. Seedling selected at the University of Hawaii. BROOKS 1997; E8M, Q93

Stephenson: (*M. tetraphylla*) Nut round, of high quality. Thin shells often split upon drying, allowing entry of fungi. Tree large, open, vigorous, a good producer. Originated in Queensland, Australia. Introduced in 1961. Fairly widely distributed in California. BROOKS 1972; J65{OR}

Vista: (*M. x sp.*) Small to medium-sized nut, 3/4 to 7/8 inch in diameter; kernel averages 46% of weight of nut, flavor excellent, oil content 75%. Shell very thin, can be cracked in an ordinary hand cracker. Tree medium-sized, pyramidal; begins to bear after 3 years; self-harvesting; flowers pink. Recommended for both home garden

and commercial plantings. Originated in Rancho Santa Fe, California by Cliff Tanner. J65{OR}

Waimanalo: (*M. integrifolia*) Large nuts, occasionally with twin halves; shell relatively thick; kernel 38 1/2% of nut, flavor good, oil content 75%. Tree medium-sized, pyramidal; productive, begins to bear after 5 years; produces nuts in large clusters; resistant to frost and disease. Grows well in cooler climates, particularly near the ocean; also yields good crops inland. Originated at the Hawaiian Agricultural Experiment Station, Waimanalo, Hawaii. J65{OR}

## MANDARIN {GR}

### CITRUS RETICULATA

#### SATSUMAS

A distinctive type considered to have originated in Japan sometime prior to 1600 A.D. Highly important there where it is called Unshu mikan. The most cold-tolerant of the commercially important citrus fruits, mature dormant trees having survived minimum temperatures of 15 to 18° F. without serious injury. Some cultivars also ripen earlier than any of the oranges or other mandarins. REUTHER; R5SM{SC}, D3M{PR}, D23M{ES}, E29, G17, I77G, J22, K67

Brown's Select: Early bearing satsuma strain. Medium to large, uniform fruits; thin, easily peeled rind; sweet, melting, flavorful flesh; quality very high; only 1 or 2 seeds per fruit. Ripens just before Owari. Tall, vigorous, upright tree. Released by Louisiana State University. H4

Changsha: Small to medium-sized fruit; skin brilliant orange-red, very loose, easily peeled; flesh juicy, sweet but somewhat insipid, segments easily separated, seedy; matures early; resembles Satsuma. Tree highly cold resistance, 10 year old seedlings having survived a temperature of 4° F. in Arlington, Texas. Bearing trees will produce crops of fruit after 7° F. temperatures even though the leaves may fall. MORTON 1987a; G17,174, K67, N37M

Dobashi-Beni Unshu: Satsuma type, distinctive only because of its deep orange-ied color. Fruit of good quality, ripening in late November or early December. Tree of medium vigor. Originated as a limb sport of Owari in the orchard of K. Dobashi in Shizuoka Prefecture, Japan and was noted about 1940. REUTHER; A63, A71, C29M{SC}, N18{OR}

Kimbrough: Satsuma type, somewhat more cold hardy than Owari; holds better on the tree. Medium to large, seedless fruit. Has very thin skin that peels readily. Quality very good. Tree larger and 40% more productive than Owari. Very popular in southern Louisiana. Seedling of Owari. Developed at the Louisiana Agricultural Experiment Station. H4

Miyagawa: (Miyagawa Wase) Fruit large for a satsuma, moderately oblate; rind thin, smooth; juice abundant, sugars and acid well-blended, quality excellent; seedless. Matures early and stores well for Wase Unshu. Tree more vigorous than most old Wase clones; productive. Named and introduced by Dr. Tyozaburo Tanaka in 1923. REUTHER; 04

Okitsu: (Okitsu Wase) Fruit somewhat more oblate than Miyagawa, but averages higher in sugar content and matures a week or so earlier. Tree also more vigorous. An early (Wase) type, and since satsumas are characterized by early fruit maturity, the Wase cultivars are very early ripening, in late September and October. REUTHER; A63,A71,183M, N18{SC}

Owari: (Owari Satsuma) Fruit oblate to rounded or becoming pear-shaped with age, of medium size. Rind orange, slightly rough, thin, tough, easily separable. Pulp orange, tender and melting; of rich, subacid flavor; segments 10 to 12, loosely separable; nearly seedless, sometimes 1 to 4 seeds. Of ancient and unknown Japanese origin. MORTON 1987a, REUTHER; A63, A71, D37{DW},

E3M{DW}, G49, H4, H78, I49M{DW}, I74{DW}, I83M, N18{SC}

Silverhill: (Silverhill Owari) Medium-sized fruit, slightly more oblate than most; rind relatively thin and smooth; seedless. Juice abundant; high in sugars and low in acid, hence very sweet; quality excellent; stores well. Season of maturity early. Tree very vigorous for a satsuma; markedly cold-resistant. REUTHER; N84, 097, R77

Variegated:<sup>2</sup> Very ornamental variegated satsuma, apparently a sport of the Owari cultivar. Sweet fruits with thin, easily peeled rinds. Dwarf to semi-dwarf habit. Ideal for growing in pots, where space is limited, or as a patio tree. Hardier than other variegated Citrus, being adapted to Zones 8 through 10. H4

#### OTHERS

Beauty of Glen: (Beauty of Glen Retreat) Medium-sized, oblate fruit; rind thin, firm but easily removed, orange-red at maturity; segments 9 to 13, easily separated; flesh orange-colored, tender, juicy, sprightly flavored; moderately seedy. Midseason in maturity. Originated about 1888 near Brisbane, Australia. Highly popular in Queensland. Q93

Choa Chou Tien Chieh Kat: Small, somewhat oblate fruit; rind light orange, thin, easily peeled; flesh light orange, juicy, very aromatic; flavor delicate but sprightly, distinct; moderately seedy. Tree vigorous, upright; very productive, bears in 3 to 5 years from seed; cold hardy, having survived 7° F. in Texas. One of the earliest of the Kat group of mandarins. K67

Clementine: (Algerian) Medium-small to medium fruit, round to elliptical; peel deep orange-red, smooth, glossy, thick, loose but scarcely puffy; pulp deep orange-red with 8 to 12 segments; juicy and of fine quality and flavor; 3 to 6 seeds of medium size; season early but long, extending into the summer. Most important early-ripening mandarin of the Mediterranean basin. MORTON 1987a, RAY, R., REUTHER, SCHNEIDER 1986 [Cui, Re]; A63, A71, B58MISC, B93M{DW}, D13, D23M, E3M{DW}, E9{PD}, E99G{PR}, G17, G49, I83M, J21M{PR}, J22, K46, N18{SC}, N40{PR}, etc.

Dancy: Oblate to pear-shaped fruit, of medium-size; peel deep orange-red to red, smooth, thin, leathery, tough; pulp dark-orange with 10 to 14 segments, of fine quality, richly flavored; 6 to 20 small seeds. Leading tangerine in the U.S., mainly grown in Florida, secondarily in California, and to a small extent, Arizona. MORTON 1987a; A63, J75EM{SC}, B73M{DW}, D3M{PR}, D23M, E3M{DW}, E97{DW}, G49, G96{DW}, H4, H49{DW}, I83M, J17, J22, N18{SC}, etc.

Ellendale: Medium-large to large fruit, oblate to subglobose; rind orange-red, medium-thin, relatively adherent though peelable at maturity; flesh bright orange, very juicy; flavor rich and pleasantly subacid; moderately seedy. Late midseason in maturity. Originated about 1878 at Burrum, Queensland, Australia. Possibly a natural tangor. REUTHER; C29M{SC}, Q93, S59

Encore: Fairly large, oblate fruit; rind yellow-orange with darker orange spots, thin, nearly smooth, peels easily; flesh deep orange, juicy; flavor rich and sprightly; seeds numerous; unusually late ripening and late holding on tree. Tree upright, spreading; somewhat alternate bearing. RAY, R., REUTHER; A63, G49, I83M, N84, 097, R77

Fairchild: Medium-sized, oblate fruit; rind dark orange, smooth, peels freely; flesh orange-colored, firm yet tender, juicy; flavor rich and sweet; retains good quality through December; seeds 20 to 30. Best suited as fresh fruit. Tree heat tolerant; adapted especially to Coachella and Imperial Valleys of California. BROOKS 1972; A63, A71, D13, G49, N18{SC}

Fallglo: Large, flattened fruit; thin, smooth, reddish-orange rind, easily peeled; high juice content, 65.8%; sweet, relatively rich flavor; ripens early to midseason. Vigorous, thornless tree, more

upright than Temple; moderately cold handy. Complex hybrid involving a mandarin, tangelo and Temple tangor. BROOKS 1997; I77G, L60M{PR}, N18{SC}

Fina: (Fina Clementina) Very small fruit; rind particularly smooth; strong, pleasant aroma; very tender, sweet and juicy; excellent flavor, quality and acid to sugar ratio. Matures as much as 4 weeks later than early Clementine clones; holds well on the tree. The standard of excellence in the Spanish Clementine industry. Large, vigorous trees with good productivity. SAUNT; C29M{SC}, Q93

Fremont: Fruit medium in size, oblate in form; rind medium-thick, of moderate adherence but easily peelable, bright reddish-orange. Flesh deep orange, tender and juicy; flavor rich and sprightly. Seeds moderately numerous. Early ripening, but fruit retains quality well past maturity. E3M{DW}, E8M, J22, N18{OR}

Honey: Small, oblate fruit; rind light yellowish-orange, faintly pebbled, peels readily; pulp deep orange, flavor exceptionally rich and sweet; seedy; ripens early. Tree vigorous; tends strongly to alternate bearing. Sometimes confused with the Murcott tangor of Florida. RAY, R., REUTHER; A63, G49, I83M, J22, N18{SC}

Imperial: (Early Imperial) Medium-small to medium fruit; rind very thin, leathery, smooth and glossy, yellowish to pale orange at maturity. Segments 9 to 11, easily separable. Flavor pleasantly subacid with an attractive aroma. Comparatively few seeds. Originated about 1890 at Emu Plains, Australia. REUTHER; Q93, S59

Kara: Fruit large, up to 3 inches in diameter; skin deep orange, somewhat wrinkled and bumpy; rind thin, peels easily and cleanly, rather tough; pulp deep, rich yellowish-orange, tender, very juicy with a unique aroma, sugar high; flavor rich, excellent, tart until fully mature; ripens very late; not tolerant of cold winters. BROOKS 1972; A63, E3M{DW}, G49, H49{DW}, H78, I83M, N18{OR}, N24M{DW}, Q93

Kinnow: Large fruit, up to 3 inches in diameter; skin yellow-orange; rind thin, smooth, peels poorly, rather tough; pulp with 9 to 12 segments, separating airily easily, deep yellowish-orange, moderately tender, very juicy with a unique and very pleasant aroma, sugar very high; flavor very rich, excellent. BROOKS 1972; A63, D13, E3M{DW}, G49, I74{DW}, I83M, N18{SC}, N24M{DW}

Lee: Medium-sized, round fruit, resembles a tangelo. Rind thin, leathery, moderately adherent but readily peelable; color deep yellowish-orange at maturity. Flesh orange; segments 9 to 10, readily separable; tender and melting; juice abundant; flavor rich and sweet. Medium-early in maturity. Clementine mandarin x Orlando tangelo. REUTHER; D57, I83M, N18{OR}

Long Huang Kat: Small, oblate, slightly irregular fruit; about 2 inches by 1 1/4 inches; smooth, glossy, yellowish-orange rind; medium orange flesh, melting and juicy, sprightly sweet-tart; segments usually 10; seedy. Ripens in early midseason. Upright tree, fairly handy. Popular in Texas and the Gulf Coast. NAGLE; K67

Mediterranean: (Willowleaf) Fruit of medium size, oblate to rounded; peel orange, smooth, glossy, thin; pulp orange, with 10 to 12 segments; very juicy, of sweet rich flavor; seeds 15 to 20; matures early. Tree small to medium; reproduces true from seed; produces best fruit in hot, dry climates. MORION 1987a, RAY, R.; A63, C29M{SC}, N18{OR}

Nova: Medium-large, oblate to subglobose fruit; rind thin, leathery, moderately adherent but easily peelable, deep yellowish-orange at maturity; segments about 11, easily separable; flesh deep orange, firm, juicy, flavor more pleasant and sweeter than Orlando. Seeds numerous in mixed plantings. Ripens early, reaching its prime in November in Florida. Clementine mandarin x Orlando tangelo. BROOKS 1972; A63, A71, E8M, E13G{PR}, E99G{PR}, J21M{PR}, N18{SC}, Q93

Page: Fruit of medium size, broadly oblate to subglobose. Rind medium-thin, leathery, moderately adherent but easily peelable, reddish-orange at maturity. Flesh deep orange, with about 10 segments; tender and juicy; flavor rich and sweet. Seeds moderately numerous. Early in maturity. Clementine mandarin x Minneola tangelo. REUTHER; A71, E8M, G17, G49, 183M, N18{SC}, Q93

Pixie: Small to medium-sized fruit, variable in shape; rind yellow-orange, peels easily without dripping of juice; flesh medium orange; flavor mild and pleasant; essentially seedless, regardless of exposure to other pollen sources; matures late. Tree somewhat alternate bearing; not successfully grown in the hot dessert. BROOKS 1972; A63, B58M{SC}, G49, 183M, N18{SC}

Ponkan: Fruit large for a mandarin, globose to moderately oblate; rind medium-thick, fairly loosely adherent, orange; flesh orange, tender and melting, juicy; flavor mild, pleasant, aromatic; segments about 10; seeds few; ripens in early midseason. Tree vigorous; distinctive in appearance due to pronounced upright growth habit. One of the most tropical mandarins, the fruit attaining maximum size and quality under such conditions. REUTHER; G17, H4, I77G, J22, K67, N18{OR}

Robinson: Medium-large oblate fruit; rind thin, tough and leathery, moderately adherent but easily peelable; color deep yellowish-orange at maturity. Flesh deep orange, with 12 to 14 segments; juicy, flavor rich and sweet; seeds moderately numerous; matures early. Tree very vigorous; bears regularly. Clementine mandarin x Orlando tangelo. REUTHER; C29M{SC}, E99G{PR}, G2M

Sunburst: Medium-sized, oblate fruit; rind orange to scarlet; pulp in 11 to 15 segments, with abundant colorful juice; seeds 10 to 20 according to degree of pollination. Matures in a favorable season (mid-November to mid-December). Tree vigorous; thornless; early-bearing; self-infertile, needs cross-pollination for good fruit set. MORTON 1987a; A63, G2M, I77G, N18{OR}

Wilking: Fruit large, up to 3 1/8 inches in diameter; skin deep yellowish-orange; rind thin to medium, peels fairly well; flesh rich yellow-orange, with 9 to 13 easily separating segments, firm, moderately tender, very juicy; aroma of juice unique; sugar content high; flavor rich and very good, being very sweet late in the season. C29M{SC}

#### CODES FOR SPECIAL TYPES

1. Cold-Hardy
2. Variegated

## MANGO {GR}

### MANGIFERA INDICA

Alphonso: (Alphonse) Medium-sized, oblong-ovate fruit; skin yellowish-green to bright yellow blushed scarlet; flesh orange, free from fiber, flavor very rich, quality excellent; seed monoembryonic. Tree broad and spreading, not heavy bearing. Supposedly named for Alphonse d'Albuquerque, one of the early governors of the Portuguese possessions in India. PARMAR, P. [Re], POPENOE, W. 1920; R0, R50

Ataulfo: Gourmet mango from Mexico. Small to medium, oval fruit, slightly tapered at one end; weight 6 to 12 ounces; yellow-orange skin; golden, fiberless flesh, sweet and melting, aromatic, slightly firmer than Kent. Produces, excellent polyembryonic seedlings. Upright tree; has proven to be productive in southern California. D57

Brahm Kai Mea: A variety that originated in Thailand where it is eaten both green or when ripe, and is considered delicious either way. Long, green fruit with deep-orange flesh; average Brix reading 19. Produces good quality fruits on a regular basis. Introduced into Hawaii where it has become popular with home orchardists. E8M

Brooks: Fruit quality fair; not particularly attractive, but late in season (August to October). Tree weak-growing; heavy-bearing. Open-pollinated seedling of Sandersha. Originated in Miami, Florida by the Charles Deering Estate. Introduced in 1924. BROOKS 1972; J22, Q93

Carabao: Long, slender fruit; thin, greenish to bright yellow skin; soft, tender, melting, juicy lemon-yellow flesh; flavor mild, spicy subacid; fiberless; quality good to excellent. Ripens in June and July, does not store well. Not a good producer in Florida. Very popular in the Philippines, accounting for about two thirds of the crop. Introduced into Florida by David Fairchild. CAMPBELL; E8M

Carrie: Medium-sized fruit, to 4 inches long, averaging 12 ounces in weight; easily bruised; skin greenish-yellow; flesh very juicy, very rich, aromatic, fiberless, quality excellent; ripens June to July. Tree semi-dwarf, with dense crown. Resistant to anthracnose. Considered to be one of the best of all mango cultivars for home gardens. Originated in Delray Beach, Florida by Lawrence Zill. Introduced about 1949. BROOKS 1972; A41G, E29, G2M, I77G, 183M, N53M, N84

Edgehill: Small to medium-sized, oblong fruit; average weight 12 ounces, individual fruits to 1 1/2 pounds; skin dark-green, with a rose blush on the side exposed to the sun, tough, does not peel well; flesh orange in color, sweet and fiberless except for a few short fibers on the ventral suture of the seed. Quality very good to excellent. Seed size medium. Bearing season Thanksgiving to end of April some years. Tree upright, productive, susceptible to anthracnose. Originated in Vista, California. Introduced in 1970. I83M

Edward: Large fruit; skin yellow, with a bright red blush where exposed to the sun; flesh firm, fiberless, juicy, rich, melting, smooth; flavor excellent; high in food value; seed small; ripens June to July. Spreading, low yielding tree. Resistant to anthracnose. Considered to be one of the best of all mango cultivars for home gardens. Originated in Coconut Grove, Florida by Edward Simmons. Introduced about 1942. BROOKS 1972; G2M, I83M, N53M

Fairchild: Medium-sized fruit, average weight about 3/4 pound; skin bright yellow; flesh golden yellow, entirely free from fiber, flavor delicious; seed small, polyembryonic; ripens in July. Tree spreading, bears lightly. Highly resistant to anthracnose. Originated in Balboa Heights, Canal Zone from seeds introduced from Saigon by David Fairchild. E8M, J22

Florigon: (Florida Saigon) Medium-sized fruit, to 5 inches and 1 pound; skin deep yellow; flesh fiberless, juicy, sweet, rich, quality excellent; season May and June. Tree small, upright, vigorous; moderately resistant to anthracnose. Probably an open-pollinated seedling of Saigon. Originated in Ft. Lauderdale, Florida by John Kaiser. Introduced about 1947. BROOKS 1972; Q93

Glenn: Fruit oval to somewhat oblong; medium to large; skin yellow with an orange-red blush, smooth, thin, tough; separates easily from flesh, many yellow and white dots. Flesh deep-yellow, fiberless, firm, juicy, rich, aromatic, spicy, quality excellent; aroma strong but pleasant, suggesting pineapple; monoembryonic. Season June and July, about 7-10 days before Haden. Excellent for yards. Originated in Miami, Florida by Roscoe E. Glenn. Introduced about 1950. BROOKS 1972; E8M, G2M, I83M, J22, N53M, Q93

Gouveia: *High* quality, attractively colored fruits with very sweet, juicy, richly flavored pulp; almost fiberless; seed small. Ripens late, in July and August. Medium-sized, upright tree, moderately productive. Grown successfully in Hawaii but requires a warm, sunny, dry climate for the development of best quality fruit. Originated by Mrs. Ruth P. Gouveia. E8M

Haden: Fruit oval to ovate, plump; size large to very large, length 4 to 5 1/2 inches, weight up to 24 ounces. Surface smooth, light to deep apricot-yellow in color, overspread with crimson-scarlet; skin very thick and tough; flesh yellowish-orange, firm, very juicy, fibrous only close to the seed, and of a rich, moderately piquant

flavor; quality good. Season July and August. Alternate bearing. Originated at Coconut Grove, Florida, as a seedling of Mulgoba. First propagated in 1910. POPENOE, W. 1920; A41G, D57, G2M, I83M, J22, N53M, Q93, S97M

Irwin: Medium-sized, oblong-ovate fruit; skin orange to pink with extensive bright-red blush and small white lenticels; flesh yellow, almost fiberless, with a mild sweet flavor; quality good to very good; ships well; seed small; season June and July. Tree semi-dwarf, bears heavy crops of fruit in clusters; susceptible to anthracnose. Originated in Miami, Florida by F.D. Irwin. Introduced in 1946. BROOKS 1972, MORTON 1987a; N53M, Q93, S97M

Jakarta: Attractive mango that shows promise as a commercial cultivar for Tropical America. Medium to large, roundish fruit; skin orange-yellow blushed with reddish-orange; tender, juicy deep-yellow flesh with a rich, spicy flavor, slightly resinous; nearly fiberless. Ripens from June to August. Produces heavy crops in Florida. Originated in Boynton Beach, Florida by Lawrence H. Zill. CAMPBELL; I83M, N53M

Julie: Fruit somewhat flattened on one side, of medium size, greenish-yellow with slight pink blush; fiber very slight; flavor sweet, creamy, excellent; ripens in July in Florida. Tree somewhat dwarf, has 30% to 50% hermaphrodite flowers; bears well and regularly. Adaptable to humid environments and resistant to disease. Fruit is resistant to the fruit fly. Introduced to Florida from Trinidad but has long been popular in Jamaica. The main mango exported from the West Indies to Europe. Originated in Mauritius. MORTON 1987a; A41G, D57, E8M, E29, G2M, I77G, I83M, N53M, N84

Keitt: Large to very large, rounded-oval to ovate fruit; skin bright-yellow with light-pink blush and lavender bloom, surface smooth, thick, fairly tough, not separating easily from flesh; flesh deep yellow, fairly firm but tender, melting, juicy, some fiber near the seed; flavor rich and sweet, quality very good; monoembryonic; season late July to October. Moderately resistant to anthracnose. Considered to be an excellent late-maturing mango cultivar. Originated in Homestead, Florida by Mrs. J.N. Keitt. Introduced about 1946. BROOKS 1972, MORTON 1987a; A41G, D57, E8M, G2M, I77G, I83M, L33M{PR}, L54{PR}, N53M, Q93, S97M

Kensington Pride: Fruit distinctly beaked when immature, medium-large; skin bright orange-yellow with a red-pink blush overlying areas exposed to the sun. Flesh orange, thick, nearly fiberless, juicy, aromatic, of rich flavor. Polyembryonic. The fruits ship well but the tree is not a dependable nor heavy bearer. The leading commercial cultivar in drier areas of Queensland, Australia. In humid regions it is anthracnose-prone and requires spraying. MORTON 1987a; Q93

Kent: Large, thick, ovate fruit; skin greenish-yellow with a dark-red blush and gray bloom; many small yellow lenticels; flesh fiberless, juicy, sweet; very good to excellent; seed small; season July and August and often into September. Tree of erect, slender habit; of moderate size; precocious; bears very well; susceptible to anthracnose. Fruit ships well, but for the market, needs ethylene treatment to enrich color. Originated in Miami, Florida by Leith D. Kent. Introduced in 1944. BROOKS 1972, MORTON 1987a; D57, G2M, I83M, L33M{PR}, L54{PR}, N53M, Q93, S97M

Manila: (Filipino) Small to medium-sized, long pointed fruits; weight 8 to 10 ounces; skin bright yellow-orange, smooth, thin and tender; flesh golden, juicy, non-fibrous, sweet, quality very good; seed small, polyembryonic; ripens October to December. Can be eaten when slightly green. Tree bushy, bears regularly, susceptible to anthracnose. D57, G2M, G49{PL}, I74, I83M, N53M, S97M

Mulgoba: Medium-sized, oblong-ovate fruit; skin deep yellow to apricot-yellow, sometimes overspread with scarlet, thick and tough; flesh bright orange-yellow, very juicy, free of fiber, of a rich piquant flavor, quality excellent; seed monoembryonic. Season July to September in Florida. The name Mulgoba is taken from that of a

native Indian dish, and means "makes the mouth water". POPENOE, W. 1920; R0, R50

Nam Dok Mai: (Nam Dawg Mai, Nectar of Flowers) Greenish-yellow fruit with a slight pink blush; average weight 375 grams; virtually stringless; firm, juicy, orange flesh; excellent, sweet, aromatic flavor; seed very thin, polyembryonic. Susceptible to anthracnose and powdery mildew. Bears regularly in cooler climates, in late mid-season. Highly prized in Thailand. LOHA-UNCHIT; G2M, I83M, N53M, Q93

Ok Rong: (Ohg Rawng, Dented Breast) Small, Saigon type mango. It is thought to have the highest sugar content of any Florida grown mango. Ok means breast in Thai. Rong means dented, or depression, because the ventral part of the fruit has a Rong or depressed line running along that part of the fruit. Excellent with coconut-flavored sticky rice. Originated in Thailand. LOHA-UNCHIT; E8M, E29, N53M, N84

Ono: Small, ovate fruit, weight 5 to 8 ounces; skin yellow, tinged with pink on side exposed to the sun; flesh yellow, juicy, melting, fiberless; flavor rich and spicy; ripens in July. Tree upright, susceptible to anthracnose. Primarily for home gardens. Originated in Makiki Heights, Honolulu, Hawaii by R.W. Smith. Introduced in 1958. BROOKS 1972; Q93

Pairi: (Pirie) Small to medium-sized, ovate fruit, weight 7 to 10 ounces; skin moderately thick, yellow-green, suffused scarlet around the base; flesh bright yellow-orange, firm but juicy, free of fiber, of pronounced and pleasant aroma and sweet, rich, spicy flavor; quality excellent. Season in south Florida July and August. Tree spreading, bears lightly, susceptible to anthracnose POPENOE, W. 1920; D57, J22, R0, R50

Palmer: Large, elongated oval fruit; weight 1 1/4 pounds; skin brightly colored with purple and red; flesh apricot-colored, smooth, nearly fiberless, very sweet; quality good; less aromatic than some; good storage characteristics; ripens July to August. Tree produces well most years; very upright in growth; susceptible to anthracnose. Originated in Miami, Florida by Charles I. Brooks. Introduced in 1946. BROOKS 1972; N53M, Q93

Pina: (Pineapple) Medium-sized, roundish fruit; weight 8 ounces; skin light yellow to orange; flesh yellow, slightly fibrous but juicy and sweet, has a distinct pineapple-like flavor; seed polyembryonic; ripens November to December. Tree upright, susceptible to anthracnose. Originated in Mexico. D57

Rapoza: Very fine-textured, fiberless pulp with a sweet, delicate flavor; small seed; ripens in July. Produces good quality fruits on a regular basis. An anthracnose resistant cultivar that can be grown in relatively humid areas. Seedling of Irwin selected at the University of Hawaii by Richard Hamilton. E8M

Sensation: Medium-sized, oval fruit, weight about 12 ounces; skin bright yellow with a dark plum-red blush, thin, adherent; flesh pale yellow, firm, slightly sweet with a distinctive mild flavor, fibers scanty, quality good; season August and September; seed monoembryonic. Tree vigorous, upright; produces heavy crops but tends toward alternate bearing; susceptible to anthracnose. Originated in North Miami, Florida. Introduced in 1949. BROOKS 1972, MORTON 1987a; Q93

Southern Blush: Very attractive, medium to large, oblong fruit; weight 1 to 2 1/4 pounds; skin yellow, heavily blushed with red; flesh nearly fiberless, firm, juicy, sweet yet tart, of good flavor. Ripens in midseason, July in Florida, has a long shelf life. Resistant to anthracnose. Tree exceptionally vigorous. Shows good commercial potential. Originated at Zill Nursery. G2M, N53M

Tommy Atkins: Medium to large, oblong-oval fruit; weight 16 to 25 ounces; skin thick, orange-yellow, with a bright to dark-red blush and purplish bloom; flesh medium to dark-yellow, firm, juicy, with medium to high fiber, of fair to good quality. Harvest season June and July; ships very well, shelf life of 2 weeks. Moderately resistant

to anthracnose. Tree vigorous, upright. Originated by Thomas N. Atkins of Ft. Lauderdale, Florida. Introduced in 1948. BROOKS 1972, MORTON 1987a; L33M{PR}, N53M, Q93, S97M

Valencia Pride: Very attractive, medium to large, roundish to ovate fruit weighing 1 to 2 pounds; skin yellow-red; flesh sweet, juicy, slightly fibrous, of good flavor; ripens in midseason, July in Florida, ships very well. Tree vigorous, very upright, consistently productive. A good shade and ornamental tree. Seedling of Haden. Recommended for home gardens in Florida. G2M, N53M, Q93

Van Dyke: Medium-sized fruit, average weight 280 grams; skin yellow-orange with bright red blush, attractive; fiber moderate. Flavor good, sweet, slightly turpentine; quality variable in some areas. Can be significantly affected by "jelly seed". Seed mono-embryonic. Ripens July to August. High resistance to anthracnose and black spot. Cropping regular. Originated in Florida. N53M

Winters: (20222) Small to medium-sized, elongated fruit; skin smooth, free of blemishes, attractively colored red and yellow; flesh yellow-orange, fiberless, flavor sweet, very good to excellent; seed small, polyembryonic; ripens October to November. Matures early but with inconsistent yields. Has the ability to ripen all of its fruits off the tree, evenly and completely once they are mature. Originated in Miami, Florida but has proven well adapted to southern California. U7T{SC}

Zill: Medium-sized, oval fruit; skin greenish-yellow, blushed with dark red or crimson; soft, juicy flesh, fiber slight; flavor mild and sweet with a strong, pleasant aroma; quality good to excellent. Ripens June to early-July. Large, vigorous, spreading tree; a regular producer. Seedling of Haden planted in 1922. Named and described in 1945. CAMPBELL; N53M

## MELON {S}

### CUCUMIS MELO

#### CANTALOUPE MELONS

The true cantaloupe melons, considered by many to be the finest flavored of all melons. Usually with a hard rind and a rough, warty, or scaly surface, but not netted. Generally they do not "slip" from the vine, and must be cut when ripe. Rarely grown commercially in the United States. Also called *rock melons*. The cantaloupe melons grown near Cavaillon in the south of France are considered among the finest in the world. H25M{PR}

#### HYBRID

Alienor: 75 days. High quality Charentais type. A popular favorite in Europe, where it is featured in gourmet restaurants. Small, roundish to oval fruit weighing about 2 pounds; light gray-green rind, slightly ribbed and with medium netting; thick, dark-orange flesh, very rich and sweet, highly aromatic. Very uniform and high yielding. Resistant to fusarium wilt. C53, G82, I18M, 177, K23{PL}, L42, L79, L89, S95M

Chaca: (Early Chaca, Flyer) 67 days. Exceptionally early Charentais type. Round fruit, 4 inches in diameter, weight 2 to 2 1/2 pounds; rind thin, grayish-green, lightly netted. Firm, thick, deep-orange flesh; very sweet and flavorful; small seed cavity. Highly productive. Ripens most of its crop as picking begins on the later cultivars. Does well in cool or short season areas. D68, J20

Charmel: 78 days. Smooth, grey-green fruit; weight 2 to 3 pounds. Aromatic deep-orange flesh, very sweet and rich, small seed cavity. Traditionally served with prosciutto. Very vigorous and productive. Good crack resistance. Tolerant to fusarium wilt and powdery mildew. C92, K66

Savor: 78 days. Medium-sized, faintly ribbed fruit; weight 1 1/2 to 2 1/2 pounds; smooth grey-green rind, dark-green sutures. Very sweet and aromatic deep-orange flesh, of excellent quality. High

yielding. Tolerant to fusarium wilt and powdery mildew. Does not slip when ripe. Harvest when color changes to straw and fruit becomes aromatic. C53, E75{PL}, G6, G68,139,177, M29, M46, N16, N84, R47, S95M

Sweetheart: 70 days. A gourmet charantais melon, specially developed for the North and short season areas. Round-oval fruit, 4 to 5 inches in diameter; smooth, pale grey-green rind. Salmon-red flesh, very sweet and aromatic. Must be harvested at full maturity. Does well in frames or under cloches. Used extensively in England and France. M46, N84, R32, S55, S61

#### OPEN-POLLINATED

Charantais: 85 days. The true cantaloupe melon of France, legendary in Provence. Medium-sized, globe-shaped fruit; 3 1/2 inches in diameter; weight 2 1/2 to 3 pounds; smooth, furrowed, grey-green rind. Aromatic, thick, deep-orange flesh; extremely sweet and flavorful. Excellent as a dessert filled with a sweet wine such as Barsac, Marsala, Port or Madeira. C20M, C53, E63D, G68, H99M{PR}, I18M, 139, 089, Q11M, Q34, S75M

Large White Prescott: Large, flattened fruits with broad ribs, very wrinkled and warty; weight 5 1/2 to 9 pounds; skin whitish-green, variegated with dark and pale green; flesh orange, aromatic, very thick, juicy, melting, of very fine flavor. Usually only 1 fruit per vine is allowed to grow. French heirloom from the 19th Century, once very popular with Paris market gardeners. VILMORIN; F80, N84

Noir des Carmes: (Des Carmes, Early Black Rock) Fruit nearly spherical, but slightly flattened at the ends; 6 to 7 inches in diameter, weight 2 1/2 to 3 1/2 pounds; ribs clearly but not very deeply marked. Rind smooth, very dark green, almost black turning orange when ripe. Flesh orange, thick, sweet, perfumed, of excellent quality. Introduced prior to 1885. VILMORIN; F73D, F80, J39, N84

Vedrantais: 92 days. Excellent charantais melon from France. Globe-shaped fruit; weight 1 to 1 1/2 pounds; rind smooth, light grayish-green, slightly ribbed. Aromatic deep-orange flesh, very sweet and flavorful. Will not slip when ripe; best grown on a trellis or in a greenhouse. Tolerant to fusarium wilt race 1. B49, B75, D74B, K49M, S95M

#### MUSKMELONS

Also called *netted melons* or *nutmeg melons*, these are the principal commercial melons grown in the United States. They are not cantaloupes as they are so often erroneously called. The surface is more or less strongly netted. Most are ripe when the stem begins to separate or "slip" from the fruit. B65{PD}

#### GREEN-FLESHED

##### Hybrid

Arava: (Hybrid 820) Galia type, with slightly larger fruit and heavier netting. Round, slightly flattened fruit; weight 2 1/2 to 3 pounds; rind yellow, netted. Flesh light green, sweet and aromatic; small seed cavity. Very early, concentrated yield. Resistant to powdery mildew race 1. Suitable for early production in tunnels and in the open field. Especially adapted to hot climates. P75M, T27M

Galia: (Gaylia) 65 days. An Ogen type melon, but larger and more vigorous than others of this type. Round fruit; weight 2 to 2 1/2 pounds; rind yellow, heavily netted; flesh light green, very sweet and aromatic; small seed cavity. Resistant to powdery mildew. Suitable for growing in frames, greenhouses or in the open field. Recommended for home gardens and local markets. F15{PR}, K60M, K66, K73, P75M, T27M

Gallicum: 80 days. Very attractive, high quality Haogen type. Small, round fruit, 5 inches in diameter and weighing 2 to 3 pounds; rind golden-orange when ripe, lightly netted; flesh lime green, melting, rich, very sweet and aromatic. Uniform and productive. Resistant to powdery mildew race 1. Very popular in the Mediterra-

nean region. C20M, C92, D26D, F13, F63, G1M, G27M, 139,191, K10, K50, K73, N52, Q11M

Passport: 75-80 days. High quality Galia type melon. Large, roundish fruits; 6 to 7 inches in diameter and weighing 5 to 6 pounds; skin orange-yellow, netted; flesh dark green, whitish green near the seed cavity, very thick, smooth, sweet; flavor rich and exotic, suggestive of tropical fruit. Vigorous, disease resistant, and widely adapted. Developed by Brent Loy of the University of New Hampshire. A16, D68, E63D, F60, G6, G13M, J20, K10, K73, L42, L89, M29, M46, M49, Q34

Rocky Sweet: 85 days. Medium-sized, round fruit; weight 3 to 4 pounds; moderately netted, with light sutures; rind dark green, turning yellow, then yellow-orange when ripe. Thick, lime-green flesh; tender, sweet and delicious, without a musky flavor. Stems will "slip" when very ripe. Ships well. Vines very vigorous and prolific. F60, F63, G16, G71, H95, K10, K73, N16

#### *Open-Pollinated*

Anne Arundel: Medium large, nutmeg-shaped fruit, weight 3 to 4 pounds; rind yellow when ripe, slightly mottled with green, moderately ribbed and netted; flesh light green, sweet, mildly flavored; quality moderately good. Unripe fruits were pickled, and ripe fruits sliced like apples and baked in pies. Maryland heirloom of the 18th Century. Often depicted in the paintings of Raphaelle Peale. TAPLEY 1937, WEAVER 1997; D29P, K20M

Boule d'Or: (Golden Perfection, Honey Ball) 120 days. Spherical to slightly oblong fruit; 5 1/2 inches in diameter, weight 2 to 3 pounds. Rind strong and tough, loosely netted; golden-yellow when ripe. Flesh pale green, rather thick, very sweet and agreeably perfumed. Stores well. Introduced prior to 1885. TAPLEY 1937, VILMORIN; C20M, H99M{PR}

Extra Early Hackensack: (Early Hackensack) Medium-sized, oblate fruit; skin golden-yellow, mottled profusely with green; flesh light green blending into yellowish green near the cavity, very fibrous, sweet and very highly flavored, mildly aromatic; quality fair to good. Originated in Hackensack, New Jersey about 1884. TAPLEY 1937; U8D

Green Climbing: Small, oblong fruits, slightly ribbed; 4 to 5 inches long and weighing 1 to 1 1/2 pounds; skin deep green, somewhat dotted with pale green; flesh green, melting, very sweet and juicy, highly perfumed. Vigorous, branching vine. Ideal for growing on trellises, espalier stakes or walls. French heirloom from the 19th Century. VILMORIN; F80, N84

Green Nutmeg: (Early Green Flesh Nutmeg, Nutmeg) 63 days. Slightly oval fruit; heavily netted, shallowly ribbed; 3 1/2 inches in diameter, weight 2 to 3 pounds. Flesh light green with a salmon center, aromatic, very sweet and sprightly. Best harvested at half slip. Heirloom. A2, D68, E5T, F73D, G57M, K20M, K49M, R47

Haogen: (Ogen, Israel) 80 days. Round fruit; 5 to 6 inches in diameter, weight 3 pounds; smooth green rinds, slightly tinged yellow when ripe; wide green sutures. Pale greenish-white flesh, tinted salmon around the small seed cavity; thick, tender, juicy, very sweet and rich. Vigorous, prolific vines. A2, B49, G71M, G93M, I99M, J9M, K49T, L11, L13M, L91M, N16, O89

Jenny Lind: 75 days. Small, oblate fruit, flattened at both ends; often with a small knob on the blossom end; 5 to 6 inches in diameter, weight 1 1/2 to 2 pounds. Skin dull brownish-orange, profusely mottled with green. Flesh light green, soft and juicy, very sweet, mildly flavored and lacking in aroma. At one time a popular home garden and local market cultivar. Introduced about 1846. TAPLEY 1937; A2, D29P, E5T, F24M, G71, J20, K49M, K71, L91M, M32

Navajo: (Branco) 85 days. Very unusual and interesting melon. Originally from Portugal, it has become the favorite melon of the Navajos. Very large, tear-drop shaped fruits, 20 inches long and 10 inches across; light yellow skin, ridged and waisted; flesh thick,

green, honeydew-like but with more flavor and texture Very perishable, must be eaten within a day or two of ripening. J73

Rocky Ford: (Eden Gem, Netted Gem, Nutmeg) 91 days. Nearly round fruit; 4 to 5 inches in diameter, weight 2 to 2 1/2 pounds; heavily netted, slightly ribbed. Flesh green with a narrow gold border near the cavity; very sweet and sprightly. Well-known and popular home garden and short distance shipping cultivar. Introduced about 1885. TAPLEY 1937; A75, B75, B75M, F24G, F60, I84, K5M, K71, L7M, M95M, N16

Tiger: 110-120 days. Very large, elongated fruits, the size of small to medium watermelons; skin yellow, mottled and streaked with green, lightly ribbed. Crisp, light-green flesh, juicy and succulent. High sugar content. Developed by Hill Luz of Bonanza Seeds from seed originally collected in Afghanistan. B49

#### SALMON-FLESHED

#### *Hybrid*

Ambrosia: 86 days. Medium-sized, very uniform, nearly round fruit; 6 inches in diameter, weight 4 1/2 to 5 pounds; heavily netted, not ribbed. Flesh salmon, juicy, extremely thick and firm right down to the rind; very sweet, with a unique distinctive flavor. Seed cavity small, with seeds in a tight mass. Vines prolific; resistant to powdery and downy mildew. B6, B75, E53M, E75{PL}, G1M, G71, G82, G93M, H85M, 139,164,191, M29, M95M

Burpee Hybrid: 82 days. Round to slightly oval fruit; heavily netted, distinctly ribbed; 6 inches in diameter, weight 4 to 4 1/2 pounds. Flesh deep-orange, thick, firm, juicy, sweet and flavorful, of excellent quality. High-yielding vine; produces very well in northern areas. Popular with home gardeners and market farmers. B6, B75, C85M, E24, E91G, G71, G79, H33M, H54, H61, H85M, I64, J97M, K50, L42, etc.

Hami Sweet: 85 days. Improved hybrid form of the famous Hami melons from Xinxiang in western China. Uniform, oblong fruits weighing 3 to 4 pounds. Very crisp and sweet orange flesh. Grows very well in milder climates. Resistant to powdery mildew. Recommended for home gardens, roadside farms, and specialty markets. D55, H49, N84

Pancha: 80 days. Hybrid between a Charantais melon and an American muskmelon. Fruit netted, with slight green ribs; 6 inches in diameter, weight about 2 pounds. Solid, deep-orange flesh, very aromatic; flavor very sweet and intense. Vine vigorous; resistant to powdery mildew and fusarium wilt. J97M, K66

Seika: Improved hybrid form of the famous Hami-gua melons from China's Xinxiang province. Oblong fruits weighing about 3 1/2 pounds; light, yellow-green skin with slight netting; thick, light-orange flesh, tender, crisp, very delicious, brix content 14%. Stores very well. Vigorous, high yielding plant; disease resistant. S70

#### *Open-Pollinated*

Ananas d'Amerique: (Red-Fleshed Pineapple) Small, globe-shaped fruit, 3 to 4 inches in diameter and weighing 10 ounces to over a pound; skin thin, light green dotted with blackish-green, slightly netted; furrows shallow, clear green; flesh red, firm, juicy, sweet, very aromatic; seed cavity tiny. Vigorous, branching vine. Heirloom from the 19th Century. VILMORIN; G68

Banana: 90 days. Long, cylindrical, tapered fruit; 15 to 18 inches in length, 4 to 4 1/2 inches in diameter; weight 3 1/2 to 4 pounds; netting very sparse, ribs prominent; skin creamy yellow when ripe. Flesh salmon orange to orange, juicy, very sweet, mildly aromatic. Introduced prior to 1883. TAPLEY 1937; B73M, C92, D76, E97, F60, H85M, K27M, K71, M46, N16

Blenheim Orange: Medium-sized, short-oval fruit; skin thin, finely netted. Thick, very succulent, scarlet flesh; very highly perfumed, of fine flavor. High yielding and extremely reliable. Traditionally grown in greenhouses in England. First raised in 1881



in the gardens of Blenheim Palace. VILMORIN; B49, K49T, N84, R32, R47, S61

Delicious 51: (Golden Delicious 51) 83 days. Nearly round fruit, 6 inches in diameter, weight 3 to 4 pounds; skin yellow when ripe, with medium to sparse netting and distinct sutures. Thick, firm, orange flesh, of excellent quality. Resistant to fusarium wilt. Excellent for home gardens and nearby markets. A25, B6, B75M, C85M, G57M, G71, G79, H33M, I64, K10, K50, L4, L7M

Early Hanover: (Extra Early Hanover) 80 days. Globe-shaped, slightly flattened fruit; 6 inches in diameter, weight 3 to 3 1/2 pounds; rind light green with slight netting, ribbing shallow, but definite. Sweet, juicy, salmon-orange flesh. Grows well under adverse conditions. Good for home gardens. A2, C95

Far North: 65 days. Hearts of Gold type. Globe-shaped fruit, 4 to 5 inches in diameter; rind sparsely netted, turns yellow when ripe. Flesh deep-salmon to orange, very firm and sweet. Small, compact vine. Successful in areas throughout Canada, where other cultivars fail to mature. D27, K20M

Garmak: 65-70 days. Very early Persian melon, often ripens in April. Small, oblate fruit, about 4 inches long and 5 inches in diameter; orange, netted rind; sweet, salmon flesh. Susceptible to powdery mildew, nematodes and wilts. Introduced into the United States in 1958 from Isfahan, Iran. SHAIDA; U14

Giant Perfection: 95 days. Extra large, round fruit; 8 to 10 inches in diameter, weight 14 to 15 pounds; heavily netted, distinctly ribbed. Firm, rich, deep-orange flesh; sweet and flavorful; large seed cavity. Selected from the old Perfection cultivar. Productive and reliable. F73D, K49M

Golden Champlain: 85 days. Moderately small, globular fruit, 5 to 6 inches in diameter; weight 3 to 4 pounds; skin yellowish-brown, profusely mottled with green; flesh pale orange, medium thick, slightly fibrous, moderately soft and juicy; flavor sweet, medium; quality moderately good. Introduced in 1923. TAPLEY 1937; K71

Golden Gopher: (Pop-Open Melon) Unusual heirloom from the 1930's. Golden yellow, round-oval fruit; netted on the stem end but free of netting on the blossom end, except for a "belly button" at the tip; flesh intense orange, aromatic, fine-textured, sweet to the rind; flavor not as complex and full-bodied as other melons. Resistant to fusarium, bacterial wilt, and drought. Known as Pop-Open melon because the fruits have a tendency to split when fully ripe. D68, K20M, K49M, L88J

Hale's Best Jumbo: 83 days. Large, oval fruit, 6 to 7 inches in diameter and weighing 5 or 6 pounds; rind yellow-green, slightly ribbed, heavily netted; flesh thick, deep salmon-orange, sweet, flavor very good. Popular standard cultivar. Good for local markets, roadside stands, and short distance shipping. B8M, B73M, B78, C69, D74B, E5T, G27M, G71, G93M, H57M, H85M, H95, K5M, K10, K49M, K71, M95M, N16, etc.

Harvest Queen: 92 days. Medium-sized, roundish fruits, 5 1/2 to 6 1/2 inches in diameter and weighing about 3 1/2 pounds; rind golden-yellow when ripe, coarsely netted, ribs shallow; flesh deep orange, thick, firm, fine-textured; flavor sweet, rich, musky; quality very good. Resistant to powdery mildew and fusarium wilt. Good for home garden and local market use. C92, G79, I59M, K23{PL}, K27M, K49M, K49T, L3J, L55J

Hearts of Gold: (Hoodoo) 90 days. Nearly round fruit, 5 1/2 to 6 inches in diameter, weight 3 to 4 pounds; rind dark green with fine gray netting, distinctly ribbed. Firm salmon flesh, sweet, somewhat sprightly, quality very good. Popular with home gardeners and local markets. Originated in Benton Harbor, Michigan by Roland Morrill. Patented in 1914. TAPLEY 1937; A75, B6, B75M, C92, G83M, G93M, H33M, H95, J73, J97M, K10, K49M, M95M

Honey Rock: (Sugar Rock) Globular fruit, 6 inches in diameter, weight 2 1/2 to 3 1/2 pounds; rind very strong, grayish-green turning yellow at maturity; netting abundant, coarsely interlaced, ribs

obscure. Medium-thick, deep-salmon flesh; juicy, sweet, slightly coarse in texture. Good for home gardens. Introduced in 1925. TAPLEY 1937; A75, C69, C85M, D76, G79, H49, I59M, I64, K10, K71, K73, M95M

Iroquois: 87 days. Nearly round fruit; 6 1/2 inches in diameter, weight 4 to 6 pounds; grayish-green rind, well netted, with prominent ribbing. Thick, sweet deep-orange flesh; of excellent quality and fine texture. Excellent for short distance shipping. Resistant to fusarium wilt. Standard main crop cultivar for northern areas. B6, B8M, B49, C44, C92, C95, D65, D76, E97, H49, H61, J9M, K71, K73, L13M, L89, N16, etc.

Kansas: An heirloom muskmelon with excellent flavor. Ridged, oval-shaped fruit, moderately netted; weight about 4 pounds. Orange flesh; ripens close to the rind. Vigorous, hardy vine; particularly resistant to sap beetles which destroy fruit of other cultivars. L7M

Minnesota Midget:<sup>1</sup> 65 days. Small, globe-shaped fruit; 3 1/2 to 4 inches in diameter; rind deeply lobed, with sparse netting. Thick, golden-yellow flesh, sweet right to the rind; small seed cavity. Dwarf vine, grows only 3 feet long; resistant to fusarium wilt. Ideal for small gardens. Released by the University of Wisconsin. A2, B73M, D76, E24, E97, G13M, G83M, J20, K10, K49M, L91M

Montana Gold: 60 days. One of the earliest maturing muskmelons. Developed by Fisher's Garden Store of Belgrade, Montana to ripen in areas with very short growing seasons. Round, netted fruit; sweet and flavorful. Fruit starts to set with the first blossoms. D82

Musketeer:<sup>1</sup> (Bush Musketeer) 90 days. An improved bush-type melon. Round, heavily netted fruit, 5 1/2 to 6 inches in diameter; weight 2 to 3 pounds. Sweet, fragrant, light-orange flesh; firm and tender. Short-vined plant, spreads only 2 1/2 to 3 feet; sets 4 to 6 fruits. Ideal for small gardens and container culture. Introduced in 1982. E91G, G27M, H54, H57M, H95, M95M

Old Time Tennessee: 100 days. Large, elliptical fruit, 12 to 16 inches long; weight 12 pounds; rind deeply creased. Sweet, very fragrant, salmon flesh. Flavor excellent, but must be picked exactly at peak ripeness. Will not keep. C20M, F73D, L7M, N16, N84

Pennsweet: 65 days. Small to medium-sized, slightly ribbed, oval fruit, 6 inches long; weight 1 1/2 to 2 pounds; well-netted rind; flesh salmon, thick, juicy and sweet, of high quality, seed cavity very small. Perfect for individual servings. For home garden and local market use. All America Selections winner in 1955. U8D

Persian: (Small Persian) 110 days. Nearly round fruit; 6 to 7 inches in diameter, weight 6 to 7 pounds. Rind dark-green, turning yellow-orange when ripe; uniformly covered with a fine netting, no ribbing. Flesh very thick, bright-orange; sweet, with a distinctly pleasant flavor and aroma. Excellent shipping qualities. Adapted to areas of long, warm growing seasons. TAPLEY 1937; B75M, C20M, F60, G93M, K60M

Schoon's Hardshell: (Illinois Hardshell) 90 days. Large, oval fruit; 8 to 9 inches in diameter, weight 5 to 7 pounds; rind heavy, hard, deeply ribbed, with coarse yellow netting. Flesh salmon pink, thick and solid, spicy with a good musky flavor. Resistant to growth cracking. Excellent for home gardens and shipping. B75M, C92, G1M, G71, G79, N16, N52

Sierra Gold: (Sierra Gold Early Shipper) 85 days. Slightly oval fruit; 6 inches in diameter, weight 3 1/2 pounds; rind yellow-green, slightly netted, almost no rib. Flesh salmon; thick, firm, sweet, of very good flavor. Good for home gardens and commercial use. Resistant to powdery mildew. D74B, G71M, K27M

Spear: 90 days. Large, elongated fruit; weight 3 to 6 pounds; rind grayish-green, moderately netted. Flesh yellow-orange, sweet. Good for home gardens and local markets. Long popular in the maritime Northwest. Known prior to 1929. Origin unknown, but possibly a hybrid of the Banana muskmelon. TAPLEY 1937; A2,139, K49M, N24M

Sweet Granite: 70 days. Oblong, lightly netted fruit; weight 2 1/2 to 3 1/2 pounds. Does well in difficult, cool weather areas. Sweet bright-orange flesh. Flavor and texture remain good if vines stay healthy and fruit is picked promptly at maturity. Moderately vigorous vine; tolerant to fusarium wilt. Developed by Professor E.M. Meader at the University of New Hampshire. A2, E59Z, G6, K49M, L13M, N24M, 089, R47

Tang Thai: Medium-sized, cylindrical, dense fruit; rind slightly pubescent when young, medium-green with lighter green stripes, reminiscent of a watermelon; flesh salmon, orange near the seed cavity, slightly sweet; has a strong distinctive aroma when ripe. Easy to grow but not suitable for trellising; grown during the rainy season in the tropics. Young fruits are canned, older ones are used for making refreshing desserts. Occasionally available in ethnic markets. 053

Tip Top: 90 days. Large, globular, moderately ribbed fruit; 6 1/2 inches long; weight 5 to 6 pounds; skin pale yellowish-cream, netting moderately abundant; flesh orange, moderately thick, rather coarse, juicy, sweet; quality very good. Does well in northern areas. Introduced in 1892 by Livingston Seed Co. TAPLEY 1937; F73D

Weeks North Carolina Giant: 85 days. Extremely large fruit, average weight 20 to 25 pounds when grown on proper soil in a normal season. Sweet, juicy flesh. Produced the world's largest melon of 39 pounds in 1977. Developed by Edwaid E. Weeks of Greenville, North Carolina. B73M, D65,181, L79

#### WHITE-FLESHED

##### *Hybrid*

Golden Crispy:<sup>2</sup> 75 days. Small, very uniform, oval fruit; 4 to 5 inches long, weight 10 to 12 ounces; skin smooth, bright golden-yellow. Flesh white, very sweet and aromatic. Rind extremely thin, edible. Whole fruit can be eaten like an apple, no peeling necessary. Vine prolific, often sets more than 10 fruits; resistant to heat. COOK [Cu]; A79M, C92,139, M46, N24M

Honey Gold Sweet:<sup>2</sup> 90 days. Small, elongated-oval fruit; weight about 10 ounces; skin golden-yellow, smooth and glossy. Flesh white, crisp, sweet and very aromatic. Rind extremely thin, edible. A good keeper. F73D, L59

##### *Open-Pollinated*

Ananas (Sharlyn) 105 days. Oval-shaped fruit, 6 inches in diameter, weight 4 1/2 to 6 1/2 pounds; rind thin, yellow-orange at maturity; uniformly netted, no ribs or sutures. Flesh white, with gold lining and seed cavity; juicy, very sweet and perfumed. Vigorous vine; tolerant to powdery mildew and crown blight. Long popular overseas. A2, F60, G93M, K49M, K49T, L11, L13M, N16, N40{PR}

Cob Melon: 85 days. Medium to large, globe-shaped fruit; skin soft, mottled with light and dark green, ribbed. Slightly grainy, creamy white flesh; very sweet and melting. Unique, cob-like seed cavity that is easily removed. Large, productive vines. Popular for over a century in old-fashioned home gardens throughout the West. F73D, N84

Early Silver Line: 76 days. A unique and very attractive oriental melon of elongated shape. Small, oblong-oval fruit; yellow skin lined with silver sutures, so thin it can be peeled like an apple. Crisp, white flesh; very sweet and fragrant. Very popular in Korean markets. B75, E75{PL}, Q3

Ein Dor: An older Ananas type still popular in Israel. Short-oval fruit; weight 2 1/2 to 4 1/2 pounds; rind light yellowish-orange, with fine netting. Flesh creamy white, very sweet and aromatic; quality very good. Ripens in midseason. Resistant to powdery mildew race 1. P75M, T27M

Hero of Lockinge: Medium-sized, roundish fruit; skin bright yellow, slightly netted; flesh white, very tender, melting, rich, of

excellent quality. Traditionally grown in cool greenhouses or frames in England. Introduced about 1884. VILMORIN; S61

Israeli: (Old Original Israeli) 90-95 days. Ananas type. Large, oval fruit; weight 4 to 5 pounds; rind yellow-orange when mature, netting sparse, no ribs or sutures. Flesh white, with a gold seed cavity; very sweet and aromatic. Vigorous, productive vines. F24M, F73D, N16, N84

Jharbezeh Mashadi: Native to northern Persia, near the town of Mashad. Considered by some to be the original form of melon. Oblong-shaped fruit, 18 inches long, 8 inches in diameter; skin mottled green and yellow, becoming split when ripe. Very sweet, honeydew-like white flesh with a crispness similar to watermelon. So sweet it has to be eaten in small amounts. U14

#### WINTER MELONS

Late ripening melons that can be stored longer than other types, some into the winter months. Generally lacking in the musky odor of the muskmelons. Most require a very long growing season. Some prefer a period of cool weather to ripen properly.

CASABA MELONS Usually with rough skins, whereas the Honeydew types are smooth-skinned. The name is derived from the town Kassabah near Smyrna (now Izmir), Turkey.

##### *Hybrid*

St. Nick: 84 day & Very attractive, hybrid Santa Claus type. Long-oval fruit, weighing about 6 pounds; very hard rind, gray-green with dark green mottling, slightly netted; flesh creamy white, firm, juicy, very sweet, refreshing; seed cavity small. Excellent keeper, will store for up to 3 months after harvest. Vigorous, productive plant. Bred from Spanish melon stock. D76, E97, 164, J97M, K66, L91M, M46

##### *Open-Pollinated*

Golden Beauty: 110 days. Long-oval fruit, 7 inches in diameter, weight 7 to 8 pounds; rind very hard, wrinkled, a rich golden color when ripe. Thick white flesh; juicy, sweet, spicy, without aroma; small seed cavity. Excellent for shipping and storage. Needs a long, warm, dry climate. Resistant to crown blight. TAPLEY 1937; B75, B75M, D1T, F60, G13M, G57M, G83M, G93M, H95, K5M, K49M, N40{PR}, N52

Marygold: 80-85 days. Premium quality, early casaba type. Medium-sized, oval fruit, 6 1/2 inches in diameter and weighing 3 to 4 pounds; rind bright yellow, slightly wrinkled, tough; flesh pale greenish-white, thick, very sweet, refreshing. Vigorous, very productive vine, resistant to fusarium and powdery mildew. Originated at the University of Maryland. J9M, K10, L10, L42, L89C

O'odham Kuri Basho: (Ke:li Ba:so) Casaba type fruit with light green flesh. A favorite of Tohono O'odham (Papago) and Pima farmers. Vines produce abundant crops. Adapted to low hot desert areas. In temperate areas, plant in spring when danger of frost is past. 116, N84

Santa Claus: (Christmas Melon) 110 days. Long-oval fruit; 12 inches long, 6 inches in diameter; weight 8 to 9 pounds; rind very hard, wrinkled, golden-yellow with dark green mottling. Thick, white to pale green flesh; juicy, sweet, spicy. Excellent for shipping and storage. Resistant to crown blight. Best adapted to long, warm, dry growing regions. B75M, C20M, F60, G57M, G93M, K60M, N40{PR}, N52

Santo Domingo: 100 days. Santo Domingo Pueblo strain. Large, round, basketball-size fruit. Aromatic, pale green flesh, sweet and juicy. Yields 5 to 6 fruits per vine. From the New Mexico Pueblo near Santa Fe. Adapted to the high semi-desert. Sown in spring after danger of frost. L3J

Sungold: 85 days. Medium-sized, nearly round fruit, weight 5 to 7 pounds; attractive, golden-yellow skin; thick rind, distinctly ribbed, slightly wrinkled at the stem end. Flesh greenish-white,

juicy, very sweet, of excellent quality; keeps well. Short vines; can be planted on closer spacing. Ripens successfully in northern areas. Developed at the University of New Hampshire by Professor E.M. Meader. J9M, K49T, L7M

Tam Mayan Sweet: Large, round fruit; rind hard, slightly wrinkled, ivory-white at maturity. Thick white flesh, very mild, of good flavor; seed cavity small and dry. Will not slip unless overly ripe. Highly resistant to downy mildew; immune to known races of powdery mildew. C92, L4, L89G

Turkish Leopard: Long yellow fruits, striped and blotched with green, weight 6 to 7 pounds; sweet, delicious flavor. Stores very well. Has proven to be well adapted to the climate in Victoria, Australia where it produces good crops of fruit. Discovered in the markets of Istanbul. 089

**HONEYDEW MELONS** Usually with smooth skins, as opposed to the Casaba types which have rough skins. The original Honeydew melon was named in 1915 and is believed to be identical to the French cultivar, White Antibes. B65{PD}, K19{DF}

#### Hybrid

Earli-Dew: (Early Honeydew) 80 days. Nearly round fruit; 5 to 6 inches in diameter, weight 2 1/2 to 3 pounds; rind smooth, green-gold at full maturity. Thick, rich lime-green flesh; very sweet and tender. Will slip when ripe. Excellent for home gardens. Well suited to most northern areas. Vigorous, productive vine; resistant to fusarium wilt. B73M, C44, C85M, D65, F13, G16, G71, H61, H95, K73, L79, M46, N16

Morning Dew: 96 days. Very large, oblong fruit; average weight 10 to 12 pounds; flesh green, thick, very sweet. Vigorous vine; tolerant to fusarium wilt race 2, and powdery and downy mildews. Should be started indoors in northern areas and transplanted through plastic mulch. F13

Orange Blossom: 80 days. Hybrid orange-fleshed honeydew. Medium-sized, nearly round fruits weighing about 3 pounds; very smooth, creamy-white rind, extra thin; flesh deep-orange, very sweet, melting, rich and aromatic. Vigorous, compact, productive vines. Recommended for home gardens, local markets and specialty markets. C92, D26D, E75{PL}, E97, G16, G82, J20, K49Z, L79, M29

Venus: 88 days. Medium-sized, oval fruit, about 5 1/2 inches in diameter; rind medium-thick, light golden-yellow, slightly netted. Flesh bright green, extremely thick and juicy, sweet and aromatic. Slips easily from the stem when ripe; harvest at full slip. Stores and ships very well. Vines produce heavy crops. B75, K50

#### Open-Pollinated

Golden Honeymoon: (Gold Rind Honeymoon, Gold Rind Honeydew) 95 days. Uniform, nearly round fruit; 6 1/2 inches in diameter, weight 5 1/2 pounds; rind smooth, creamy white turning an attractive golden color when ripe. Thick, emerald-green flesh; juicy, sweet and spicy. Resistant to sunburn. Ships and stores well. A2, G57M, H33M, H95, K5M, N16

Green Fleshed: (Honeydew) 110 days. Round-oval fruit, 7 inches in diameter, weight 6 pounds; rind smooth, hard, creamy white when ripe. Flesh emerald green; very sweet and juicy, with a distinct, spicy flavor; medium-sized seed cavity. Excellent for shipping. Resistant to crown blight. Adapted to long season areas. A75, A87M, B75M, F60, G93M, H42, H85M, I39, K49M, K71, R47

Honeyloupe: (U.C. Honeyloupe) 92 days. Short-oval fruit; 5 to 6 1/2 inches in diameter, weight 3 to 5 pounds; rind creamy white, tinted with pale salmon at maturity. Thick, sweet, salmon-orange flesh; distinct flavor; small seed cavity. Slips from vine when ripe. Resistant to verticillium wilt and crown blight; tolerant to sulphur. Honeydew-cantaloupe cross; developed at the University of California, Davis. C20M, C95, F15{PR}, J9M, K23{PL}, N16, N52

Orange Fleshed: 110 days. Nearly round fruit, 6 inches in diameter, weight 5 to 6 pounds; rind smooth, creamy white when ripe. Thick, sweet, light-orange flesh; flavor intermediate between Honeydew and Crenshaw; small seed cavity. Excellent for market and shipping. Resistant to crown blight. ^475, B75M, C20M, G57M, G93M, H85M, H95, K5M, M32, N52

Tam Dew: 100 days. Medium-large, oval fruit; 6 inches in diameter, weight 5 to 6 1/2 pounds; rind smooth, creamy white at maturity. Thick, light-green flesh; sweet and juicy; small seed cavity. Resistant to downy and powdery mildews. Developed by Texas A & M University. C20M, L4, N16

Tam Dew Improved: 95 days. Round fruit; 6 1/2 inches in diameter, weight 5 to 5 1/2 pounds; rind smooth, creamy white, sometimes with a yellow spot where exposed to the sun. Flesh green, lighter towards the seed cavity, which is small; high sugar content. Resistant to downy mildew and races 1 and 2 of powdery mildew. AI, A87M, F60, G13M, K5M

#### OTHERS

#### Hybrid

Early Crenshaw: (Burpee Early Hybrid Crenshaw) 90 days. Large oval fruit, slightly pointed at the stem end; weight 14 pounds; smooth dark-green skin, yellowish-green when ripe. Thick, firm, salmon-pink flesh; juicy, sweet and flavorful. Early enough to ripen in northern areas. Vigorous, prolific vine. B75, F63, G79, H49, H95, K50, M29, M95M

Gold King: 90 days. Hybrid Yellow Canary type that can be grown in northern areas. Large, smooth oval fruit; weight 3 1/2 to 4 pounds; attractive, very thick yellow rind. Sweet, aromatic, flavorful, nearly white flesh. Can be stored for several weeks without refrigeration. Popular in Europe. K10, K73

Honeyslow: 85 days. Very early hybrid Crenshaw type. Oval-shaped fruit, tapering slightly towards the stem end; 7 to 8 inches in diameter, weight 8 to 9 pounds; rind mottled green, turning yellow at maturity. Thick, tender, pastel pink to orange flesh; sweet and juicy, with a distinctive aromatic flavor. Will ripen in short season areas. C20M, D11M, F63, F70, G27M, K50

#### Open-Pollinated

Crenshaw: 110 days. Oval-shaped fruit, slightly tapered towards the stem end; 6 to 6 1/2 inches in diameter, weight 5 to 7 pounds; rind rough, dark green turning mottled yellow when ripe. Thick salmon-pink flesh; very tender and juicy, sweet, of a rich distinctive flavor. Requires a long, warm season. C92, G83M, G93M, H33M, H85M, J84, K5M, K49M, K71, N40{PR}

Crenshaw Blanco: (White Crenshaw) 110 days. An improvement on the original Crenshaw. Large, oval fruit, weight about 5 pounds; rind corrugated, becomes creamy white when ripe; flesh salmon-pink, very sweet. Excellent for long distance shipping, specialty markets and home gardens. B8M, C20M, F60, G57M

Escondido Gold: Large, elongated fruit; 6 inches in diameter, weight 8 to 10 pounds; skin smooth, light yellow-gold, with streaks of orange or light green. Flesh yellowish-orange; tender, juicy, very sweet and flavorful; of excellent quality. Resistant to drought. Originated in Escondido, California by Stanley Grabinski. The result of 16 years of breeding. LI 1, L77D

Indian Cream: (Cobra Melon) An unusual type, with drier flesh than common melons. Has a very distinct flavor and aroma. Splits when ripe. Usually served sweetened with honey or ice cream. PIG

Napoletano Giallo: Small to medium-sized, oval fruit; skin yellow; flesh whitish, sugary, of excellent flavor. Harvested the end of August, ready for eating the end of September into winter. Keeps and ships very well. Becomes sweeter and more melting as it ripens in storage. N84, Q11M

Napoletano Verde Precoce: Small to medium-sized, oval fruit; skin green, slightly ribbed, resists bruising; flesh whitish, sugary, savory. Harvested in August, stores well into the winter always becoming sweeter and juicier. Ships very well. N84, Q11M

Pinyonet de Valencia: (Pele de Sapo, Pinonet Piel de Sapo, Toad Skin) 105 days. Oval-shaped, 8 inch long fruit; skin mottled with green and yellow, reminiscent of a frog's skin; netting and sutures absent; flesh white, very sweet, flavor very agreeable. Ripens very early for a winter melon. G57M, K60M, K73, M46, N84, Q11M

Stutz Supreme: 90 days. Heirloom melon, developed over a 20 year period by Joe Stutz of Chico, California. Large, round fruit, weight 5 to 10 pounds; skin beige, non-netted. Delicious orange flesh. Won't slip when ripe. Ripens midseason; bears well until frost. Requires heat to develop full flavor. L77D, N84

Sweet Freckles: 100 days. Early Crenshaw-type melon with unusual dark green "freckles" that dot the light green skin. About 1/2 to 2/3 the size of regular Crenshaw. Light orange flesh; sweet, juicy and tender with a sweet aroma reminiscent of roses. Handles well due to the tough rind. Should be harvested when the "freckles" on the underside turn yellow-orange. J9M

Tam Canary: Round-oval fruit; rind hard, slightly wrinkled; skin color light-green, turning yellow-orange at maturity. Flesh white, crisp, flavorful; with a small, dry seed cavity. Will not separate or slip from the vine; should be harvested when yellow. Highly resistant to downy mildew; immune to known races of powdery mildew. L89G

Valencia Espanhol: 80 days. Oval-shaped fruit, with pointed ends; 6 inches in diameter, weight 5 to 6 1/2 pounds. Rind very dark green, appearing black from a distance, very hard, furrowed. Thick, crisp flesh; pale yellow with an orange seed cavity lining, very sweet and juicy. May be stored for 4 months while retaining high sugar content. Adapted to arid, long season areas. J73, N84

Verte de Treste: Origin unknown. Apparently brought to Toulon in southern France by American soldiers landing from North Africa in 1944, hence its market name, l'Americain. Football-shaped fruit, with dark green skin and sweet pale green flesh, slightly tinged with orange around the seed cavity. Excellent keeper. C20M

Yellow Canary: (Jaune des Canaries) 110 days. Elongated fruit, 5 1/2 inches in diameter, weight 4 to 6 pounds; rind smooth but slightly wrinkled, bright yellow. Flesh white, with an orange cavity lining at maturity; 2 inches thick; crisp, sweet and aromatic. Requires a long growing season to mature properly. Long popular in the Mediterranean area. B75M, C95, E5T, F60, G57M, G93M, K49T, K73, L3J, L59G, N16, N40{PR}, N52

#### CODES FOR SPECIAL TYPES

1. Short-Vined
2. Edible-Rinded

## MINT {PL}

#### MENTHA SPP.

Banana: Distinctive new mint with interesting culinary possibilities. Well-shaped, light green leaves with a pleasant, fruity scent and hints of banana. Not reliably hardy in New Jersey. K57, M82

Black Mitcham: Dark green foliage on purple stems. Strong peppermint flavor. Makes a soothing, fragrant tea. Grown from disease resistant Black Mitcham stock. Widely grown commercially due to its high yields, hardiness and fine flavor. Grows about 28 inches tall. K57, L90J

Blackstem Peppermint: (Black Peppermint) Tall, upright growth habit. Thick stems of bronze-purple blended with green. Dark green

leaves tinged with purple. Reddish-purple flower clusters. Excellent strong peppermint flavor and aroma. Makes a delicious tea. High oil content. C43M, C81M, F32D, G96, H29M, K22, J66, J76, L94M, R49

Blue Balsam: (Blue Balsam Tea Mint) Shiry, dark-green leaves with a purplish tint. Height 2 to 3 feet. Has an excellent aroma and flavor, more pungent than peppermint, with a hint of pennyroyal. Excellent for tea. Prefers a shaded location. C9, C43M, C67M, E61, F37T, H51M, 139, J66, J66{DF}, J76, K22, K57, K85, M82, N19M, N42, etc.

Candy: (Candy Peppermint) Strong sweet scent, reminiscent of Pep-O-Mint Lifesavers. Round, glossy leaves with reddish stems. Grows to 2 feet tall. Very attractive. Said to be a cross between peppermint and spearmint. C9, C43M, C81M, F32D, F35M, F37T, H29M, H94M, I77M, J76, K57, L56

Chocolate Peppermint: (Chocolate Mint) Dark green leaves and stems. Height 12 to 18 inches. Has an attractive peppermint odor and flavor with a rich, aromatic chocolate overtone. Reminiscent of a chocolate peppermint patty. Very good for fruit desserts and ices; also excellent for candying. WILLIAMS, J.; A97, C9, C67M, G96, H4, H94M, 139,191, J37M, J66, J82, K22, K66, L90J, M53, N42, etc.

Curly Spearmint: (Curly-Leafed Spearmint, Curly Mint) Stems long and weak, to 2 feet high; hairy; sprawls in late summer. Broad, dull, crinkled leaves with a heavily veined undersurface. Pale purple flower spikes. Scent and flavor similar to spearmint but stronger. Also a stronger grower. C43M, C81M, E61, F15M, F32D, H94M, J82, K57, L56, L90J, M82, N42

Doublemint: Combines the qualities of both spearmint and peppermint in one plant. When first tasted, there is a definite flavor of spearmint followed by an aftertaste of peppermint. Interesting and flavorful. Height 2 feet. Hardy in Zones 4 to 9. C9, C43M, F37T, F93G, L90J, N42

Emerald 'n' Gold: (Gieen and Gold, Variegated Spearmint) (M. spicata) An unusual form of spearmint with dark-green and golden-yellow variegations forming on the leaves in cool spring weather. Same flavor and aroma as spearmint. Height 2 feet. Plant in sun or semi-shade. A97, C9, C43M, C67M, C81M, F32D, G80, H29M, L90J, N42

Grapefruit: Strong, upright growth habit. Good form; less scraggly than many mints. Large, light grayish-green, ruffled leaves tinged with purple in juvenile stage. Has a spearmint scent and flavor with a strong, distinct grapefruit-like overtone. Height 12 to 18 inches. Rust resistant. Can be used for tea, jellies and potpourri. Developed by the University of Oregon. A97, C43M, C67M, C81M, E61, F32D, F37T, J66, J66{DF}, J82, K22, K85, L56, L90J, M82, etc.

Hillary's Sweet Lemon: Hybrid of apple and lime mints. Combines the sweet, fruity, spearmint-like aroma of apple mint with the distinct citrus overtones of lime mint. Fast growing, female plant with ruffled leaves and lavender flower spikes. Developed by Jim Westerfield. Named after Hillary Clinton, First Lady and herb enthusiast. E7, F35M, J82, K22, M82, N84

Kentucky Colonel: (Improved Spearmint) (M. x villosa) Vigorous, 30 inch tall plant with large, broad, rugose leaves. Has a delightful, extra pungent, fruity spearmint flavor and aroma. The Kentucky Derby classic; great for mint juleps. One of the best flavored of all the spearmints. A hybrid of spearmint and pineapple mint. Plant in sun or semi-shade. A97, C9, C43M, C67M, C81M, F15M, G96, H4, H46{DF}, H51M, J66, J82, K22, K57, L56, L90J, N42, etc.

Lebanese: (Lebanese Mint) Compact leaves and dark, reddish stems. Fresh, sharp peppermint flavor and fragrance. Suitable for fresh use or drying. Grows about 15 inches tall. F37T, K57, M53

**Menthol:** (*M. spicata*) A seed-propagated cultivar commonly sold as peppermint or spearmint. The flavor and odor is pungent, not sweet like the true root-propagated strains. Useful for tea, especially for medicinal purposes. J82{S}

**Mint the Best:** (*M. spicata*) Narrow, dark green foliage with an excellent crisp spearmint aroma and flavor. Very popular spearmint type. Excellent for tea, mint juleps and jellies. Vigorous plant; height 2 to 3 feet. F32D, H51M, H94M, 139,191,199P, K2, L90J, M15T, M53

**Moroccan:** (*M. spicata*) An extremely fragrant strain of spearmint grown in Morocco for the making of mint tea. Add a drop of honey, if you wish, for one of the most refreshing herbal teas. In parts of Morocco, they often add wormwood or mugwort to mint tea. Grows to about 2 feet tall. F35M, H94M, N84, R53M, S55

**Narrow-Leaved Spearmint:** (*M. spicata*) Similar to spearmint, but leaves are narrow and tinged purple. Same flavor and aroma as spearmint. An heirloom cultivar, carried by settlers from place to place. Height 12 to 24 inches. K22, K85

**Roberts Mitcham:** (*M. x piperita*) Select, wilt resistant strain of true black peppermint. Dark-green leaves on purplish stems. Strong, cool peppermint flavor and aroma. Tall, upright-growing plants, height about 24 inches. Fresh or dried leaves are excellent for tea. G6

**Todd Mifcham:** Very flavorful strain of blackstem peppermint grown commercially for the flavor industry. Dark-green leaves and purplish stems. Strong, cool, classic peppermint aroma and taste. Vigorous, upright plant, grows 20 to 36 inches tall. Hardy in Zones 3 through 10. F32D, M82

**Variegated Peppermint:** (*M. x piperita*) Attractive leaves touched with patches and stripes of white. Strong peppermint flavor. Ornamental as well as good for culinary usage. Quickly reverts to green form unless green branches are rogued out. Grows about 24 inches tall. F32D, F35M, G96, H51M, J82, K2, K57, M15T, M82

**Wrigley's Spearmint:** (*M. spicata*) This is said to be the mint which was originally used for flavoring the famous Wrigley's spearmint gum. Has a very strong spearmint aroma and flavor. Excellent quality. Grows about 2 feet tall. Hardy in Zones 4 through 9. C9, J66, N42

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## MULBERRY {GR}

### MORUS ALBA MORUS RUBRA

### MORUS NIGRA

**Bachus Noir:** Sweet, black fruit with a distinctive flavor; best when eaten directly from the tree or made into pies; ripens early, after strawberry season ends. No spraying or pruning is necessary. Adapted to Zones 7 through 10. I53M

**Beautiful Day:**<sup>1</sup> (*M. alba*) Fruit medium to large; pure-white in color; flesh sweet; very good for eating fresh, excellent for drying. Imported white mulberries that are dried like raisins are sold in many food stores and are one of the better dried fruits. Tree medium-sized, spreading; very productive; requires little care and no spraying. Original tree from Maryland. D37

**Boysenberry Black:** The mother tree of this cultivar was discovered at an old homestead in Wakulla County, Florida. It is well over 100 years old and bears abundant crops of very large, seedless black mulberries. The flavor is distinct, somewhat reminiscent of boysenberry, sweet and rich with just the right amount of tartness. Makes excellent jams. Ripens early to late May. G17

**Chelsea:** (*M. nigra*) Large, dark mulberry-red fruit of fine flavor. Excellent eaten fresh, in pies and preserves, or made into wine or "mulberry gin". Will fruit within 2 to 3 years of planting. The

original tree was planted by King James II at the Chelsea Physic Garden, but was destroyed during World War II. R77

**Collier:** (*M. alba* x *M. rubra*) Medium-sized, purplish-black fruit, 1 1/8 inches long and 3/8 inch in diameter; flavor sweet, with just a trace of tartness, quality very good, on a par with Illinois Everbearing. Ripens over a long period, beginning about 2 weeks before Illinois Everbearing. Tree of medium size, spreading, relatively hardy, very productive. D37, M16

**Downing:** (*M. alba*) Fruit medium-sized; 1 1/8 inches long, 1/2 inch in diameter; pink; sweet, with no tartness. Tree wide-spreading; hardy and productive; appears to be mostly *M. alba*. This is not the cultivar which has been widely sold under the name Downing in the past. E91M

**East Coast:** Large, glossy black fruit, about 2 inches long; sweet, juicy flesh, with a zestful balance of sweet and sour. Vigorous tree, often grows 6 feet per year; very cold hardy. Yields of 40 gallons per tree have been reported. Adapted in Zones 8 through 10. I53M

**Florida Giant:** Long, narrow fruit, 2 to 2 1/2 inches in length; light purple in color; sweet and juicy, flavor mild. Tall, vigorous tree, to 50 feet or more. Large heart-shaped leaves, 12 inches wide, very attractive. Despite the name, it is reportedly hardy in Zone 5. D57, M16

**Hunza Seedless:**<sup>1</sup> (*M. alba*) Medium-sized, pure white, seedless fruits. Usually dried and stored by the people of Hunza who use the fruits as a staple part of their diet. Imported Hunza Seedless mulberries sell for \$4.25 per 8 ounce package in health food stores. Selected by Dr. Thompson of the USDA on a six month plant collecting expedition to Pakistan. D37, I19M{DF}

**Illinois Everbearing:** (*M. alba* x *M. rubra*) Fruit large and very long, average 12 per ounce; skin black; nearly seedless; flavor good to very good, very sweet, considered best by many; matures over a long season. Tree extremely hardy; very productive; young grafts extremely vigorous. Originated in White County, Illinois on the bottom-lands of the Wabash River. Introduced in 1958. BROOKS 1972; B74, C27T{SC}, D37, E62{SC}, E91M, F43M, H4,149M, J61M, K67, M16, NO, N24M, N33

**Kaester:** (*M. nigra*) Large, elongated fruit, 1 1/2 inches long and 1/2 inch in diameter; deep purple or black when ripe; juice bright red; flavor very sweet, with good balance between sweetness and acidity. Tree bears heavily, is easily propagated from cuttings. Originated in Los Angeles, California. Introduced in 1971 by Nelson Westree. I83M

**Middleton:** (*M. alba* x *M. nigra*) Medium to very large, dark purple-black fruit of excellent quality; very sweet. Large, vigorous tree. Has a strong tendency to double crop in areas with long growing seasons. Previously listed as Sullivan. I66T, I83M

**Noire of Spain:** (*M. nigra*) Medium-sized, purplish-black fruits with an excellent sweet tart flavor; quality very good. Tall, vigorous tree, very productive. One of the most commonly grown Persian mulberries. Very popular on the Pacific Coast. Only adapted in warmer climates, such as Zones 7 through 10. F43M, 174, NO

**Northrop:** (*M. alba*) One of the hardiest mulberries available. Has survived temperatures of -50° F. May show some winter dieback when young due to extremely rapid growth. Can begin fruiting after 3 to 5 years. The parent tree was planted on the Northrop farm in Potsdam, New York, in the 1850's. I49G{SC}, L27M

**Oscar's:** (*M. alba*) Medium to large, blackish-purple fruit, resembles a large blackberry. When fully ripened the fruit has a full rich flavor and is considered one of the best of the hardy varieties. May also be eaten at the red stage, when it has the flavor of raspberries. Ripens in late spring and early summer. Very cold hardy and drought tolerant. Originated in Riverside, California by Oscar Clarke. C34,174

Pakistan: Extremely large fruit; 2 1/2 to 3 1/2 inches long and 3/8 inch in diameter; purplish-black when fully ripe, but sweet even at the ruby-red stage; flesh firmer than that of most named cultivars; excellent, finely balanced flavor. Spreading tree with large heart-shaped leaves. Recommended for the deep South and mild winter areas such as southern California. Originally from Islamabad, Pakistan. C54, H4,174

Paradise:<sup>2</sup> Medium-sized, lavender fruit, 1 1/8 inches long and 3/8 inch in diameter; flesh exceptionally sweet, seeds few; good fresh and out of hand, also dries well. Tree dwarf, 7 feet tall and 6 feet wide at maturity; attractive, with heart-shaped leaves; perfect for gardeners with limited space. D37

Riviera: Elongated, deep purple-black fruits; 1 to 1 1/2 inches in length, 1/2 inch in diameter; flesh slightly juicy and very sweet, dessert quality very good; ripens over a long period, from April to June. Originated in Vista, California. D57

Russian: (Tatarica) (M. alba) {PL} Fruit reddish-black; of good quality when completely ripe. Useful for jelly, wine, etc. Tree bushy; to 35 feet tall; very hardy and drought resistant; widely planted for windbreaks, wildlife food and chicken forage. Introduced into Europe from China about 1500 years ago. Brought to America by Russian Mennonites. VOTH; A82, A91, G66, G66{S}, H49, I49M, K38{S}, K89, M69M, P38{S}

Scott's Jumbo: Medium to large, blocky, light purple fruit, about 1 1/4 inches long; flavor sweet, good, somewhat lacking in tartness. Ripens over a period of 2 to 3 weeks. Medium-sized, spreading tree; bears heavily. Originated in Kansas by Les Scott. M16

Shangri La: Large black fruit of good quality. Tree with very large, heart-shaped leaves; early bearing. Good for the deep South, but may be cultivated in other areas; has fruited well 6 of 8 years in Maryland. Original tree was discovered near Naples, Florida. D37

Silk Hope: (M. alba x M. rubra) Thick, black fruit, about 1 1/2 inches long; very sweet. Ripens over a two month period during late spring and early summer. Dates back to the 1800's when silk worm production was attempted in North Carolina. Discovered by A.J. Bullard. H4

Stearns: Small to medium-sized, dark black fruit, 3/4 to 1 3/8 inches long and 1/2 inch in diameter; good flavor. Original tree in central New York state bears fruit from early July until hard frost (around the end of September), and still has green fruit when frost hits. Good for home gardeners because it ripens over a long period. I49G{SC}, M16

Tehama:<sup>1</sup> (Giant White) (M. alba) Very large, plump fruit, 2 3/4 inches in length and 1/2 inch wide; very sweet, succulent, melting flesh. Attractive, large-leaved tree; hardiness undetermined, but probably adapted in Zones 7, 8, and 9. Originated in Tehama County, California. D37,174

Tiger Red: Berries large and very long, up to 1 1/2 inches in length; an attractive raspberry-red in color; virtually seedless. Flavor excellent, rich and sweet, reminiscent of real raspberries. Ripens late May to mid June in Florida. Vigorous and productive tree. G17

Weeping: Small, black fruit; sweet and pleasant. Tree umbrella-shaped, weeps to the ground; semi-dwarf; about 12 feet tall, 12 to 14 feet wide when mature; long-lived; highly productive; very ornamental. Original tree from northwest of Baltimore, Maryland. D37

Wellington: Fruit medium-sized, 1 1/4 inches long, 3/8 inch in diameter; form long, slender and cylindrical; skin reddish-black; flesh soft, of good flavor; ripens over a period of several weeks. Tree a heavy producer. Originated in Geneva, New York on the property of noted fruit breeder Richard Wellington. May be the old cultivar New American, which was also sold many years ago as Downing. D95, F43M, I49G{SC}, 174, J61M, M16, NO

White:<sup>1</sup> Small to medium-sized, pure white fruit. Flavor very sweet, with no tartness, however not as sweet as Illinois Ever-bearing. Like other pure white types it is valued because it does not stain and for its excellent qualities when dried. Tree medium-sized, spreading, productive. C54, D95, F43M, H4, M16

#### CODES FOR SPECIAL TYPES

1. Pure White
2. Genetic Dwarf

## MUSCADINE {GR}

### VITIS ROTUNDIFOLIA

#### PISTILLATE MUSCADINES

Pistillate, or female muscadines bear fruit but are self-sterile unless pollinated by a self-fertile cultivar. For best production, female cultivars should be planted within fifty feet of a pollinating cultivar. The source of pollen will not affect the color, shape or flavor of the grape.

#### BLACK/PURPLE-SKINNED

African Queen: Large fruit, about 1 1/8 inches in diameter; skin black, medium thin; very sweet, sugar content approximately 16%; ripens in mid-season. Good for fresh eating, jelly or juice Very vigorous and productive. Excellent cold hardiness. F93

Black Beauty: Large fruit, 1 1/4 inches in diameter, dry scar; skin black, edible; clusters large; quality very good, sugar content 23-24.5%; ripens uniformly mid to late-season. Suitable for fresh fruit, jelly and wine. Vine very vigorous. Excellent disease resistance. One of the best black muscadines ever developed, and rated tops for flavor. F93, K67

Black Fry: Large fruit, up to 1 1/4 inches in diameter; skin black; quality very good, comparable with Fry; sugar content 19-20%; ripens uniformly, mid to late-season. Suitable for fresh fruit, jelly and juice. Vine very productive; disease resistant. Clusters large. F93

Farrer: Large fruit with a dry berry stem scar, about 1 1/4 inches in diameter; skin black; quality excellent, 18-23% sugar content; ripens early. Good for fresh fruit, juice and jelly. Vine vigorous; very high yielding. Clusters large. Some years up to one-half of crop is seedless. F93

Hunt: Medium to large fruit; skin medium, dull black, with abundant pigment prized by manufacturers of wine and frozen pulp; quality excellent; ripens early. Very even in ripening, unusual in muscadine grapes. Clusters large. One of the best all-purpose cultivars; excellent for wine, fermented juice, jelly and hull preserves. BROOKS 1972; B45M, B73M, E3, F93, G8, G72, I41P, I53M, K28, K75T, L90, M69M, M83

Jumbo: Large fruit, largest of any muscadine cultivar so far introduced; skin black; quality good; ripens mid-season to late. The fruit ripens irregularly over several weeks making it an excellent cultivar for home use. Vine productive, disease resistant. Clusters large. B22, B45M, C30M, D77M, F93, G17, H4, I41P, I53M, K75T, L90, M83, M95T

Loomis: Large fruit; skin medium, burgundy colored; quality excellent, taste panels have rated Loomis the best of all cultivars for fresh eating. Ripens mid-September to October 1st. Vine very vigorous; consistently productive; very disease resistant; winter hardy. Clusters medium to large. Recommended for the fresh fruit market. B45M, F93, I53M

Pride: Very large fruit; skin medium to thick, purplish-black; quality good; ripens mid-season, and over a 3 to 4 week period. Vine vigorous, winter hardy; production heavy; disease resistance medium to good. Clusters medium to large. Recommended for home

use. B45M

Sugargate: Fruit very large; skin dark; flavor excellent, sugar in individual berries up to 21 %. Rated one of the top 5 muscadines for flavor. Vine very vigorous; production very good. Clusters large. Fruit ripens earliest of all cultivars. Very good for home and commercial use, and fresh fruit sales. Not recommended for Gulf Coast use. F93

Supreme: Very large fruit, about 1 1/2 inches in diameter, dry scar; skin black, edible; sugar content 22-23%; ripens mid-season to late; quality excellent. Rated just below Black Beauty for best tasting muscadine. Very vigorous and productive vine with excellent disease resistance; clusters large. F93

Thomas: Small fruit; skin thin, reddish-black; quality excellent; ripens mid-season. Vine vigorous. Clusters medium, compact. One of the best cultivars for making unfermented juice, because of its distinctive flavor. 14 IP

#### BRONZE-SKINNED

Darlene: (Darling) Fruit 1 1/2 inches in diameter, consistently large throughout vine; not erratic in size like Fry or Farrer; skin reddish-bronze; quality excellent, pulp melting, sugar content 22-24%. Rated in the top 5 of all muscadines for flavor. Very vigorous, productive vine. An early ripening type suitable for fresh fruit and jelly. F93

Fry: Very large fruit, up to 1 3/8 inches in diameter; skin bronze; quality excellent even before fully ripe, sugar content high; ripens mid-season. Rated in the top 10 for flavor. Vines moderately vigorous; production good; susceptible to black rot. Clusters very large. Very highly recommended for home use, local sales, and commercial plantings. B22, B45M, B73M, C30M, D77M, E3, F93, G17, H4, 14IP, I53M, K75T, K76, M95T

Janet: Very large fruit, about 1 1/8 inches in diameter, wet scar; sugar content 21%, quality excellent for eating out of hand. Rated one of the top 5 muscadines for flavor. Very vigorous and productive vine with large clusters, cold hardy. Latest ripening of all the bronze female cultivars. F93

Scuppernong: Medium to large fruit; skin medium to thin, bronze; flesh sweet, with an excellent and distinctive flavor; quality excellent; ripens early. Can be used for wine. Vines vigorous; production good. Clusters medium. Best known and most widely grown muscadine grape; the oldest cultivar but still one of the best. B45M, C30M, F74M{PD}, F93, F93{PR}, G65M, I53M, J24M{PD}, K67, L33, L90

Sugar Pop: Medium to large fruit, 1 to 1 1/4 inches in diameter; skin bronze; sugar content 17-21 %. Pops open when you eat it. Very good for eating out of hand. Ripens mid to late-season. Very vigorous and productive, high production being an outstanding characteristic. F93

Sweet Jenny: Very large fruit, up to 1 1/2 inches in diameter; skin bronze; quality very good, sugar content 23-24%; ripens early to mid-season. Excellent for eating out of hand. Rated one of the top 10 muscadines for flavor. Vine vigorous; very productive; disease resistant. Clusters large. F93

Watergate: Large fruit, up to 1 1/2 inches in diameter; skin bronze; pulp juicy, melting; sugar content 16%, flavor excellent; ripens early to mid-season. Good for eating out of hand. Vine very vigorous; production good. Recommended highly for home and commercial planting. F93

#### RED-SKINNED

Higgins: Fruit very large; skin pink to reddish-bronze, moderately thick yet tender, edible; quality good when fully ripe; ripens mid to late-season. Suitable for winemaking. Vine moderately vigorous; production heavy to overproductive. Clusters large; compact. Very

good for commercial or roadside sales. B45M, B73M, D77M, E3, F93, G17, H4, I53M, L90, M69M, M83

Rosa: Large fruit, up to 1 1/8 inches in diameter; skin pinkish-red; quality good; ripens mid to late season. Very sweet, rated excellent by taste panels. Vine very vigorous with good disease resistance and cold hardiness. Best of the red grapes. Very good for home use and pick-your-own. F93

Scarlett: Newly released cultivar with good quality. Large, reddish fruit; flavor excellent; ripens in midseason. Vigorous, productive vines, resistant to most major diseases. Recommended for fresh market. Developed by Dr. Ronald Lane of the University of Georgia Experiment Station. B45M, F93, G8

Summit: Large fruit, about 1 inch in diameter; skin medium (thinnest of any large-fruited cultivar), red; sugar content 20%; quality very good to excellent; ripens mid-season. Vine vigorous; very productive. One of the best red cultivars for home and commercial use and rated in the top 10 for flavor. B45M, F93, 14IP

#### SELF-FERTILE MUSCADINES

Perfect-flowered, or self-fertile muscadines produce both fruit and pollen. They will pollinate themselves as well as pistillate plants. The pollen of individual self-fertile cultivars is more viable on any other cultivar than on its own blooms, therefore it is better to plant more than one cultivar of self-fertile muscadine grape in large plantings.

#### BLACK/PURPLE-SKINNED

Albemarle: Medium to large fruit; skin blue-black, medium, smooth; flesh sweet, flavor very good; ripens about mid-season. Vine vigorous; very productive; resistant to leaf diseases. Clusters medium. Recommended for home use where a single vine is desired. BROOKS 1972; B45M

Cowart: Fruit very large, one of the largest self-fertile cultivars; skin black; quality good, best of any of the large-fruited cultivars; ripens medium early. Vine vigorous; productive; disease resistance good. Clusters very large. Originated in Experiment, Georgia by B.O. Ry. BROOKS 1972; B22, B45M, C30M, D77M, F93, H4, 14IP, I53M, K75T, L33, L90, M83, N33

Ison: Large fruit, up to 1 1/8 inches in diameter, dry scar; skin black; quality good, sugar content 19-20%; ripens uniformly, early to mid-season. Suitable for flesh fruit, jelly, juice and wine. Vine very vigorous and productive; disease resistance excellent. Clusters large. Considered the best black pollinator. D37, F93

Nesbitt: Large fruit, up to 1 1/8 inches in diameter; skin black; quality very good; ripens over a period of 4 or 5 weeks beginning in early September. Vine vigor medium; production very good. Clusters medium to large. Recommended for pick-your-own, dooryard plantings and fresh fruit sales. Released by North Carolina State University. B45M, F93, G17, I53M, K67

Noble: Medium-sized fruit; skin medium, black; quality good; ripens early to mid-season. Vine vigor medium; very productive; persistence good; disease resistance good, except for powdery mildew. Clusters large. Excellent for making a red table wine. B45M, B73M, E3, F93, G17, I53M, L90, M83, M95T

Regale: Medium-sized fruit; skin black; quality good, high acid taste; ripens late mid-season. Vine vigorous; production good; winter hardy. Clusters medium. Recommended for red wine, juice or jelly. B45M, I53M

Southern Home: Ornamental dooryard muscadine with a unique leaf pattern resembling a maple leaf. Loose clusters of oblong black fruit. Good disease resistance; self pollinating. Recommended for ornamental trellises and fences. B45M

Southland: Fruit medium to large; skin purplish-black, non-glossy; quality excellent, flavor very sweet; ripens mid-season. Vine vigorous; disease resistant; persistence good. Recommended for

home use and commercial plantings. Originated in Meridian, Mississippi. BROOKS 1972; B45M, F93, G8, 141P, K76, M95T

#### BRONZE-gKINNED

Carlos: Small fruit, 1/2 inch in diameter; skin medium, bronze, attractive; flavor pleasing, similar to Scuppernong; ripens mid-season. Vine vigorous; very productive; hardy. Cluster intermediate. One of the best bronze muscadines for wine making. Originated in Raleigh, North Carolina. BROOKS 1972; B22, B45M, B73M, E3, F93, H4, 141P, I53M, K76, L90, M83

Chowan: Large fruit; skin medium, light brown to bronze, appearance attractive; flesh subacid, aromatic, flavor good; ripens in early mid-season, about 1 week before Scuppernong, which it resembles. Vine vigorous; very productive. Clusters large. Suitable for home use. BROOKS 1972; B45M, H4, L90, M83

Dixieland: Fruit large, one of the largest self-fertile cultivars, wet scar; skin bronze; flavor excellent; sugar content 22%; ripens medium-early. Similar to Fry in flavor, color and size. Rated one of the top 10 muscadines for flavor. Vine vigorous; productive. Recommended for home and commercial planting. F93

Doreen: Medium to large fruit; skin bronze; quality good to excellent; ripens late mid-season. Makes excellent light golden wine. Also used for jelly and juice. Vine vigorous; winter hardy; production very heavy. Clusters medium to large. Recommended for pick-your-own operations. B45M, F93

Golden Isles: Large, bronze to brownish fruit; medium thin skin; excellent quality; ripens in late September. Produces an exceptionally high quality white wine. Moderately vigorous and productive vine; medium clusters. B45M

Granny Val: Large fruit, up to 1 1/8 inches in diameter, dry scar; skin bronze; sugar content 16%; quality very good to excellent; ripens late to very late. Suitable for eating out of hand. Vine productive, with extra high yields; disease resistant. Clusters extra large. F93

Janebell: Large fruit, up to 1 1/8 inches in diameter, dry scar; skin bronze; quality good, sugar content 16-22%; ripens mid to late-season. Suitable for eating out of hand. Vine very productive; disease resistant. Clusters large. F93

Pineapple: Fruit large, 1 1/8 inches in diameter; skin bronze; quality good, has the flavor of pineapples; sugar content 16%. Ripens mid to late-season. Suitable for fresh fruit, jelly and juice. Vine very vigorous and productive; disease resistant. Clusters large. F93

Triumph: Fruit large, one of the largest of the bronze self-fertile cultivars, dry scar; skin greenish-bronze, thin; sugar content 18%; quality good. Ripens early to mid-season. Vine moderately productive; winter hardy; an excellent pollinator. Recommended for home or commercial use. B45M, F93, G17, G65M, M95T

Welder: Medium-sized fruit; skin bronze; quality excellent; ripens early to mid-season. Makes an excellent wine grape. Vine vigorous; productive. Proven to be the best cultivar for partial shade. Recommended for home and commercial planting, both for wine and fresh fruit sales. F93, G17

#### GREEN-SKINNED

Dearing: Medium to small fruit; skin translucent green, thin; quality excellent, flesh crisper than most other muscadine cultivars, flavor sweet; ripens in late mid-season. Vine productive. Clusters medium. BROOKS 1972; K76, M69M

#### RED-SKINNED

Dixie Red: Large fruit, similar to Cowart in size, wet scar; skin light red; quality very good, sugar content 17 to 19%; ripens in mid-season. Good for fresh fruit, juice and jelly. Vine vigorous; high

yielding. Clusters very large, containing 12 to 30 berries. Recommended for home and commercial planting. F93

Fry Seedless:<sup>1</sup> Small to medium-sized, red fruit, similar in color to Redgate, wet scar; sugar content 18-20%. Ripens early to mid-season. Vigorous vine; self-fertile, yet needs to be pollinated by another self-fertile cultivar; tolerant to disease. Erratic yields. F93

Redgate: Medium-sized fruit; skin light to dark red; quality very good; ripens late to mid-season; does not shatter. Uniform ripening of clusters, very attractive when displayed in baskets. Clusters very large, up to 40 berries per cluster. Recommended highly for home and commercial planting, and fresh fruit sales. U7G{SC}

Senoia: Medium-sized fruit, about 3/4 inch in diameter, wet scar; skin pinkish-bronze, dry scar; quality high, sugar content 20 to 22%; ripens evenly in mid-season. Produces an excellent light red wine. Vine vigorous and productive; disease resistant. Clusters large. F93

#### WHITE-SKINNED

Magnolia: Small to medium-sized fruit; skin white, smooth, attractive in appearance; quality excellent; ripens in late mid-season, about 1 week later than Scuppernong. Excellent for wine making. Vine vigorous; very productive. Clusters medium to large. Good for commercial and home use. BROOKS 1972; B45M, F93, G8, G17

#### CODES FOR SPECIAL TYPES

1. Seedless

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## MUSHROOMS

See Button Mushroom and Shiitake in Part II: Major Crops. See also Alphabetical Listing of Fungi Families in Part I: Botanical Listings.

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## MUSTARD {S}

BRASSICA JUNCEA

SINAPIS ALBA

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#### MUSTARD GREENS

ORIENTAL Cultivated since the earliest times in China where it is called *Gai choi*, and in India where it is called *Lai*. In China especially, numerous cultivars have been selected for various purposes, such as pickling, drying, preserving in salt, and stir-frying. (B. juncea). N40{PR}

Aka Taka-Na:<sup>2</sup> (Aka Chirimen, Red Broad-Leaf Mustard) Large, wavy, dark purplish-red leaves on a green base; wide, somewhat thick, pale green to white ribs; very nice pungent, mustard flavor. Eaten fresh, cooked or pickled. Tolerant of cold; also very slow to bolt. G20M{PD}, G33

Ao Taka-Na: (Ao Chirimen, Green Broad-Leaf Mustard) Broad, aromatic bright green leaves with very succulent, crunchy, white midribs. Pungent leaves become pleasantly spicy when cooked. Midribs are excellent raw in salads or cooked. Grows about 12 inches tall. For summer and early fall sowing. E83T, F73D, G33

Chao Chow: 70 days. Broad-leaved, semi-heading type, similar to Wrapped Heart but the stalks are slightly narrower and longer. Dark green leaves with thick stems. Grows about 15 inches tall. Very popular for pickling in China and Southern Asian countries. N84

Dai Gai Choi: (Broad-Leaf Mustard, Big-Stem Mustard) 65 days. Large, quick-growing leaves; broadly obovate or oval; more or less hairy when young; about 12 inches long. Broad, thick petioles. Widely grown in south China as an autumn crop. The swollen flowering stems of some cultivars, known as *tsoi sum*, are used,



peeled, in the preparation of pickles. HERKLOTS; A79M, C20M, D55, E83T, L79G, N84

Green-in-Snow: (Red-in-Snow, Hsueh Li Hung, Shia-Li-Hon, Snow Cabbage, Serifon) 50 days. Small plant with pale-green leaves and red roots. Used in stir-fry dishes, especially those containing lima beans or bamboo shoots. The pickled form is used as a delicious seasoning for fried rice or meat dishes. Can withstand temperatures of 20° F. and will make abundant growth in cold frames during the winter. The Chinese name translates as snow inside red, or luxuriant in the snow. CHANG, W. [Re], COST 1988 [Cul], HERKLOTS, SO [Re], VON WELANETZ; C20M, C27G{PD}, D55, F73D, G33, I39, K49M, L59, R32, S55, S63M, S70

Horned: (China Taka-Na, Kobu Taka-Na) Semi-heading plant with bright green frilled leaves. Each stem flares into a horn, opening the plant into a leafy bush. In cooking, used as a stir-fried vegetable, pickling, or for surrounding meat dishes. Makes excellent sweet mild flowering shoots, up to 16 inches long. Grow in warm weather but not during times of intense heat. Easy to grow. A2, C95, G33, N7G, N84, Q34, S63M, TIM

Hsueh Li Hung Na 2: Very vigorous, well-branched plants; slow-bolting and resistant to soft rot and virus. Can be harvested after reaching 2.8 pounds in weight, or as early as 20 days after planting. Suitable for making Chinese-style pickles. Grown year-round in Taiwan. Q39

Miike Giant:<sup>2</sup> (Miike Purple Giant) 80 days. Very large, broad, undulate, coarsely crinkled leaves with very striking purple veins and thick mid-ribs. The flavor, though strong and pungent, also has a powerful sweetness to it. Can be sown in early spring, or late summer for autumn and winter use. Very cold hardy. C20M, D55, F73D, G13M, K49T, K50, K57{PL}, K73, Q34, S55, S63M, S70, TIM

Miike Long Shoot: Attractive, sweetly pungent leaves with red veins and broad, often undulant midribs. Selected for its very long undulant flowering shoots, up to 18 inches, which are excellent for stir frying in late spring. Best planted for a fall harvest, as colder weather enhances sweetness, succulence and color. N7G

Nan Foon Non-Heading: (Nam Fong, Nam Fong Loose Leaf) 45 days. Upright, vigorous, fast-growing plant. White leaf-stalks, which are an important part of this vegetable, are white and fleshy, straight, 1 1/2 inches at the widest point. Leaves are dark green in color; not large; thin, but a little coarser than South China Heading. Both the leaves and stems are very tender and mild. D55, N84

Osaka Purple-Leaved:<sup>2</sup> 80 days. Spreading plant, 12 to 14 inches tall; comparatively early; stands well until late in the spring. Leaves very large, 20 to 26 inches in length; round, undulated, slightly serrate; tinged purplish-red overall when young, darkening gradually towards maturity. Ribs wide and white. Mild flavor for light cooking and salads. C53, F73D, G6, J73, K49T, L3J, L13M, L77D, N7G, N84, PIG

Peacock Tail: 40 days. Small, fast-growing, leafy mustard; reaches 12 to 18 inches tall when mature. Should be harvested when young as it will be very tender and less pungent. Excellent for stir-frying and pickling. A2, D55, F73D, N84

Red Giant:<sup>1 2</sup> (Red-Leaved Giant, Giant Red) 90 days. Attractive, large, dark-red, crinkled leaves with light green undersides and white mid-ribs. Harvest at 6 inch "baby" size for salads, or allow to grow to mature height of 16 to 18 inches for steaming or stir-frying. Older stems are very good pickled. Plant in early spring or late summer. Winter hardy and slow to bolt. A2, C53, D55, E24, E63D, F13, G6, I77, I91, J9M, J97M, K66, M29, M46, O53M, Q34, S63M, etc.

San-Ho Giant: Very large plants, up to 5 pounds in weight, may form a head in cold climates; dark-green leaves with broad, thick, crisp petioles. Very tender and flavorful, with just the right pungency. Very popular in Chinese cooking. Can be grown from late

summer through early winter. D55

Sarepta: (Mooi Ts'oi, Amsoi) A cultivar with very prominently lyrate-lobed basal leaves. The main shoot is very expensive. It is reserved in salt and sold dry, not damp or wet, and then costs about 6 a pound. The leaves and upper part of the stem may be salted and are sold very cheaply. Grown in Hong Kong as a winter crop. HERKLOTS, LARKCOM 1991. C27G{PE}, S55

Swatow: (Leaf Heading, Chiu Chow Dai Gai Choi) 43 days. Large, light-green leaves; succulent, tender and sweet. Forms a solid, tight head in cold fall weather; may not head in hot summer weather. The solid heart is disproportionately small and is a very expensive vegetable in Hong Kong. It can be eaten fresh, or it may be salted or made into sour-salt mustard (*ifiaam suen choi*). DAHLEN [Cul, Re], HERKLOTS; L59, Q34

Swollen-Stem: (Pressed Mustard, Cha Choy) 45 days. The peculiar feature of this cultivar is the swollen stem with 7 to 9 protuberances or bulges representing enlarged rudimentary lower petioles. Requires a cool, moist climate for this stem development, such as that of the lower Yangtze river in the Szechuan province of China. The swollen stems are preserved in salt, pressed in tubs so that much of the liquid inside the stem is squeezed out, then pickled with a fine red chili powder. This product is commonly known as *Szechuan preserved vegetable*. COST 1988, HERKLOTS, SO; C20M, C27G{PD}, C34G{PD}, I76T{PD}, L3J, L42

Turnip-Rooted: (Tai Tau Choy) A very distinct form grown for the fine sty, tuberous roots which are similar to white turnips in appearance, texture and flavor. The swollen root-tubers are sliced and preserved in salt or pickled. Cultivated as a winter vegetable near Hong Kong. BAILEY, L. 1894, HERKLOTS, TANAKA, UPHOF; E83T

Wrapped Heart: (Bau Sin, Paau Sum) 60 days. Large, 16 inch tall plant which develops a heart in cool weather. Leaves dark green; petiole thick and glabrous, the veins nearly white on the inner surface of the blade protected from the light. The whole plant is preserved in salt and vinegar. Also good for frying. The heart is not as hard and compact as that of the Swatow mustard and is not eaten fresh. HERKLOTS, ROSS [Cul, Re]; C20M, D55, F73D, L3J, N84, Q39, S70

**AMERICAN** Newer cultivars developed in the United States where they are very popular in the southern states. Traditionally steamed or boiled as "greens", or stewed with pork and eaten with combread to sop up the "pot likker". The curled and frilled types are commonly referred to as *mustard lettuce* in Auckland, New Zealand. (B. juncea)

Florida Broadleaf: 50 days. Vigorous, semi-upright plant with a spread of 16 to 22 inches. Smooth, deep green, broad-oval, thick leaves, slightly serrated and with a distinctive flattened, pale green midrib. Moderately slow-bolting. Popular in the South for local markets, processing and home gardens. A27M, A75, A87M, B75M, C44, E38, G68, G79, G93M, I64, I84, K49M, K73, M46, N16, etc.

Fordhook Fancy: (Burpee's Fordhook Fancy) 40 days. Deeply curled and fringed, dark-green leaves that curve backward like ostrich plumes. Will stand for a long time without bolting. The feathery leaves make an attractive addition to salads, and have a pleasantly mild flavor when cooked. HALPIN; G57M, K49M

Green Wave: (Green Wave Long Standing) 50 days. Large, upright plant; large, broad, medium dark-green leaves with curled and ruffled edges. Similar to Southern Giant Curled, but slower growing and bolting, with more finely frilled leaves, slightly darker in color, and more upright in growth habit. C44, F24M, G6, G79, G93M, J20, K49T, L3J, L10, L13M, L42, M46, N7G

Magma: Exceptionally attractive mustard with plenty of fire. Resembles a purple Green Wave Very textured, savoyed leaves; deep purple on top with extremely frilly margins showing the green

underside in dramatic contrast. Excellent in salads when young, or for steaming and stir frying at any age. F80, N7G

Old Fashion: (Old Fashion Ragged Edge, Hen Peck) 40 days. An old favorite which produces long, ruffled leaves that make very fine salad greens. Easy to grow and very hardy. Can be planted in spring or fall. Adapted to cut-and-come-again techniques. Fine quality accounts for its long lasting popularity. A2, D12, G1M, L7M, L10, M95M

Southern Giant Curled: (Giant Southern Curled Longstanding) 45 days. Large, upright plant with a spread of 18 to 24 inches. Large, bright green, long-oval leaves with a crumpled, heavily curled and fringed margin. Slew to bolt. Very popular in the South for greens. Attractive for bunching. A27M, A75, A87M, B3M, B75M, G16, G71, G79, I64, I84, J97M, K73, L7M, N16

#### MUSTARD SEED

Brown: (Black) (*B. juncea*) {DF} Dark reddish-brown seeds with a strong, pungent flavor. The mustard preferred for making Dijon-style mustards, and also some German mustards. *Oriental mustard seeds* are a form of brown mustard. The names brown and black are often used interchangeably. True black mustard, *B. nigra*, is not used in commercial mustard preparations. NORMAN; C92{S}, GO, G44M, H86, H90G, J58, K49M{S}, K66{S}, L16, L16{DF}, L94M{S}, M15M, N7D, N7D{DF}

Burgonde: (*B. juncea*) 85 days. Small brown seed used for the many different hot brown, stone-ground, and French mustards. Burgonde is the standard cultivar for this usage. Seeds average 9900 per ounce. Prolific plants, about 3 feet tall. May also be used as a green manure. L88J

Tilney: (*S. alba*) 95 days. Large yellow seed used in American hotdog mustards and in the English and German yellow mustards or white mustards. Seeds average 4500 per ounce. Tilney is the leading yellow cultivar, developed by the famous mustard producer, Colman Foods Ltd. of Norwich, England. H90G{PD}

Yellow: (White) (*S. alba*) {DF} Light tan to sandy-brown seeds, larger than those of brown mustard. Milder than brown mustard seeds, and often moistened with water to bring out the flavor. Widely used in the production of American style mustards and some English mustards. Also used in pickling and sausage making. The most commonly sold mustard seeds. NORMAN; C92{S}, GO, G44M, H86, H90G, J58, K49M{S}, L16, L94M{S}, M15M, N7D

#### CODES FOR SPECIAL TYPES

1. Baby
2. Red-Leaved

## NECTARINE {GR}

### AMYGDALUS PERSICA NUCIPERSICA GROUP

#### WHITE-FLESHED

Arctic Rose: Large, globose fruit; chalk-white skin, mottled with red; flesh white, streaked with red near the pit, firm, dense, very sweet and rich when fully ripe; clingstone. Ripens in early to mid July in Central California. Excellent for drying. Highly recommended for home orchards. Requires 600 to 700 hours of chilling. Developed by Floyd Zaiger and colleagues. BROOKS 1997; A5, A88M, E4, I99M, N20

Elruge: Medium-sized, round to oval fruit; skin pale greenish-white, blushed with dark purplish-red; flesh greenish-white, red near the stone, very soft, aromatic, quality high; stone free; ripens the end of August. Tree very hardy; productive. Grown in many parts of the world. SIMMONS 1978; 081, R77

Gold Mine:<sup>1</sup> Medium-large fruit; skin white with a red blush; flesh white, juicy, flavor very good to excellent; freestone; ripens late mid-season. Tree vigorous and productive. Low chilling requirement. Originated in New Zealand. STEBBINS; A63, B93M, B93M{DW}, C54, D23M, E4, G49, H4, H63M, I68, 765{ES}, K76, K88T, L47, N20

Heavenly White: Fruit large; skin creamy white, with beautiful dark-red blush; flesh firm, very sweet, aromatic; flavor excellent; freestone; ripens late July to August. Self-fertile. One of the best white-fleshed nectarines. Originated in Modesto, California by Floyd Zaiger. A88M, E4, I49M, I99M, N20

John Rivers: Fruit medium to large; skin white with a crimson blush; flesh greenish-white, tender and juicy, semi-freestone; ripens early. Tree medium-sized; vigorous; ornamental when in bloom. Severely affected by insufficient winter chilling. Originated in England. STEBBINS; A88M{OR}, F91T{SC}, K88T, L47, N20, R77

Karla Rose: Medium-sized, roundish fruit; skin predominantly an attractive red, with some white blotches; flesh white, juicy, very sweet, flavor and quality excellent; freestone; ripens late-May to mid-June. Tree moderately vigorous and productive; requires 700 hours of chilling. C30M, C75M, E99M, F61M, F93

Lola: White-fleshed nectarine that should not be confused with the Lola peach, an old American white peach. Recently introduced by the USDA from the former Soviet Central Asia, where it is highly esteemed for its quality. Apparently has a very high chilling requirement. MARIANI; T49M{SC}

Lord Napier: Large, oval fruit; skin pale yellow, practically covered by a crimson and brownish flush; flesh very pale green, slightly subacid, tender, melting and juicy; flavor good; stone long-oval, free. Tree a regular and heavy bearer. Raised from Early Albert by Rivers and introduced in 1869. SIMMONS 1978, WICKSON; 081, Q30{SC}, R77

Morton: Medium-sized fruit, about 2 inches in diameter, spherical; skin thick, white, about 80% red blushed; flesh greenish-white, juicy, melting; semi-clingstone; quality very good; ripens in early mid-season; often escapes brown rot infection. Tree vigorous; hardy; flower shewy, self-fertile. Originated in Geneva, Nov York by H.O. Bennett and R.C. Lamb. Introduced in 1965. BROOKS 1972; L12

Quetta: An old heirloom nectarine brought to the United States from India. White-skinned fruit, highly blushed with red; very firm and meaty, well flavored; quality good. One of the parents of Le Grand, along with J.H. Hale peach. Named after the town in western Pakistan. MARIANI 1994; F91T{SC}, K88T

Red Chief: Fruit about 2 inches in diameter and length, nearly round with halves tending to be unequal; skin bright red with an attractive finish; flesh white, moderately firm; flavor mild; quality good; freestone; resistant to brown rot. Originated in Blacksburg, Virginia. Introduced in 1952. BROOKS 1972; E45, E99M, F93, H49{DW}, I41P

Rose: (White Rose) Large, freestone fruit with excellent flavor; resembles John Rivers, but is larger, firmer and has more attractive red skin; ripens during John Rivers season. Tree moderately vigorous; a heavier and more regular producer than John Rivers. Also has a lower chilling requirement. Good backyard cultivar. Originated in Le Grand, California by F.W. Anderson. BROOKS 1972; B71M, K88T, N20

Silver Lode:<sup>1</sup> Medium-sized fruit; skin creamy yellow, about 75% red-blushed with numerous red dots; flesh white, juicy, fine-grained, sweet; freestone; ripens early to midseason, and over a long period. Tree vigorous; chilling requirement low. Originated in Ontario, California by Herbert C. Swim, Armstrong Nurseries. Introduced in 1951. BROOKS 1972, STEBBINS; A63, C54, F91T{SC}, H4, I68, K88T, L47

Snow Queen:<sup>1</sup> High quality freestone. Slightly oblong fruit, about 3 inches in diameter; creamy white skin blushed with red; rich, dense, melting white flesh, very sweet and juicy, flavor excellent. Ripens in mid to late June, 2 to 3 weeks ahead of Babcock peach. Very vigorous and productive. Low chilling requirement, 250 to 300 hours. Highly rated by members of the California Rare Fruit Growers. *N20*

Stanwick:<sup>3</sup> Fruit medium-large, roundish oval, slightly heart-shaped at base; skin pale, greenish-white, shaded into deep, rich violet in the sun; flesh white, tender, juicy; semi-freestone; flavor very rich and vinous; ripens late. Has a sweet kernel. Tree tends to drop fruit before fully ripe. Originated in England from seed brought from Syria. STEBBINS, WICKSON; *C54, K88T*

Violette Hative: Round, slightly tapered fruit; skin pale greenish yellow with a dark crimson blush; flesh nearly white, red near the stone, very soft, sweet, quality very good; stone free; ripens the end of August. Tree vigorous, fairly handy, productive. A very old French nectarine, known in 1659. SIMMONS 1978; *T49M{SC}*

White Tiger: Medium-sized, uniform fruit; skin pale colored, blushed with red; flesh white, aromatic, juicy, melting, very sweet; dessert quality excellent. Chilling requirement 600 hours or lower. Ripens late. Similar to Tiger, a yellow-fleshed nectarine. Originally from the preservation orchard of Emil Linquist. *LI*

#### YELLOW-FLESHED

Cherokee: Fruit about 2 1/4 inches in diameter; ovate, symmetrical; skin highly colored with a fine finish; flesh yellow, texture noticeably stringy, flavor rich and above average quality, semi-freestone; ripens 13 days before Lexington. Tree moderately vigorous; productive; has an above average tolerance to brown rot and spring frost. BROOKS 1972; *E45, E99M, F91T{SC}*, *I41P*

Desert Delight:<sup>1</sup> Medium-sized, globose fruit; skin bright red; flesh light yellow, firm, juicy and sweet with a rich, vinous flavor; clingstone. Ripens early in subtropical desert climates. Large, vigorous, upright tree; large, showy pink blossoms. Low chilling requirements, only 100 to 200 hundred hours. *A88M, I68, I83M, N20*

Double Delight: Attractive dark-red fruit; flesh yellow, flavor rich and sweet, freestone; quality very high; ripens mid-season, about with Heavenly White. Showy pink double blossoms. Originated in Modesto, California by Floyd Zaiger. *A88M, D23M, I99M, N20*

Durbin: Medium to large fruit; flesh yellow, firm but melting, flavor good, texture medium, semi-freestone; matures early, ripening ahead of Redhaven peach. Tree disease resistant; widely adapted. *A82, C75M, E99M, F61M, F93*

Early Rivers: Large, round, somewhat flattened fruit; skin greenish-yellow, almost covered with a scarlet flush and darker stripes; flesh pale yellow, without red near the stone, very soft, juicy, flavor excellent; stone free; ripens early. Tree hardy; productive. Introduced in 1893. SIMMONS 1978; *R77, R83*

Erliscarlet: Large fruit; skin golden yellow, with 80% scarlet red blush; flesh yellow, firm. Tree vigorous and productive. Originated in Kearneysville, West Virginia by the USDA-Appalachian Fruit Research Station. Introduced in 1985. *A5, C75M, E99M, F91T{SC}*

Fairlane: Large, oval fruit; skin yellow with a red blush; flesh yellow, firm, smooth textured, flavorful, clingstone; ripens late August to early September. Tree vigorous and productive; flowers large and showy; medium chilling requirement. Originated in Fresno, California. *B71M, F91T{SC}*, *K88T, L47*

Fantasia: Large, ovate fruit; skin bright yellow with one-third to two-thirds covered with a bright-red blush, more highly colored than Le Grand; flesh yellow, firm, texture smooth, quality good, freestone; ripens immediately after Flavortop; shipping quality good.

Very good for drying. Tree vigorous; productive; self-fertile. Introduced in 1969. BROOKS 1972; *A5, A9, A88M, B53, B83, C30M, C75M, E4, E99M, F53, K73M, K88T, LI, M11M{PR}*, *M39M*, etc.

Firebright: Medium to large, ovate fruit; skin golden, blushed with bright cherry-red, highly attractive; flesh yellow, firm, smooth textured, flavor excellent, semi-freestone; ripens early, just after Redhaven peach. Tree moderately vigorous and productive; only medium hardy; has good resistance to bacterial spot. Fruit should be thinned early for optimum size. *A9, B71M, B83, F91T{SC}*, *K88T, M11M{PR}*, *M39M*

Flamekist: Large, ovate fruit; skin attractive yellow, blushed with red; flesh yellow, firm, texture smooth, quality excellent; clingstone; ripens 3 weeks after Elberta; ships well. Tree productive; flower large, self-fertile; moderately low chilling requirement. Recommended for areas of low rainfall. BROOKS 1972; *A9, B71M, E4, F91T{SC}*, *K88T, N20*

Flavortop: Large, ovate fruit; skin mostly red, with an attractive yellow-spotted undercolor; flesh golden-yellow streaked with red, firm, texture smooth, quality excellent, freestone; shipping quality good; ripens just after Independences Very good for drying. Tree vigorous; productive; self-fertile. BROOKS 1972; *A5, A63, B53, B71M, B83, C54, E4, E99M, F53, F61M, L47, M11M{PR}*, *M39M, M99G*

Garden Beauty:<sup>1 2</sup> Fruit large, to 3 inches in diameter when properly thinned; skin yellow with a bright-red blush; flesh yellow, flavorful, clingstone; ripens late, in early September. Tree a genetic dwarf, grows only 5 to 6 feet tall; highly ornamental, with showy dark-pink double blossoms. Low chilling requirement. STEBBINS; *G49, H65, I68, N20*

Garden Delight:<sup>1 2</sup> Large fruit, to 3 inches in diameter; skin yellow with a bright red blush; flesh yellow, melting, rich and flavorful, freestone; ripens late, in mid-August. Tree a genetic dwarf, grows only 5 to 6 feet high; self-fertile; has unusually dense foliage and showy pink blossoms. Low chilling requirement. STEBBINS; *A88M, I68, N20*

Garden State: Large, round oval fruit; skin with greenish-yellow ground color, almost completely covered with red; flesh yellow, firm, juicy, freestone; ripens in late August. Tree vigorous; medium-spreading; flowers large, showy, light pink, self-fertile. Originated in New Brunswick, New Jersey by M.A. Blake. Introduced in 1934. BROOKS 1972; *A82, G72, G72{DW}*, *H49, H49{DW}*, *K28, K28{DW}*, *M25M, M69M*

Gold: (Giulla di Padova) Fruit large; skin and flesh clear golden yellow. Well-ripened fruit is melting, juicy and sweet with an apricot-like flavor. Probably needs high heat to ripen properly. Originated in Padova, Italy. Introduced into the United States in 1926. Renamed Gold in 1932. BROOKS 1972; *LI, 071M*

Gulf Pride:<sup>1</sup> (Stark Gulf Pride) Medium-sized fruit, 2 to 2 1/2 inches in diameter; skin covered with 50% red blush; flesh yellow, very firm, flavor excellent; ripens in early May, has good handling and shipping qualities. Very low chilling requirement, about 150 hours. Originated in Modesto, California by Floyd Zaiger. Introduced in 1983. *I83M*

Hardired: Average sized fruit, 2 1/4 inches in diameter; skin yellow, with 90% brilliant red blush; flesh yellow, medium-firm, texture and flavor good, freestone; ripens uniformly. Tree very hardy, hardness comparable to Reliance peach; tolerant to brown rot and bacterial spot; self-pollinating. Originated in Harrow, Ontario, Canada. *A91, A91{SC}*, *C45M, D69, D76, D76{DW}*, *F53, G23, M11M{PR}*

Harko: Fruit medium, averages 2 1/2 inches in diameter; skin yellow with 90% bright-red blush; flesh yellow, medium-firm, melting; flavor and texture good; almost freestone; uniform ripening, ripens mid-August, or 4 days after Redhaven peach. Tree

medium-sized; spreading; hardy; somewhat resistant to brown rot and bacterial spot; self-fruitful. C34, F53, F91T{SC}, I49M, M11M{PR}

Independence: Medium-sized, ovate fruit; skin brilliant cherry-red, attractive; flesh yellow, firm, of good texture and flavor, freestone; suitable for long-distance shipments; ripens early, in late June or early July. Tree productive; moderately vigorous; self-fruitful. BROOKS 1972; B93M, C41M, C54, E4, H89M, H89M{DW}, I68, K88T, L47, M39M, N20

June Gio: Medium to large fruit; skin yellow with a red blush; flesh yellow, firm, flavor and aroma excellent, freestone. Tree blooms late, but ripens in June, up to 4 weeks before Fantasia. Excellent tree and bud cold tolerance; good for late frost areas; some resistance to bacterial spot. Originated in Modesto, California by Floyd Zaiger. B71M, C34, E4, F53, J61M, L33, M11M{PR}, N20

Le Grand: (Pot of Gold) Very large fruit; skin yellow with a bright-red blush; flesh yellow, firm, rubbery, clingstone; flavor delicate, semi-acid; ripens late; holds well on the tree. Tree large, spreading; productive; flowers large, showy, pink. Originated in Le Grand, California by F.W. Anderson. Introduced in 1942. BROOKS 1972, STEBBINS; C54, I68, K88T, L47

Mericrest: Medium-sized fruit; skin solid dark-red; flesh golden-yellow, flavor excellent, freestone; ripens in Glohaven peach season, or early August in Zone 6. Tree very hardy, withstands winter temperatures of -20° F; resistant to brown rot and bacterial leaf spot; self-fruitful. Originated by E.M. Meader of New Hampshire. A88M, A91, A91{SC}, B74, C45M, D76, D76{DW}, E97, F53, H65, L12, L33, L33{DW}, N20

Necta Zee:<sup>2</sup> Large, attractive fruit; skin dark red; flesh yellow, firm, flavorful, clingstone; ripens early to mid-June in central California, 1 month before Nectar Babe. Tree strong, vigorous; a genetic dwarf, growing only 6 feet tall; self-fruitful; needs approximately 500 chilling hours. Developed by Floyd Zaiger. A88M, C34, I49M, I68, J61M, N20

Nectar Babe:<sup>2</sup> Skin bright-red; flesh yellow, sweet, rich and flavorful, freestone; ripens in mid-summer, one month earlier than Garden Delight. Tree a genetic dwarf; requires another peach or nectarine for pollinization; produces heavy crops when pollinized with Honey Babe peach. A88M, G49, I68, N20

Panamint:<sup>1</sup> Medium to large fruit; skin bright red; flesh yellow, freestone; ripens during third week of July. Tree vigorous; productive; has a very short chilling requirement, being adapted to southern California growing conditions. Originated in Ontario, California by Herbert C. Swim, Armstrong Nurseries. Introduced in 1952. BROOKS 1972; A63, A88M, C54, D23M, G49, I68, I83M, K88T, LI, L47, N20

Peento:<sup>4\*\*7\*\*\*\*</sup> (A34-160) Very distinct type with fruits that are compressed and oblate, similar to the peaches known as pen-tao, doughnut or saucer peaches. Small fruits, 2 to 2 1/2 inches wide; yellowish-orange skin, blushed with red; firm, juicy, melting yellow flesh, honey sweet; excellent, distinctive flavor reminiscent of mango. Susceptible to brown rot. Should have good potential as a specialty market fruit. U30{SC}

Pineapple: Fruit round, fairly large, slightly tapering; skin yellow green but almost covered with bright crimson; flesh golden yellow, faintly red near stone, very soft; flavor distinctive and good; stone small, free. One of the best yellow-fleshed nectarines. Raised by Rivers from Pitmaston Orange and introduced before 1870. SIMMONS 1978; 081, R77

Pocahontas: Fruit medium large, 2 1/8 inches in diameter; ovate; skin highly colored; flesh yellow, slightly stringy, quality good, semi-freestone; ripens 19 days before Lexington. Tree vigorous; productive; resistant to brown rot and spring frosts. Originated in Blacksburg, Virginia. Introduced in 1965. BROOKS 1972; E45, E99M, F91T{SC}, I41P, L90

Red Gold: Large to medium fruit; form symmetrical, globose; skin smooth, yellow, overspread with red, medium to thick; flesh yellow, streaked with red near pit, firm, meaty, flavor subacid, eating quality good to best; freestone; ripens evenly, immediately after Sun Grand. BROOKS 1972; A5, A9, A82, B53, B83, C41M, C75M, E99M, F53, F61M, H49{DW}, K73M, L33, M11M{PR}, M39M, etc.

Southern Belle:<sup>12</sup> Fruit large; skin yellow overspread with red; flesh yellow, freestone; ripens in early August. Tree a genetic dwarf, growing only 5 feet tall at maturity; very productive; blooms very early. Low chilling requirement, approximately 300 hours at or below Ay F. Originated in Le Grand, California by F.W. Anderson. Introduced in 1975. C54, D23M, I83M

Sun Glo: Large fruit, 3 inches in diameter; skin golden yellow, with 75% red blush; flesh yellow, juicy, firm, quality very good; ripens in midseason, or early August in Zone 6. Tree hardy; productive; thrives in Zones 5 to 8. A5, B53, B83, C30M, C75M, E99M, F61M, H89M, K73M, L33, L33{DW}, L90, M99G

Sun Grand: Fruit large, about 2 1/2 inches in diameter; skin yellow with a red blush; flesh yellow, firm, freestone; ripens after John Rivers, about July 5th. Tree large, spreading; productive; flowers large. Very good for drying. Originated in Merced, California by F.W. Anderson. Introduced in 1950. BROOKS 1972; A9, B93M, E4, K88T

Sungem: Medium to large, round fruit; skin yellow, 90 to 100% blushed with deep ruby red; flesh bright yellow, firm, melting, very sweet; semi-freestone; ripens extremely early, early to mid-May. Tree vigorous, semi-spreading; self-fruitful, productive; extremely disease resistant; flowers large, showy, fragrant. Released by the University of Florida. C75M, E99M, F61M, G17

Sunred:<sup>1</sup> Small to medium-sized, round fruit; skin bright red over 90 to 100% of surface; flesh yellow, firm, dessert quality excellent, semi-freestone when fully ripe; ripens early to mid-May in central Florida. Tree requires about 300 hours of winter chilling at or below 45° F. to break dormancy. BROOKS 1972, RUCK; C54, F61M, I41P, I53M, J59, K76, K76{IM}, M83

Surecrop: Large, roundish fruit; skin attractive bright red over a yellowish-white undercolor; flesh yellow, firm but tender, juicy, sweet and flavorful, freestone; quality good; ripens mid-August. Tree vigorous; productive; self-pollinating. A82, D76, G23, G72, G72{DW}, G79M{DW}, I41P, K28, K28{DW}, L90, M25M, M83

#### CODES FOR SPECIAL TYPES

1. Low-Chill
2. Genetic Dwarf
3. Sweet-Pit
4. Donut

## OKRA {S}

ABELMOSCHUS ESCULENTUS

#### GREEN-SKINNED

##### HYBRID

Annie Oakley: 45 days. Medium-green, slender, five-angled pods; 7 to 9 inches long; spineless; remain tender as they grow to a large size. Earlier than open-pollinated types. Compact, uniform, heavy-yielding plants; height 3 to 4 feet; can be planted at high densities. Excellent for local markets, home gardens and processing. Does well in the North. B75M, C20M, C85M, D26D, E97, F13, G57M, G71, G79, K50, N16

Cajun Delight: 49 days. Hybrid Clemson Spineless type with attractive, darker green pods that remain tender longer with less fiber build up. Slightly curved pods, 3 to 5 inches long. Vigorous,

exceptionally productive, compact plants. Recommended for fresh markets and home gardens. All America Selections Winner in 1997. B73M, C92, D68, E75{PL}, E97, F13, G6, G16, G27M, G82, H61, H95, I39, I50G, J91, J20, K71, L42, M29, M46, M49, etc.

#### OPEN-POLLINATED

Blondy: (White Blondy) 48 days. A short-season okra for Northern gardeners; has performed well in trials as far north as Canada. Spineless, ribbed pods; attractive creamy-lime in color; best picked when about 3 inches long; crisp and firm, yet tender and not stringy. Short, compact plant; only 3 feet tall yet very productive. All America Selections winner for 1986. A21, F73D, G27M, H49, H85M, K71, L4, M95M

Burmese: 58 days. Somewhat curved, virtually spineless pods, 9 to 12 inches long; creamy yellow green when mature. Tender, sweet and spineless enough to be eaten raw or added to salads, even at 10 inches long. Less mucilaginous than other okras. A favorite in local restaurants of southern middle Tennessee. Heirloom from Burma. L7M

Cajun Jewell: Tender pods, 1 inch in diameter and up to 7 inches long; excellent flavor. Dwarf, spineless plant, 2 to 4 feet tall; produces early and continues to bear good crops all season if pods are kept cut. A local favorite in Cajun country since the 1950's. F73D, L7M

Clemson Spineless: 55 days. An abundant producer of rich-green, slightly ribbed, straight, pointed, spineless pods; 6 to 7 inches long; of high quality; best picked when 2 1/2 to 3 inches long. Height 4 feet. Standard cultivar for processing, fresh market, and home garden use. All America Selections winner in 1939. Developed by the South Carolina Experiment Station. A27M, A75, B75M, C44, F80, G57M, G79, G93M, H61, I64, I84, K50, L7M, M46, N16, etc.

Cowhorn: 55-60 days. Very large curved pods, up to 10 inches in length, ribbed with light green. Most tender when about 6 inches long. Tall, robust plant, produces prolific amounts of pods. An old traditional variety no longer generally available in the seed trade. A27M, K71

Dwarf Green Long Pod: (Prolific Long Pod Green) 55 days. Sturdy, compact, well-branched, productive plants; height 2 1/2 to 3 feet; easier to pick than tall types. Dark-green, moderately ridged pods; slightly more slender and longer than Clemson Spineless; 7 to 8 inches in length; spineless; of excellent quality. For best flavor, harvest when 1 to 2 inches long. A25, A27M, 475, C44, C69, D11M, F70, G57M, G71, H85M, K10, K49M, M95M, N16

Emerald: (Emerald Green Velvet) 55 days. A round-podded cultivar popular for processing. High quality dark-green pods are smooth, spineless, slender and thick-walled; 8 to 9 inches long; can be snapped like green beans. Extra length and perfectly round slices are valued for canning and freezing, but best flavor is obtained if pods are picked when 2 to 4 inches long. Vigorous, thrifty plants. Height 5 feet. C20M, D1T, D12, F63, G57M, G71, G93M, N16

Evertender: 50 days. Slightly ridged, medium-green pods; average 5 to 7 inches in length when mature. Quality very good; stays tender much longer than others. Medium-sized, unbranched plants; height 4 to 5 feet; have a tendency to lodge. Easy to harvest and has good tolerance to disease and drought. Imported from India. K20M, L7M

Gold Coast: 75 days. Vigorous producer of smooth (nearly unfluted), light-green pods. Small, bushy plant with an open growth habit, height 4 to 5 feet. Highly drought-tolerant and heat-resistant. Sometimes called "the lost okra of New Orleans". Introduced in 1960 by the Louisiana A.E.S. L7M

Guarijio Nescafe: Seeds are roasted, ground and used as a substitute for coffee. Young pods are fried, boiled or added to stews and gumbos. The very large, mature pods are good for dried arrangements. Attractive yellow flowers with red throats. Originally from Sonora, Mexico. 116, N84

Lee: (Dwarf Lee) 50 days. Bright-green, firm, tender, spineless pods; 6 to 7 inches long. Compact, bushy plant; height 3 feet; of open habit which makes harvesting easier; shorter stems permit closer planting in limited-space gardens. Dependable producer of uniform pods over a long season. Developed at the University of Arkansas. C20M, D12, D76, I91, N16

Longhorn: Unique heirloom from southwestern Louisiana. Very large pods, 12 inches or more long. Never commercially available, but grown locally by the Cajuns for at least 75 years. Traditionally considered the best okra for gumbo. Very large plants, 8 to 10 feet tall. F73D

Louisiana Green Velvet: (Louisiana Velvet) 60 days. Medium-green, slender, round, smooth pods; 6 to 7 inches long; spineless and very tender; retain their color when processed. Well-adapted to canning. Large, vigorous, branching, heavy-yielding plant; height 6 feet; produces all season. Very similar to Emerald. D12, F73D, N16

Pentagreen: 55 days. An early and high-yielding cultivar from Japan. Medium-green, five-angled, upright, slightly spiny pod; 6 inches long. For best quality, harvest when about 3 inches long. Sturdy, compact plant; 18 to 30 inches tall. Very productive, even in areas usually too cool for okra. C20M, J9M, K16M

Perkins Mammoth: (Perkins Mammoth Long Pod) 55 days. Pods long and slender, straight, slightly grooved, intensely green in color; length 6 to 8 inches; diameter 1 1/8 inches; fleshy and tender over a long period. Excellent for canning. Strong growing, highly-productive plant; height 4 to 5 feet. F24M, G57M, I99M, K23{PL}, K27M, K49M, K49T, K71, M95M

Star of David: 60 days. An Israeli cultivar with a distinctive flavor; recommended for okra lovers who would like to try something different. Short, blunt pods; about 5 inches long and 2 inches in diameter; with 8 to 9 deep grooves. Unbranched stalks grow 8 to 10 feet tall. Highly productive throughout the season. C95, K20M, K49T, L7M, L77D, N84

White Velvet: (Creole) 60 days. Very large, round, velvety smooth pods; greenish-white in color; long and tapering; not prickly to the touch; stay tender longer than other types. Excellent for frying. Height 3 to 5 feet. A standard, traditional cultivar. Introduced prior to 1894. C92

#### RED-SKINNED

Artist: Very uniform, brilliant purplish-red pods; 2 1/2 to 3 1/4 inches long; pentagonal in form; curved slightly and tapering at die end. Ripens early in the season. Turns an attractive deep green color after cooking. Excellent in soups and gumbos. Vigorous and productive. C20M, E97, S63M

Burgundy:<sup>1</sup> 60 days. Deep-red "baby" pods (2-3 inches long) make very attractive menu additions; older pods remain tender even at 8 inches in length; keep their red color when cooked. Attractive, deep-red stems and branches; red-veined green leaves. High yielding. Ornamental as well as tasty. All America Selections winner for 1988. B75, G6, G27M, G57M, G71, H21, H49, H85M, I64, I91, M46, M95M, R47

Hill Country Red: Attractive plant with bronze-red fruit. The slender pods can be sliced and eaten raw in salads. Produces very well in the heat of summer. Grows approximately 5 or 6 feet tall. Adapted to the low desert. F73D, I16, N84

Red: 60 days. Tasty pods are rich scarlet; 6 to 7 inches long; hold their color when fresh, but turn green once cooked. Recommended for fresh market, home gardens and processing. Vigorous, medium-sized plants; 3 to 3 1/2 feet tall. Leaves, stems and pods have a reddish tinge. Pods are also ideal for dried arrangements. A21, C92, C95, K49M

Red Velvet: 60 days. Long, slender, slightly ribbed, deep-red pods; will retain their color as long as they remain fresh but turn

green when cooked; add raw to salads for best use of bright color. Cut when very small before ribs become striggy. Tall, red stalks; height 4 to 5 feet; red-tinged foliage. An old cultivar. C20M, J97M, K23{PL}, K49T

Red Wonder: Long, red pods, with 7 distinct ridges; longer than other red strains; remain tender until almost mature. Upright plant; height 4 to 5 feet; very ornamental. Excellent quality combined with an attractive appearance. F85, R50

#### CODES FOR SPECIAL TYPES

1. Baby

### OLIVE {PD}

#### OLEA EUROPAEA

Alfonso: Very large, oval fruits. Usually salt-brine cured, packed in wine or wine vinegar, then bottled with the addition of olive oil. Cured olives are pale-brown to bright purple, soft-textured, and mildly bitter. Easy to pit. Excellent marinated in oregano and chopped garlic. Widely grown in South American countries, especially Chile and Peru. KLEIN, ROGERS [Re]; I64M, L50M, L99

Amfissa: (Amphissa) Large, roundish fruits. Brine-cured, sometimes with the addition of vinegar. Cured olives are rich-purple, smooth, moderately tender, and mild in flavor. They hold their texture and flavor well when pitted. Excellent in olive pies. From central mainland Greece. KREMEZI 1993 [Re], SCHNEIDER 1993; H15T, I58P

Arbequina: Tiny, roundish to oval fruits. Excellent for both pickling and oil extraction. Brine-cured olives are grayish-brown, aromatic, and have an intense, distinctive flavor. Very popular in tapas bars. Yields a smooth, rich, fruity oil considered by many to be the best in Spain. Named after the village of La Arbeca in Catalonia. ANDREWS, C. 1998, DOMINGO; L13P, L13P{PD}

Ascolano: (White Olive of Ascoli) Very large, ellipsoidal fruit; skin color very light even when perfectly ripe; pit relatively small. Excellent for pickles, but needs proper aeration during pickling to develop acceptable color. Also yields a complex, very fruity oil. Ripens very early. Widely adapted tree, tends toward alternate bearing when older. HARTMANN, KLEIN; I83M{GR}, 194, K39M{PD}

Atalanti: Medium to large, roundish fruits. Brine-cured and often packed in vinegar. Cured olives are greenish-tan to purple-brown, smooth, soft-textured, and moderately salty. One of the few European olives commonly sold already pitted. From central mainland Greece. ROGERS [Re], SCHNEIDER 1993; H15T

Barne'a: Small, almond-shaped, pointed fruits. Brine-cured, then packed in olive oil with native Middle Eastern seasonings. Cured olives are an attractive green, delicate, very fresh and herbal tasting, with pleasant bitter overtones. A selection from rootstock recently discovered in the Sinai Desert. SCHNEIDER 1993; E69

Barouni: (Baruni) Large, oval fruit, reddish-black when ripe. The variety usually shipped to the East Coast for makers of home-cured olives. Also produces a flavorful oil. Tree spreading and easy to harvest; a very consistent bearer. Withstands extremely high temperatures. Originally from Tunisia. HARTMANN, KLEIN; K39M{ED}, S59{GR}

El Greco: {GR} Selected for its heavy and reliable cropping and good oil content. One of the earliest bearing olives, producing good sized, small stoned fruit. Originated in New Zealand. N84, 097, R77

Elitses: High-quality Greek olive resembling Nigoise. Tiny, oval, pointed fruits with a high pit-to-flesh ratio. Suitable for pickling or

oil extraction. Brine-cured olives are brown to greenish-black, slightly bitter, oil-rich, fairly mild and wood<sup>^</sup>. Ideal for nibbling. SCHNEIDER 1993; H15T

Farga Aragon: Small to medium-sized, oval fruits with relatively high pit-to-flesh ratio. Picked ripe and then brine-cured. Cured olives are deep-brown to purple, soft and tender, with an intense, slightly smoky flavor. Excellent blended with extra virgin olive oil and made into olive pate. Produced in Spain, often by organic methods. E56, L13P{PD}

Frantoio: {GR} Small, long-oval to oblong fruits; black when ripe, with a prominent bloom. Ripens early, by October 15. An important oil producing olive in Tuscany and Umbria, in central Italy. Yields an oil with a fruity, herbal, nutty aroma and an occasional peppery bite. Vigorous, spreading tree; susceptible to cold; tends to bear in alternate years. DOMINfi, HARTMANN, KLEIN; 071M, R77

Gaeta: Small to medium, roundish fruits. Usually dry-salt cured, then rubbed with oil, but sometimes brine-cured. Salt-cured olives are black, wrinkled, and meaty. Brine-cured olives are mahogaiy, smooth, and slightly more soft and chewy. Both types are surprisingly mild. Often flavored with rosemary and other herbs. Can be hard to pit. KLEIN [Re], ROGERS [Re]; B71G, E23M, L99

Gigante di Cerignola: (Bella di Cerignola) Very large, prune-shaped fruits. Brine-cured in ash which produces attractive, bright-green olives with a light, fresh, sweet flavor. Distinctive, firm, fleshy texture. Low in salt. Difficult to pit. Also available in a black form. Tree a shy bearer; susceptible to cold injury and peacock spot. From the small town of Cerignola in Apulia. HARTMANN, ROGERS, SCHNEIDER 1993; A76, C94M, L50M, L99, N54

Hojiblanca: Medium to large, roundish fruit; yields 17 to 19% oil; ripens late November to late December in Spain. Often used for table olives because of its firm texture, as well as for oil. The oil is ideal for pastries and baking, yielding exceptionally workable and light doughs. Moderately vigorous tree; withstands cold well. Difficult to harvest. A7{PD}

Kalamata: (Calamata) Famous Greek olive from the town of Kalamata in the southern part of the Peloponnese. Medium-sized, slightly curved, pointed fruits; an attractive purple when cured. Brine-cured with the addition of red wine vinegar, producing the characteristic spicy flavor. Excellent seasoned with oregano and chopped garlic. KLEIN [Re], KREMEZI 1993; A7, A7M, A52M, B71G, C94M{PD}, E23M, H15T, I58P, I64M, J66M, L50M, L99, N54, S59{GR}

Ligurian: (San Remo, Olivette) Small, oval fruit with a high pit-to-flesh ratio, resembles Nigoise. Salt-brine cured, then frequently packed in herb-infused oil. Cured olives are glos<sup>^</sup>, brownish-black to purple-black, juicy, robustly flavored. Excellent blended with extra virgin olive oil and made into olive pate. From the Italian Riviera. KLEIN [Re], ROGERS [Re]; 194, 194{PD}, L99

Lucques: (Crescent) Medium-sized, oblong, variably curved fruit; glossy, velvet black when ripe. Cured green olives are fleshy, fine-grained and richly flavored. Also produces a robust, intensely fruity oil. Ripens in December. Strong-growing tree with a spreading top; bears fairly regularly. Originated in France. Named after the Italian province of Lucca. HARTMANN, SCHNEIDER 1993, WICKSON; A7, I58P, K39M{PD}, N84{GR}

Manzanillo: Large, rounded-oval fruit; skin brilliant purple, changing to deep blue-black when mature, resists bruising. Ripens early, several weeks earlier than Mission. The pulp parts readily with its bitterness and is exceedingly rich when pickled. Excellent for oil and pickles. Tree spreading, vigorous, a prolific bearer. Introduced to California from Spain. WICKSON; B93MIGR, G17{GR}, H15T, H40M{GR}, I64M, I83M{GR}, K39M{PD}, Q93{GR}, S59{GR}

Mission: Medium-sized, oval fruit; skin deep purple changing to jet-black when ripe; flesh very bitter but firm, freestone; ripens

rather late. Good for pickling and oil, especially ripe pickles. Average oil content. Most widely used for cold-pressed olive oil in California. Tree vigorous, heavy-bearing. More cold resistant than other cultivars. Grown at the old missions in California. C60D{PD}, D3M{PD}, D7{PD}, E48{GR}, H40M{GR}, I64M{PD}, I83M{GR}, K39M{PD}, S59{GR}

Nabali: Medium to large, plump, roundish fruits. Suitable for both pickling and oil production. Relatively high oil content, 27 to 33%. Small, easily removed pits. Available in both green-cracked and tree-ripe forms, usually brine-cured and seasoned with herbs and spices. Tree somewhat of an alternate bearer. Widely grown in the Galilee region of Israel. HARTMANN, SCHNEIDER 1993; E69{ED}

Naphlion: (Naphlion) Famous Greek olive from the town of Naphlion in the northeastern part of the Peloponnese. Small to medium, elongated fruits. Brine-cured, then packed in olive oil. Cured olives are dark khaki-green, crisp and meaty, and have a sharp, fresh, fruity flavor. Often dressed with garlic or herbs. In Greek markets, olives called *tsakistes* or the "cracked ones" are usually Naphlion. LAMBERT-G6CS, ROGER [Re]; A52M, H15T

Nevadillo: Medium-sized, long-oval fruits; glos<sup>^</sup>, velvet-black when ripe. Ripens in October. Grown on a small scale in California for oil production. Yields a very versatile oil with a rich, robust flavor. Vigorous, spreading tree; somewhat alternate bearing. Imported into the United States from Spain about 1885. HARTMANN; K39M{PD}, N54{PD}

Ni<sup>o</sup>ise: Small, oval fruits with a high pit-to-meat ratio. Brine-cured, then packed in olive oil with *herbes de Provence*. Cured olives are glos<sup>^</sup>, brown to brownish-purple, smooth, tender, rich and flavorful. Difficult to pit. Essential for *salade Nigoise*, a classic dish of the French Riviera. ANDREWS 1996 [Re], KLEIN [Re], ROGERS [Re]; C34G, H15T, I8M, I64M, J66M, L99, N51M

Nyons: Hearty olive from the Provencal region of France. Small to medium, roundish fruits. Mostly dry-salt cured, then rubbed with oil, but occasionally brine-cured. Cured black olives are slightly wrinkled, melting and pleasantly bitter. Easy to separate and pit. Excellent in *pissaladiere* and *tapenades*. Also suitable for oil extraction. KLEIN [Re], ROGERS [Re]; A7,158P, L99

Picholine: Small, elongated fruit; skin light green, changing to wine red, then to red-black when ripe; pulp fleshy, firm-textured. Cured olives have a delicate, subtle, lightly salty, nut-like flavor. Usually salt-brine cured. Widely grown in certain parts of Provence, France where it used for *olives farcies* (variously stuffed olives). Popular in gourmet and specialty markets. Tree vigorous, medium-sized, bears heavy crops regularly. A7, I8M, I58P, K39M{PD}, L99, 071M{GR}

Pical: Medium to large fruit, pointed at the tip; yields 22% oil on average; ripens in November and December. Produces excellent quality oil which is traditionally used for frying, stews, meat dishes, salads and gazpachos. Very vigorous tree; precocious and high yielding. Plantings of Pical amount to 50% of Spanish olives, and therefore about 20% of the world's olives. Grown mostly in Andalusia. DOMINE; U7G{SC}

Santa Catarina: (Santa Katherina) Medium to large, long-oval fruit, slightly smaller than Ascolano. Ripens in November. Cured, green-cracked olives are meaty, juicy and flavorful. Usually brine-cured, those from Israel often flavored with lemon rind. Grown throughout central Italy and in the Galilee area of Israel. Bears good crops regularly. HARTMANN, SCHNEIDER 1993; E69, 071M{GR}

Sevillano: (Gordal) Very large fruit, bluish-black when ripe; stone large, clingy; ripens early. Little oil content, mostly used for pickling. Used for making Sicilian style salt-brine cured olives and the largest *Queen olives* of Spain; also the leading canning cultivar. Tree a strong grower and regular bearer; requires deep, rich, well-drained soil; will not stand much cold. KLEIN, WICKSON;

D81{PO}, H15T{PD}, I64M{ED}, I83M{GR}, L13P{ED}, K39M{PD}, Q93{GR}, S59{GR}

Souri: Small to medium, elongated fruits. Used for both pickling and oil extraction. High oil content, 33 to 44%. Yields an oil with a foil, delicate, fruity flavor. Both cracked-green and ripe brine-cured forms are available. Large, vigorous tree; yields heavy crops but tends toward alternate bearing. The oldest and most popular variety grown in the Galilee region of Israel. HARTMANN, SCHNEIDER 1993; A7{PD}, E69{PD}

Taggiasca: An important olive in the Ligurian region of the Italian Riviera, both for table olives as well as oil production. Small, oval fruits. Brine-cured olives are brownish-purple and have a mild but distinctive flavor. Yields an exceptional, very light, thin oil with a delicate almond-like flavor. Introduced to Taggia by Benedictine monks. Possibly a clone of Frantoio. ANDREWS, C. 1996, DOMINE; C60D, C60D{PD}

Thasos: Medium-sized, oval fruits. Dry-salt cured, then often coated in oil. Fudge-brown to licorice-black when cured; wrinkled; chewy, prune-like flesh; subtle, earthy, concentrated flavor; usually quite salty. Regional olive from Greece, only occasionally available at ethnic markets. SCHNEIDER 1993; H15T

Verdale: {GR} Medium to large, almost round fruit; skin very green till nearly ripe, then vinous red, finally deep black, somewhat dull; pulp fleshy, dry; stone very large; ripens early. Flavor and texture when pickled very good. Primarily used for green olives. Tree dwarf, lacking in vigor; a regular, moderately heavy bearer. Originated in France. Q93, S59

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## ONION {S}

ALLIUM CEPA  
ALLIUM X PROLIFERUM

ALLIUM FISTULOSUM

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### BUNCHING ONIONS

Also called *Welsh onions*, *green onions*, *salad onions*, *spring onions* and *scallions*. Grown for the green tops and the long, usually white stalks or slightly swollen base. Mostly *A. fistulosum*.

### RED-STALKED

Benizome: A unique cultivar with dark violet stalks. The violet color develops well under low temperature conditions. Usually produces 3 to 4 stalks. Useful raw or cooked. Excellent for the fresh gourmet market and bedding sales. Matures late for a bunching onion. TIM

Deep Purple: 60 days. A new development in red bunching onions. The first cultivar that is highly colored at any temperature or age. Deep reddish-purple color. Develops and retains its color throughout its growth period and under high and low temperature extremes. Suitable for spring or summer sowings. G6, K49M, L7M

Get Set Red: Perennial scallion-like bunching onion. Reddish colored for a length of 2 inches along the bottom of the stalks. Forms large bulbs the second year; continues multiplying at the base. Over-winters and sets seed, while producing more onions. Grows about 18 inches tall. Harvestable from spring to early winter. H15P

Redmate: Easy to grow, scallion-like, red bunching onion. Crispy, mild and sweet; delicious whether picked at the thin, pencil-size stage or after the bulb has just begun to swell. The flavor will be somewhat stronger if picked at the latter stage. Developed in Europe. E33

Red Beard: 60 days. Attractive, red-colored stalk, 12 inches long; crisp, mild and flavorful. Best quality is obtained when harvested just as the bulbs begin to swell. Delicious brushed with oil and grilled over charcoal until soft and sweet. Vigorous plant; height 2 1/2 feet. Bright coloration develops in cool weather; should be

planted in late summer for a fall harvest. D68, F80,177, K23{PL}, L3J, L42, M49, N84, R32, S55, S70

**Red Bunching:** (Bed Welsh Bunching) Red non-bulbing onion. Grows in clusters of 3 to 4 stalks. Stalk 10 to 12 inches long, bright-red over nearly the entire length, free of bulbing. Mild flavor; good in soups, stews and salads Very hardy and prolific. Usually grown as an annual. K85{PL}, Q34

**Red Welsh:** (Early Red, Ciboule Commune Rouge) 65-70 days. An old form of perennial bunching onion, similar to the true wild Welsh onion. Grows in clusters of 2 to 3 stalks, each stalk 12 to 14 inches long; coppery-red in color. Light green leaves. Strong flavor; use leaves and small bulbs. Can be maintained from season to season by division. Very hardy. C53, N84, 048, P59M, S55

**Santa Clause:** 56 days Very fine Ishikura type with rose-red stalks. Can be harvested as "spring onions" 6 to 8 weeks after sowing; remains tender and flavorful for 2 to 3 weeks afterwards. Excellent lightly grilled until soft and sweet. Unique color improves with earthing up and intensifies with the onset of cold weather. L91M

#### WHITE-STALKED

**Beltsville Bunching:** (*A. cepa* x *A. fistulosum*) 65 days. Long, smooth white stalk with a slight swelling, resists bulbing; crisp, very mild and flavorful. Widely adapted; produces well where others may fail. Will stand hot, dry weather better than most cultivars; also very hardy. Resistant to pink root, smut and thrips. Released by the USDA. D12, G13M, G57M, K49M, L42

**Evergreen White Bunching:** (Evergreen Hardy Long White, Nebuka) 65 days. Long, slender stalk; 4 to 9 inches to the first leaf; little or no bulbing; tender and mildly pungent. Resistant to thrips, smut and pink root. Extremely winter hardy. Sow in spring or fall. Can also be treated as a perennial by dividing the clumps the second summer to produce a new crop. C97, C85M, D55, D82, F44, F80, F82, G6, G13M, G33,164, L59, L79, N16

**He-Shi-Ko:** 65 days. Semi-splitting type; produces clusters of stalks when not planted too closely. Long, silver-white stalk, 8 to 10 inches to the first leaf; tender and mildly pungent. Tolerant to both heat and cold; can be over-wintered for an early spring crop. Resistant to pink root, smut and thrips. A16, C44, D12, D65, D76, E97, G13M, G83M, 139, J20, K85{PL}, M46

**Hikari:** Grows in clusters of approximately 6 stalks. Strong, erect, dark-green foliage. Both leaves and stems are tender, mild and flavorful. Resistant to bulbing. For summer and fall harvests. Can also be sown in the fall for over-wintering. N84, R32, S55

**Ishikura:** (Ishikura Long White) 65 days. Single stalk type. Thick, cylindrical, non-bulbing stalk; up to 12 inches long to the first leaf; tender and mildly pungent. Tall, upright, pale blue-green leaves; resist breaking. Good shipping qualities. Winter-hardy plant; grows 18 to 24 inches tall. A75, C85M, F63, G13M, G33, H61, J9M, K10, K49T, K73, L42, L91M, N52, Q3, R32, S63M, etc.

**Kincho:** (Kincho III) 75 days. Single stalk type, similar to Tokyo Long White. Long, slender, pure-white stalks with much better uniformity than Ishikura. For late summer and fall harvests, or for over-wintering. Winter hardy in southern Ontario, New York, Ohio and New Jersey. F13, H54, K73, L42, L89, N52

**Kujo Multistalk:** (Kujo Green Multistalk) 70 days. Grows in clusters of 3 to 4 stalks. Slender white stalk, 6 inches long to the first leaf. Both leaves and stalks are very tender and flavorful. Height of plant 20 to 24 inches. Can be sown spring through late summer or treated as a perennial. C95, D1T, D55, K49M, N84, 053M, S70

**Kuronobori:** 60 days. Single stalk type. Slender white stalk, 16 inches long; mildly pungent and flavorful. Dark green leaves; 14 inches long. Grown mainly for the long white stalks, which are mildly pungent and well-flavored. Suitable for planting at any time of the year. Very popular in Japan and China. D55, N84, S70

**Multi-Stalk 9:** (Iwatsuki) 80 days. Grows in clusters of 8 to 10 stalks. White stalks; 7 inches long. Leaves green, about 12 inches long; moderately thick, soft and sweet. Suitable for sowing at any time of the year. E83T, L59

**Naga Negi:** (Tokyo Negi) Very long, white, single stalk type. Famous for the length of its stalk which may reach 2 feet or more. Has a pleasant, mildly pungent flavor. Traditionally the most popular onion in Tokyo and surrounding areas. Available year round in Japan, but develops its best flavor in the autumn. Often grilled on skewers, or used for flavoring vinegar and beef dishes. TSUJI; G20M{PR}

**Tokyo Bunching:** 110 days. Resembles Evergreen White Bunching, but has more upright, stiffer tops and grows with single stems. Little or no bulbing, especially in the fall. For summer and fall harvests; not recommended for over-wintering. AI, M29

**Tokyo Long White:** 68 days. Single stalk type. Long, slender white stalk; 14 to 18 inches long, 3/4 to 1 1/2 inches in diameter; little or no bulb; tender and mildly pungent. Upright, stiff, dark blue-green leaves; about 6 inches long. Excellent for fall and summer bunching; not winter-hardy. Resistant to pink root, smut and thrips. A75, D1T, D12, FI, G13M, G33, G82, H61, H95, J84, K73, L42, L59, M49, 053M, etc.

**Tokyo Natsuguro:** Dark green leaves with long white stalks, very tender and mildly pungent. Vigorous growing plant, to 3 feet tall. Similar to Kuronobori. One of the most popular single-stalk bunching onions in Japan. D55, N84, Q28, S70

**White Javelot:** 65-70 days. Beltsville Bunching type. Of better appearance, with longer white stalks and less tendency to bulb. Very uniform. Resistant to hot weather and cold. Finer, bluish-green foliage. Less sensitive to diseases than traditional bunching types. D11M, F70

**White Knight:** Long white stalks, with relatively little bulbing. Erect, medium tall, medium dark-green tops. Good tolerance to some strains of pink root. A refined and widely adapted cultivar. Grows well on a variety of different soil types and under diverse climatic conditions. 118M

**White Spear:** 85 days. Short white stalks, 4 to 5 inches long; very slow to bulb even in hot, dry weather. Tall, upright, blue-green leaves; weather tolerant, stand up well to stress and heat without falling. Very vigorous and reliable. Resistant to pink root. AI, A2, A75, G16, G57M, G82, H61, J84, K49Z, K50, K63G, K73, L7M, L94, M32, etc.

**Yakko Summer:** 100 days. A specialty in Osaka, Japan. Leaves slender but numerous. Stands heat better than other cultivars without falling over. Good for late spring sowing. J73

**Zhang Qiu:** Large, tall plants, over 3 feet tall and weighing more than 2 pounds; white part of stem 20 to 24 inches long, tender, crisp and sweet. One of the most famous scallion cultivars in China where it is considered superior to all others for brushing thick *hoisin sauce* onto the Mandarin pancakes used for wrapping *Beijing duck*. Adapted to the climate of northern China. 054

#### LARGE BULBING ONIONS

Some types of bulbing onions are grown for fresh use, others for storage. They are grown from seed or from *onion sets*, which are small, specially grown bulbs. Raising them from sets is easier than from seed, especially in areas with short summers or where spring sowing conditions are likely to be difficult. Sets mature earlier and largely avoid the problem of onion fly, however only a few cultivars are available as sets. LARKCOM 1984. (*A. cepa*)

#### RED/PURPLE-SKINNED

##### *Hybrid*

**Red Burgermaster:** (Burgermaster) 110 days. Long-day type. Large to very large, globe-shaped bulbs, up to 3 1/2 inches in



diameter; bright reddish-purple skin; crisp, very attractive, red and white flesh. Excellent, sweet and spicy flavor. Perfect for slicing. Very good storage qualities. Good vigor and uniformity. A16, D8M{PL}, D26D, D65, F13{PL}, F63, G16, G71, G83M, G87, H57M, 139,191, J20, J99G{PL}, L89, L89{PL}, M49, etc.

Red Granex: 165 days. Short-day type. Large, flattened globe-shaped bulb; skin thin, dark red; flesh red, firm, mild. Stores moderately well. Some tolerance to bolting and doubling under good growing conditions. Protect from strong sunlight to prevent bleaching. Resistant to pink root. Standard short-day red onion in the Granex class. C20M, G93M, 191

#### *Open-Pollinated*

Benny's Red: (Bennie's Red) 112 days. Long-day type. An improved Southport Red Globe. Medium to large, deep globe-shaped bulbs; attractive bright red skin; soft, moderately pungent, pink to white flesh. Not for long-term storage. Standard commercial red onion; also good for home gardens. C20M, D12, F13, G79, G82, K10, M27, N52

Burgundy: (Red Hamburger, Red Buigundy) 120 days. Short-day type. Large, flattened globe-shaped bulb, 3 to 4 inches in diameter; glossy, dark red skin; flesh white, with red ringing; very sweet and fine-textured. Ideal for slicing. Not a good keeper. Resistant to pink root. D65{PL}, E97, H33M, H95, I50G, I65M{PL}, K5M, K27M, K49M, N16

Early Red Burger: 172 days. Intermediate-day type. Medium-large, thick-flat bulb; skin deep dark-red; flesh white with light-red ringing, soft, mildly pungent. Developed as an early fresh market cultivar with good color. Highly non-bolting with good tolerance to pink root. Widely adapted. B49, C20M, G93M, H61

Italian Blood Red Bottle:<sup>1</sup> 120 days. Large, spindle-shaped, blood-red bulb. Has a spky, tangy flavor. Ideal shape for slicing. Can be used in salads or for cooking. Often employed in center-piece arrangements. 139

Ramata Rossa di Milano: 110 days. Very large, blocky, top-shaped bulb; copper-red skin; sweet, pungent, flavorful white flesh. Sown February through April for harvesting in the summer. Very long storage ability for a red-skinned onion. Excellent for braiding. C53, K49T, Q11M

Red Bermuda: 95 days. Short-day type; similar to Yellow Bermuda and Crystal Wax except for its red color. Medium to large, semi-flat bulb, about 3 inches in diameter; thin red skin; crisp, very mild, pinkish flesh. Excellent in salads and sandwiches. Does not keep well. DIT, E5T, G57M

Red Brunswick: (Braunschweiger, Rouge de Brunswick) 105 days. Small, very flat bulb, seldom exceeding 2 1/2 inches in diameter; skin intense violet-red, verging on black; flesh white, hard and firm, juicy, mildly pungent. Can be used for green onions. Stores extremely well. Introduced prior to 1865. BURR, VILMORIN; D24{ST}, P59M, R83{ST}, S55, S61

Red Creole: (Red Creole C-5, Creole C-5) 110 days. Short-day type. Small to medium-sized, thick-flat bulb; skin reddish-buff; flesh reddish-purple, fine-grained, solid, very pungent and flavorful. Stores moderately well. Grows well under hot, humid conditions. C20M, DIT, D12, E5T, G27M, G93M, J59M, K49M, K63G, S66M

Red Grano: 90-100 days. Short-day type. Medium to large, top-shaped bulb; deep red skin; crisp, fine-grained flesh of mild flavor. Will store well for 2 to 3 months if kept dry. Resistant to pink root rot. C20M, DU, D82,177

Red Torpedo:<sup>1</sup> (Italian Red Torpedo) 100 days. Intermediate-day type. Large, spindle-shaped bulb, often weighs 1 pound or more; skin thin, dry, light purplish-red; flesh very light-red, soft, sweet, mildly pungent. Ideal shape for slicing. Stores moderately well. For home gardens and local markets. Highly productive and non-bolting.

Good tolerance to pink root. B49, C20M, C53, DIT, G93M, I18M, 177,199M{PL}, J20, K49T, 053M

Red Wethersfield:<sup>5</sup> (Large Red Wethersfield) 105 days. Long-day type. Large, comparatively flat bulb, 5 inches in diameter; skin deep purplish-red; flesh medium-firm, pungent, purplish-white. Widely used for the production of red onion sets. Widely adapted. Keeps fairly well. Introduced prior to 1865. BURR, VILMORIN; A25, C44, C61{ST}, C95, D12, F92,163Z, 184, J99G{ST}, K49M, K71, M46

Rossa di Bassano: (Di Genova) Medium-day type. Large, flattened bulb with violet-red skin and rose colored flesh. Sown in August and September or February through April. Harvested in spring and summer. An early maturing onion for the fresh market. Does not store well. N84, 053M, Q11M

Rouge de Florence:<sup>1</sup> (Red Florence) Very long, spindle-shaped root, about 6 inches long; bronze pink-red in color. Very mild and sweet. Attractive red color blends well with the pale green stem. Ideal shape for salads and pickling. Relatively insensitive to daylength; may be sown in spring or fall. C53, G68, N84, S55

Ruby: 105 days. Long-day type. An attractive, refined selection of Southport Red Globe. Medium to large, deep globe-shaped bulb; thick, deep red skin; pink, firm, pungent flesh. Tight, relatively heavy, well-retained scales. Well suited to prolonged storage when properly cured. C20M, C95, G93M

Southport Red Globe: 110 days. Long-day type. Medium to large, globe-shaped bulb; thick, glossy, purple-red skin; flesh firm, strongly pungent, white tinged with pink. Heavy, deep red scales are well retained during handling and storage. Well-adapted to northern areas. Standard hard red market and storage onion. B49, B75, E53M, G93M, H21, H95, I64, J14{PL}, J20, K49T

Stockton Early Red: 180 days. Intermediate-day type. Large, thick-flat bulb; skin thin, dark red; flesh white with light-red ringing, mildly pungent. Short storage period. Very productive and vigorous. Highly non-bolting; tolerant to pink root. Well adapted to central California. C20M, C53, G93M, H61, I99M{PL}, J9M, K49T, K66{PL}, L89, L89{PL}

Sweet Flat Red: Long day type similar to Red Hamburger. Large, flat bulb, 3 to 4 inches in diameter; skin red; flesh white, with light-red ringing. Very mild, as mild as Bermudas but better adapted to the Midwest. Excellent for summer salads and hamburgers. Does not store well. G16{PL}, I49M{PL}

#### WHITE-SKINNED

##### *Hybrid*

White Granex: (Miss Society) 170 days. Short-day type. Large, thick-flat bulb; white skin; fairly firm, mild white flesh. Resistant to pink root. Standard white Granex type, very widely grown and popular in onion-producing areas of the South. Released by the USDA and the Texas Agricultural Experiment Station. C20M, D8M{PL}, DIT, G27M, H33M{PL}, I50G, J99G{PL}, N16{PL}

White Keeper: 106 days. White Sweet Spanish type. Uniform, globe-shaped bulbs, 3 inches tall, 3 1/2 inches wide; average weight 12 ounces; pure white throughout and resistant to greening on both interior and exterior. Centers are firm, generally multiple but not dividing in any way. Excellent storage capabilities, particularly for a sweet white onion. Tolerant to various strains of pink root. Introduced in 1980. C20M, C68M, G57M, J20, J84

##### *Open-Pollinated*

Blanco Duro: 120 days. Long-day type. Large; blocky, globe-shaped bulbs; about 3 inches in diameter; attractive, ivory-white skin; firm, spicy, pungent white flesh. Less prone to greening and developing thick necks than Southport White Globa Very good storage qualities. Good production and uniformity. Tolerant to pink root. A1, B75M, C20M, G93M, J9M, J20, L59G, L89

Dehydrator 86:<sup>7</sup> Short-day type specially developed for dehydrating. Slightly elongated, white bulbs; very firm, 18-20% dry matter; stores for a long time. Suitable for mechanical harvesting. Also recommended for use as a bunching onion. *P75M*

Fresno White: 194 days. Intermediate-day type. Large, thick-flat to flattened globe; thin white skin; soft, white, moderately pungent flesh. For fresh market use; does not store well. Highly productive and non-bolting with good tolerance to pink root. Well adapted to the Central Valley of California. *C20M, G93M*

Odorless Plain Leaf:<sup>2</sup> Excellent salad onion. Flat, light brown bulb; creamy white flesh, very mild in flavor. Keeps fairly well. Used for early crops sown in autumn and winter. Available since 1932 in Australia. *PIG*

Ringmaster:<sup>3</sup> (White Sweet Spanish Ringmaster) 115 days. Long-day type. Selected for a high percentage of single centers, ideal for onion rings. Very large, globe-shaped bulb; glossy white skin; medium firm, mildly pungent white flesh. Stores moderately well. Produces a high percentage of jumbo size bulbs. Resistant to pink root. *C20M, D1T, D12, G13M, G57M, K73, M32*

Southport White Globe:<sup>4</sup> 65-120 days. Long-day type. Medium-sized, globe-shaped bulb; thin pure-white skin; very firm, close-grained, pungent white flesh. Stores very well if cured properly. Good for home gardens. Standard storage cultivar in long-day regions; also used for green bunching onions in the spring. 475, B49, B75, C92, D11M, F13, F70, G57M, G71, H61, J84, K73, L42, N52

White Bermuda: 90-100 days. Short-day type. Medium-large, semi-flat bulb, 2 1/2 to 3 1/2 inches in diameter; thin white skin; very mild, crisp, waxy white flesh. Excellent in salads and sandwiches. Not a good keeper. Widely adapted in southern areas. *C61{ST}, D8M{PL}, H33M, H33M{PL}, H85M{PL}, K10, K27M, K27M{PL}, L89{PL}, N16{PL}*

White Ebenezer:<sup>5</sup> 100 days. Long-day type. Medium to large, flattened bulb; white skin; firm, mild, clear white flesh. Good keeping qualities. Used for mature onions or small pickling onions; also widely grown for the production of white onion sets. 475, C44, *D12, E5T, G57M, H49, J20{ST}, J99G{ST}, M95M*

White Lisbon:<sup>4</sup> (White Lisbon Bunching) 60-110 days. Bulb round, more or less flattened, 3 to 4 inches in diameter when well grown; skin smooth, thin, clear and white; flesh mild, moderately firm. Widely grown as an early bunching onion. Does not keep well. Introduced prior to 1865. *BURR, VILMORIN; B49, C69, C85M, C92, D65, G79, H61, I50G, 184, K10, K49M, K66, L42, TIM*

White Sweet Spanish:<sup>4</sup> 75-120 days. Long-day type. Large, globe-shaped bulb; skin white, medium-thick, glossy; flesh white, moderately firm, mildly pungent. Stores fairly well. Also used as a green bunching onion. Standard late white cultivar for long-day regions. *C85M, D8M{PL}, D82, E38, G71, I64, I65M{PL}, J14{PL}, K71, L79, L89{PL}, N16*

White Sweet Spanish Bunching:<sup>4</sup> 70 days. Special strain used for bunching or stripping. Uniform, long white stems; slender blue-green tops. Very mild and sweet. Slow to form bulbs, but will reach 5 1/2 inches in diameter if planted as a Spanish onion. Harvested from early spring until fall. *B75M, E53M, F63, G82, L42*

White Sweet Spanish Jumbo: (White Sweet Spanish Utah Jumbo) 125 days. Long-day type. Very large, globe to deep globe-shaped bulb; white skin; moderately firm, mildly pungent white flesh. Keeps fairly well. High yielding; produces a high percentage of jumbos. Tolerant to thrips. *F63, G93M, H61, I59M, K5M*

#### YELLOW/BROWN-SKINNED

##### Hybrid

Candy: 105 days. Large, jumbo Spanish type with intermediate daylength requirements. Globe-shaped bulbs with small necks;

golden-yellow skin; very sweet, mild white flesh. Only suitable for short term storage. Very popular near the Mason-Dixon line, where it is direct seeded in early spring. Produces jumbo sizes when grown from transplants in the North. *A87M, C20M, D8M{PL}, E97, G13M, G82, G93M, 139, J14{PL}, J84, J99G{PL}, K10, K50, K73, M46, etc.*

Copra: 105-110 days. Long-day type. Medium-sized, very hard, blocky round bulbs; thin necks that dry quickly; thick, deep copper-yellow skin; mildly pungent white flesh. Highest in sugar of the storage onions. Excellent uniformity and production. One of the longest storing onions, remains firm and sound after other varieties have sprouted. Tolerant to fusarium wilt. *C20M, C28, C85M, D68, D76, E24, E75{PL}, E97, F13{PL}, F63, G6, G87, K50, L42, L89, L89{PL}, N81, etc.*

Mau: 6 Short-day Yellow Granex type hybrid. When grown on the slopes of Haleakala volcano on the island of Maui, the volcanic soil and cool climate produce a delicious onion that is high in sugar and moisture and low in bite. SCHNEIDER 1986 [Cul, Re]; *A94M{PD}, E13G{PR}, E13G{PD}, F85M{PR}, G33, H90G{PQ}, K17J{PD}, L11, N40{PR}*

Sweet Sandwich: 110 days. Long-day type. Large, slightly top-shaped bulb; light-brown skin; tender, light-yellow flesh. Moderately pungent at harvest, mellowing considerably and becoming sweet after about 2 months in storage. Will keep until April or May. High yielding; tolerant of drought. Developed by Clinton Peterson of the University of Wisconsin. *C53, E24, E91G, G13M, G16, J14{PL}, M95M, R32*

Vidalia:<sup>6</sup> (Vidalia Sweet, Vidalia Granex) Short-day, Yellow Granex type. Large, slightly flattened globes with rounded shoulders; yellow skin; crisp, firm white flesh, extremely sweet and mild; large-ringed. Excellent for onion sandwiches, pickles and onion relish. Resists bolting. Widely grown near Vidalia, Georgia where it is claimed to be "the sweetest onion in the world". SCHNEIDER 1986 [Cul, Re], THOMPSON, P. [Re]; *B21M{PD}, D76, D76{PL}, E97{PL}, F85D{PD}, H35{PD}, H49, H90G{PD}, I65M{PL}, J49{PE}, K71{PL}, L35{PL}, M50{PD}*

Yellow Granex: 165 days. Short-day type. Large, thick flat-shaped bulb; skin light yellow, thin; flesh yellowish-white, moderately firm, very mild and sweet. Keeps fairly well. Resistant to bolting when grown where adapted. Tolerant to pink root. Very widely grown and popular in onion-growing areas of the South. *D8M{PL}, D12, G93M, I50G, J14{PL}, N16{PL}*

##### Open-Pollinated

Ailsa Craig: 110 days. Sweet Spanish type from England where it is a traditional exhibition onion. Very large, globe-shaped bulb, weight 2 pounds or more; rich, golden straw-colored skin; firm, sweet mild flesh. Good keeping qualities. For spring or early fall sowing. Introduced about 1899. *B49, D68, E33, G6, G53M, J9M, J14{PL}, J20, M46, N84, 053M, R32, S55*

Bedfordshire Champion: Medium to large, globe-shaped bulb; light-brown skin; firm, mildly pungent white flesh. Excellent storage qualities; keeps well into winter. Consistently heavy yields. Very susceptible to downy mildew. An old traditional English cultivar, still very popular. Introduced prior to 1885. *VILMORIN; B49, N84, 053M, R32, S55, S61*

Early Yellow Globe: 100 days. Long-day type. Medium-sized, globe-shaped bulb; light bronze skin; moderately firm, mildly pungent white flesh. Good shipping and storage qualities. Widely adapted; but particularly well suited to the Northwest and upper Midwest. Introduced in 1980 by Joseph Harris. *A2, C20M, C85M, D68, F82, I39M, J20, L7M, L89C*

First Edition: 100-105 days. Long-day type. Medium-sized, very firm, globe-shaped bulbs; 2 to 3 inches in diameter; bright, brownish-skins; rich, pungent, creamy-yellow flesh. Especially good for cooking and roasting. Excellent keeping qualities. Adapted to a

wide range of temperatures in storages Tolerant to pink root. D8M{PL}, D76, E97, G16, G57M, G71, G82, G87, J99G{PL}, K66{PL}, L89, L91M, N16{PL}

Giant Zittau: Large, flattened globe-shaped bulb, 4 to 5 inches in diameter; skin attractive, very smooth, almost silky, pale salmon-colored; small neck. Also used for medium-sized pickled onions. Keeps exceptionally well. Highly productive. Suitable for spring or autumn sowing. Introduced prior to 1885. VILMORIN; B49, P59M, R32, S75M

Golden Globe:<sup>5</sup> Long-day type. Medium-sized, oblong globe-shaped bulb; deep golden-yellow skin; firm, mildly pungent flesh. Widely used for the production of yellow onion sets. Can also be harvested as early green onions. Moderately good keeper. D12, E38

Imai Early Yellow: Early maturing selection from Senshyu Semi-Globe. Thick, flattened globe-shaped bulb, weighing about 10 ounces; skin pale yellow, thin; flesh firm, pure-white, mildly pungent; quality excellent. Adapted to overwinter culture in mild climates. Bridges the gap between the stored onions from the previous year's crop, and the current crop, not yet ready for use. C20M, S63M, S70

James Long Keeping: (James Keeping) Small to medium-sized, pear-shaped bulb, seldom over 2 inches in length; skin coppery red; very fine neck. Excellent storage qualities. Still popular in England, with both home gardeners and commercial growers. Introduced about 1834. VILMORIN; C95

Kelsae Sweet Giant: 110 days. Long-day type. Extremely large, top-shaped bulb, average weight 4 to 5 pounds; dense, solid, very mild flesh; unique sweet flavor. Matures easily in northeastern United States and Canada on sandy soils by mid-September. Excellent for storage. Produced the World Record onion of 7 pounds 7 ounces. D11M, D27, D76, E75{PL}, E97, F70, H42, L42, L79, N84, Q34

New Merico Yellow Grano: 167 days. Short-day type used for early markets. Medium to large, top-shaped bulb; thin, light yellow skin; medium-firm, mild flesh. Short storage period. Resistant to pink root; somewhat tolerant to thrips. For autumn, winter or very early spring plantings in southern areas. AI, C20M, K5M

New York Early: 95-100 days. Long-day type. Medium to large, firm, blocky to roundish-oval bulbs; attractive, copper-yellow skin; tender, sweet, mildly pungent flesh. Medium-term storage capabilities. Early Yellow Globe strain, selected and maintained by onion farmers of Orange County, New York. The type of onion known to gourmets as *black dirt onions*, as they were once shipped down the Hudson River still covered in rich black soil. MALOUF [Re]; D68, E24, G6, K50, K73, L42, L59G, M27

Oakey: Large, flat bulb, up to 5 pounds; skin light brown; flesh firm, very pungent and flavorful. Excellent with bread and "real ale". Keeps up to 9 months. Very popular for exhibitions. Heavy yielding. Rare English cultivar, grown in Soham, Cambridgeshire since the 1880's. S55

Pukekohe Longkeeper: (M & R Pukekohe Longkeeper) 200 days. Intermediate-day type. Medium to large, globe-shaped bulb; skin amber to golden-brown; flesh white, firm, pungent. Very productive and extremely long keeping. Originated in New Zealand. TIM

Ramata di Milano: (Giallo di Milano) Large, blocky, top-shaped bulb; copper yellow-brown skin; flavorful white flesh. Sown February through April for harvesting in the summer. Very compact bulbs make this cultivar suitable for long term storage. Excellent for braiding. C53, Q11M, S17

Ringer:<sup>3</sup> (Ringer Grano) 168 days. Short-day type. Large, top-shaped bulb; yellow-brown skin; soft, mild, sweet flesh; very thick rings. Produces a high percentage of single centers, making it ideal for onion rings. Excellent in salads and sandwiches. Also good for fresh market use. High yielding. Resistant to pink root. AI, A87M, C20M, K73

Senshyu Semi-Globe: (Senshyu Yellow) Heavy yielding Japanese cultivar bred for over-wintering in mild climates. Medium to large, flattened globe-shaped bulb; deep straw-colored skin; firm, mildly pungent flesh. Excellent keeping qualities. Sown late summer to autumn; ready for harvesting mid-June to July. N84, Q3, R32, R32{ST}, S63M, S70, S75M

Sturon:<sup>5</sup> Long-day type. Medium-sized, flattened globe-shaped bulb with a thin neck; skin yellowish-brown, moderately thick; flesh firm, juicy, pungent; quality very good. Keeps extremely well. High yielding Stuttgarter type, widely grown in Europe for sets. P59M{ST}, R83{ST}, S61M

Stuttgarter:<sup>5</sup> (Yellow Stuttgarter, Stuttgarter Riesen) {ST} Long-day type. Medium-sized, flattened globe-shaped bulb; skin light yellow-brown, glossy; flesh firm, white, mildly pungent. Keeps very well. Primarily used for the production of sets. Sets hold very well in storage without sprouting; will not produce seed-stalks when set out in unfavorable weather. /175{S}, C61, C85M, D72, D24, D68, F13, G16, G57M, J20, J97M, K95M, M49

Sweet Winter: 340 days. Over-wintering onion developed to withstand bolting in sub-zero northern climates. Produces a Stuttgarter shaped set onion from a late summer planting. Matures by the end of June the following spring. Large, thick-flat bulb; skin light yellow; flesh mild and sweet, 50% sweeter than regular set onions. Short storage period. Introduced in 1980. C20M

Texas Early Grano: (Texas Early Grano 502) 175 days. Short-day type. Large, uniform, top-shaped bulbs; skin thin, dry, straw-yellow; flesh white, soft, mild and sweet, thick-ringed. Short storage period. Good resistance to bolting and splitting. Tolerant to pink root. Widely used in southern Texas as an early shipper. AI, A2, A87M, DIT, D12, G1M, G27M, G71M, G93M, K49M. S70

Texas Supersweet:<sup>6</sup> (Texas Grano 1015Y) 175 days. Short-day type. Yellow Grano strain, with improved tolerance to pink root. Large, globe-shaped bulb, weight about 1 pound; yellow skin; mild, very sweet flesh. Better storage and handling qualities than other grano types. High yielding. Released by Texas A & M University. Winner of the raw onion category of the National Sweet Onion Challenge. AI, A87M, D8M{PL}, D81P{PD}, E97, G16{PL}, G82, H33M{PL}, I49M{PL}, I65M{PL}, J21M{PR}, J21M{PD}, L50G{PR}, L89G, N16, N16{PL}, etc.

Turbo:<sup>5</sup> 85-100 days. Long-day type. Developed in Holland for sets. Compared to the previous Dutch standard Sturon, Turbo is higher yielding and keeps longer. Produces large, globe-shaped bulbs with deep amber skin and very good flavor. Highly resistant to running to seed, even under conditions of stress. B49{OR}, R32{ST}, R83{ST}

Wadmalaw Sweet:<sup>6</sup> Yellow Granex type said to be sweeter than Vidalia and other very sweet onions. Large, yellow bulbs with thin skin and a sweet, mild flavor. Delicious eaten raw; also excellent for making onion rings, and are very tasty when grilled. Grown on Wadmalaw Island, off the southern coast of South Carolina. MILLER, J24M{PR}, J24M{PD}

Walla Walla Sweet:<sup>6</sup> 110 days. Large, flattened globe-shaped bulb; light brown skin; white, ultra-mild flesh. Considered one of the sweetest onions, along with Texas Supersweet, Vidalia and Maui. Not for storage. Brought to Walla Walla, Washington from Corsica at the turn of the century by Peter Pieri, a member of the French army once stationed on the island. SCHNEIDER 1986 [Cul, Re]; B75{PL}, C53, D8M{PL}, D82, F82, F92, G6, G83M, G93M, H95, I65M{PL}, I99M{PL}, J20, J89{PL}, J89{PR}, K71{PL}, M62{PR}, etc.

Yellow Bermuda: 100 days. Short-day type. Medium-sized, flattened bulb; skin thin, loose, light straw colored; flesh nearly white, juicy, very mild and sweet. A popular market type grown primarily as a winter crop in the South; also good for home gardens. Highly resistant to pink root. B8M, C20M, E5T, G57M, 184, K27M, K27M{PL}

Yellow Dutch: {ST} Excellent onion sets from Holland. Produces green onions soon after planting, or if left in the ground will grow into large mature onions for winter storages Very good texture and flavor. A16, D27, FI, H42

Yellow Ebenezer:<sup>5</sup> 105 days. Long-day type. Medium-sized, slightly flattened bulb; skin brownish-yellow; flesh off-white, very firm, mildly pungent. Highly productive. Good keeping qualities. Widely used for the production of yellow onion sets. Introduced about 1900 from Japan. A75, D12, E5T, E97{ST}, G1M, G57M, G71{ST}, H54,139, K71, L7M, M95M

Yellow Globe Danvers:<sup>5</sup> 110 days. Long-day type. Medium-large, globe-shaped bulb; copper-yellow skin; firm, moderately pungent, clear white flesh; small neck. Excellent keeping qualities. High yielding; also grown for sets. Popular home garden and market cultivar. Introduced prior to 1865. BURR; A25, D27, G87, J97M{ST}

Yellow Rock:<sup>5</sup> 100 days. Flattened globe-shaped bulb; attractive bronze-yellow skin. Good light tan wrapper leaves. Excellent keeping qualities. High yielding. Used extensively for the production of yellow onion sets Earlier and much firmer than Yellow Ebenezer. Developed by Martin Rispens and Son. D12, D82{ST}, E24{ST}, J99G{ST}

Yellow Sweet Spanish: 110 days. Long-day type. Large, globe-shaped bulb, weight often 1 pound or more; skin dark brownish-yellow; flesh medium-firm, pure-white, mild and sweet with a good flavor; small neck. Moderately good keeper. Popular home garden cultivar. A25, B78, C44, C85M{ST}, D8M{PL}, D82, E38, G71, H21, I64, I65M{PL}, J14{PL}, N16, N16{PL}

Yellow Sweet Spanish Utah: (Utah Sweet Spanish, Yellow Valencia Sweet) 115 days. Long-day type. Large, globe to deep globe-shaped bulb; skin dark yellowish-brown; flesh white, moderately firm, mildly pungent; medium small neck. Keeps fairly well if thick neck is properly dry-cured. Resistant to mildew; somewhat tolerant to thrips. A16, B75M, C69, C85M, D27, E53M, FI, G79, G87, H95,139, K49T, K50

#### MULTIPLIER ONIONS {ST}

Hardy perennial onions that produce a cluster of bulbs at ground level from a single planted bulb. The larger bulbs are saved for eating, and the medium and small sized bulbs are stored and replanted. They can be grown in pots for forcing *green onions* during the winter. Some types are in demand as gourmet items. A. cepa Aggregatum Group unless otherwise noted.

**POTATO ONIONS** Also called *hill onions*, *pregnant onions*, *nest onions*, and *mother onions*. Potato onions enjoyed widespread popularity before the turn of the century, and are still a local favorite in some areas of Virginia. When a small bulb (3/4 inch) is planted, it will usually produce one or two larger bulbs. When a large bulb (3 to 4 inches) is planted, it will produce approximately 10 to 12 small bulbs per cluster.

Potato Onion: (Multiplier Onion) Each large bulb divides underground to form 8 to 12 smaller ones; when planted, these produce 1 or 2 large bulbs. Can also be left in the ground for mild cooking onions later in the season. Slightly more pungent than standard onions. A16, D11M, D27, F70, G87, H24, H42, I67M, K49M, K95M, M16

White Potato Onion: (White Multiplier Onion) Grows much like other potato onions but produces smaller bulbs, only 1/2 to 1 inch in diameter. Divides underground to form clusters of up to 15 onions. Used for green bunching onions in the spring and fall, or bulbs are prepared as pearl onions. Stores well all winter. Flavor becomes stronger with hot weather. Popular winter onion in the South; also does well in the North. F40M

Yellow Potato Onion: (Yellow Multiplier Onion) Divides underground to produce clusters of up to 15 onions. Medium-sized bulbs, 3 to 4 inches in diameter depending on growing conditions. Flavorful, yet not strong. Keeps well for 8 to 12 months. Resistant to

drought and pink root. Widely adapted; hardy. An heirloom strain dating from 1886. C85M, D65, F40M, F73D, J99G, L7M, L89, M32

**SHALLOTS** Mostly compact, medium-sized bulbs with a mild, distinct flavor. Some cultivars are especially valued in gourmet cooking and are very good pickled. Also used for *scallions*. Planted and harvested in essentially the same manner as potato onions. They mature rapidly and will keep longer than bulbing onions, often remaining sound until the following summer. C81M, E13G{PR}, E13G{PQ}, E14T{DF}, J89{PR}, K85, L16{DF}, N40{PR}, R47{S}

Atlas: {S} 75 days. High quality true shallot grown from seeds. Produces 1 or 2 bulbs per seed depending on plant spacing. Large, dark reddish-brown bulbs with pale violet flesh and an excellent flavor. Direct seeded like large bulbing onions in early spring. Ready for harvesting in August and September. D11M, F70, G53M, J82, N84, R32

Creation:(F, {S} 105 days. Hybrid seed-grown shallot with superior storage capabilities. Large, round bulbs; bright, straw-yellow skin and firm, pure-white flesh; very pungent flavor. Direct sown in early spring. Matures about one month later than shallots planted from bulbs. Well-grown bulbs will keep from fall harvest into the following spring or early summer. E33, G6, J20, L91M

Drittler White: (Nest Onion) Family heirloom brought to the United States by German pioneers who settled in north central Arkansas, on Colony Mountain. The term nest onion originated with these settlers. Maintained by the Drittler family since 1885. Bulbs are variable in size. The leaves can be used like chives. Widely adapted north to south, and especially well-suited to south Florida and Texas. F40M, F73D

Dutch Yellow: (Yellow) Bulbs average 1 1/2 inches in diameter, 2 inches when well grown; yellow-brown bulb scales; yellow to cream-colored flesh. Keeps very well. High yielding; each bulb will grow into a cluster of 8 to 12 shallots. Widely adapted, but only recommended for spring planting from Virginia northward. D8M, D68, F11, J82, J99G, L89, M32

French Red: (Red) Reddish-pink bulb scales; pale purple-pink flesh; mild, distinctive flavor. Prolific; each bulb multiplies to produce up to 30 additional bulbs. Widely adapted, but does not keep as well as other shallots. Valued in gourmet cooking. E63D, E97, F11, F73D, I81T{PR}, I99M, L7M, M32

Frog's Leg: (Pear, Brittany, Chicken's Leg) Large, elongated bulb, resembles a bull frog's legs; dark orange-brown skin; purple-white flesh. One of the mildest shallots, with an excellent sweet flavor. Large size and elongated shape makes them easier to peel and dice. Very productive; each bulb produces up to 15 shallots. C53, G68, J82, J99G, P59M

Golden Gourmet: Large, uniform, round golden-brown bulbs, up to 2 inches in diameter. Crisp flesh with an excellent distinctive flavor. Produces a cluster of 8 to 12 bulbs in only 77 days. Very good winter storage capabilities when kept cool. Tall tops are suitable for use in salads. D24, F40M, L91M, P59M, R32, R83, S17, S55, S61M

Gray: (French Gray) In France, gray shallots are considered the best of all shallots and bring premium prices. Large elongated bulb, about four inches long; bulb scales fairly firm, dull grayish brown; purple-white flesh; strong, distinctive flavor. Does not store well. Prolific; each bulb will multiply to produce 20 additional bulbs. C53, E34M, F11, F40M, G16, G68,139, J82, J99G, L89

Hative de Niort: Large, flask-shaped bulbs with fine deep-brown skin and reddish flesh; produced in clusters of 3 to 4 shallots. Recognized in Europe as the outstanding exhibition shallot. Also excellent for pickling. S61

Odetta's White: Pure-white bulbs, about 7/8 inch in diameter. Delicate flavor. Can be used as a source of scallions, green tops, and

pearl onions. Bulbs are especially good pickled. Keeps well, though the bulbs tend to dry out more readily than others. Rare heirloom, carefully tended by a family for three generations. L7M

Prince de Bretagne: Good-sized bulbs, some 3 ounces or more; light reddish-brown skin; white flesh with a purple tinge. Should be planted in spring only. An old reselected grower's strain from Brittany, France where it is a local favorite. F73D

Shallot: (French Shallot) Each bulb divides during the growing season to form a cluster of 6 or more shallots. Can also be harvested for green onions early in the season. Dark orange-brown skin with a pink cast; purple-white flesh; delicate garlic-like flavor. Widely used for flavoring soups, salad dressings, omelettes, etc. Stores well; hardy. B75, D11M, E63D, FI, F35M, F70, G16, J20, J89, L89

Golden Snow Shoe: Long, torpedo-shaped bulbs, about 3 inches long and 3/4 inch in diameter; golden-yellow skin. Grows in clusters of about 20 shallots. Excellent for adding zest to roasts or casseroles, or they can be used for any recipe calling for onions. Extremely winter hardy. Originated in Russia. F40M

Tohono O'odham Pitoi's: From the Boboquivari Mountains of southern Arizona where the O'odham Papago deity I'toi is said to reside. Probably an early introduction from the Old World. Strong, distinct flavor. Produces offshoot scallions most of the year, even when other onions go dormant. Adapted to both high and low desert areas. F40M, F73D, 116, N84

TOPSET ONIONS Commonly known as *Egyptian onions*, these produce several small bulbs below ground level as well as clusters of tiny aerial bulbils at the top of the flower stalk. The bulbs are strong flavored but the leaves are relished in salads through much of the year and provide a dependable source of *green onions* even in cold climates. The bulbils are sometimes used for flavoring in pickling recipes. (A. x prolifera)

Catawissa: (Catawissa Onion) Very hardy cultivar of Canadian origin, distinguished by its vigorous growth and the rapidity with which the bulbils commence to grow without being detached from the top of the stem. The bulbils divide into tiers, the second set of bulbils producing green shoots, leaves or barren stems to bring the height of the plant to over 2 1/2 feet. Large, hollow green stems are excellent for stuffing with cream cheese. VILMORIN [Cu], WEAVER 1993 [Re]; F40M, J99G, L89

Heritage Sweet White: Produces clumps of 50 or more scallions per year that can be harvested from late summer until late spring or early summer, when the plant becomes dormant. Dormant bulbs can be harvested for cooking or pickling. Grows to about 2 feet tall. Very winter handy, can even be harvested during the winter if the ground thaws enough to allow digging. Old family heirloom from Florida. F40M

McCullar's White Topset: An heirloom from Mississippi. Similar to the highly esteemed and well known cultivar Pran, from Kashmir and Pakistan, but white-fleshed instead of yellow. Produces a number of 1-inch or larger white bulbs below ground level, plus pea-sized bulbils at the top of the flower stalk. Larger bulbs are used for eating; topsets for replanting. Used primarily as a source of greens when other onions are dormant. F73D

Moritz Egyptian: Heirloom from Missouri, grown by several families in a one block area since 1940. Similar to the typical Egyptian onion, but the bulbs are a deeper color (red-purple) and topsets are slightly larger than most strains. An unusual strain that will sometimes produce sets in the middle of the stalk. L7M

West Virginia Purple: Old family heirloom that is notable for its high production of topsets. Topset bulbils form an unusually large tight cluster and average more than 1/2 inch in diameter, a perfect size for pickling. Also produces table ready scallions from late summer until the following late spring or early summer. Grows to 2 feet or more in height. Very winter hardy. F40M

## PEARL ONIONS

Also called *pickling onions*, *boilers*, and *mini* or *baby onions*, these are bulbing onions that are planted thickly and harvested when very small. They are especially suitable for pickling because they don't develop papery outer skins. Most will grow in poorer, drier and less fertile soil than the larger bulbing onions. Flat, Italian types are often called *cippolini*. A *Gibson* is a Martini cocktail garnished with a pearl onion instead of an olive HAWKES [Re], HERBST, S., LARKCOM 1984. (A. cepa). E13G{PR}, N40{PR}

### RED/PURPLE-SKINNEP

Boretano: 110 days. Italian heirloom of the *cippolini* type. Flattened, spherical bulbs; glossy, rosy-bronze color. Firm, fine-grained flesh, well-developed flavor. Usually harvested when 2 inches in diameter and 1 inch thick. Traditionally served whole, pickled, or braised in a sweet and sour sauce Very productive, long day type with exceptional keeping qualities. 177, K23{PL}, K66, K66{PL}, Q34

Jon: 65 days. Purple-red skinned mini onion similar to Purplette, but not quite as early. Reddish-purple, turning an attractive pastel pink when cooked or pickled. Matures early and holds well. Can be harvested at golf ball size, or when very small as baby bunching onions with purplish bases. Gourmet specialty market item. G6

Purplette: 60 days. The first red-purple skinned mini onion. Glossy, rich burgundy color, turning pastel pink when cooked or pickled. An attractive specialty item either topped or bunched. Can be harvested at golf ball size or very young as "baby" onions with purple pearl ends. Matures early and holds well. A2, F44, G6, K49M, N84, Q34, R32, S55

### WHITE-SKINNED

Aviv: 62 days. Small, flattened globe-shaped bulb; skin thin, delicate, silver-white; flesh mild, flavor very good. Very well suited for pickling. When planted at a suitable depth and density, no thinning is required. Very quick to mature. Sow in spring to early summer. Developed by Hazera Seeds. K66, P75M, S61, T27M

Barletta: (White Barletta, Early White Pearl, St. Jans) 70 days. High quality cocktail onion from Europe. Small, nearly round bulb, slightly flattened at top and bottom; silky-white in color; flesh crisp and mild, of fine quality. Very uniform in size and shape. Excellent for pickling. C85M, D11M, F70, G68, L42, 089, P59M, P75M, Q11M, RUM, S55, S95M, T27M

Crystal Wax: (Crystal Wax Bermuda) 95 days. Very attractive White Bermuda strain. Flattened globe-shaped bulb; skin white, thin and waxy; flesh white, coarse, crisp and juicy; very mild flavor. Widely used for bunching and pickling when young. Not a good keeper. Resistant to pink root. A16, A87M, D68, D76, G27M, H61, H95, 165M{PL}, K5M, K49M, K73, M49, N16

Marzatica: Small, pure white bulbs. Not as quick maturing as Barletta but the bulbs are somewhat larger. Should be sown thickly from August to October for continuous harvests beginning in early winter. Italian *cippolini* type. Q11M

Pacific Pearl: 50 days. New pearl onion developed in Oregon. More day neutral than other types, can be planted in spring, summer or fall and still produce bulbs. Perfect for salads, garnishing or pickling. L89

Paris Silverskin: (Early Paris Silverskin, Blanc Hatif de Paris) Medium-sized, flattened bulb, 2 to 3 inches in diameter; silver-white skin; firm, flavorful white flesh; small neck. Widely used for pickling. Introduced prior to 1885. VILMORIN; N84, R32, S61, S95M

Pompeii: (Pompeii Perla Prima) 65 days. Similar to the Barletta type but smaller. Typical, thin-necked, flattened globe-shaped bulb; very thin, pure-white skin; mild flavor. Widely used for the cocktail

onion trade. Can also be harvested when young for scallions. *D12*, *F44*, *L42*, *P75M*, *RUM*, *T27M*

White Pearl: 75 days. An improved rounder version of the popular standard cultivar Silver Queen. Round, clear white bulbs, slightly waxy in appearance. Attractive European strain that meets the highest demands of the cocktail onion trade. Slightly earlier than Silver Queen or White Queen. *D82*

White Portugal: (Silverskin, American Silverskin) 100 days. Excellent multi-purpose cultivar. May be used for green or bunching onions when young, "pearl" onions when bulbs form, sets, or mature bulbs. Mature bulbs large, thick-flat; skin clear silver-white; flesh firm, fine-grained, flavorful, mild and sweet. Good storage qualities. Introduced prior to 1865. *BURR*; *C20M*, *D12*, *E5T*, *E24{ST}*, *G82*, *163Z*

Wonder of Pompeii: 100 days. Small, flattened globe-shaped bulb; silver-white skin; of good quality. Excellent for pickling. Also used whole in soups and stews. Should be sown thickly to produce small, uniform bulbs. *139*, *K49M*

#### YELLOW/BROWN-SKINNED

Gold Coin: 80 days, Very flat, yellow *cippolini* type. Medium-small bulbs, 1 1/2 to 3 inches in diameter, 3/4 to 1 inch tall; very firm, pungent, sweet. Stores very well. Excellent for braiding or storing in a basket in the kitchen. Recommended for latitudes 38° to 60°, as necks may be too thick at lower latitudes. *G6*

Yellow Borettano: 110 days. Gourmet *cippolini* type. Flattened globe-shaped bulb, slightly larger than typical pearl onions, 1 1/2 to 2 inches in diameter and 1 inch high; golden-tan skins; fine-textured white flesh; sweet, delicate flavor. Holds up well in storage. Adapted to long day conditions, Very popular in Italian cuisine. *I18M*, *111*

#### CODES FOR SPECIAL TYPES

1. Spindle-Shaped
2. Odorless
3. Ring
4. Also Bunching
5. Set
6. Ultra-Mild
7. Dehydrator

## ORANGE{GR}

### CITRUS X SINENSIS

#### BLOOD ORANGES

Blood oranges are considered the connoisseur's or gourmet's citrus. Their flavor is distinctive and refreshing. It is often described as a rich orange flavor with overtones of raspberries or strawberries. The fruit is a bit hard to peel but excellent for juicing. The juice can be used in mixed drinks or as a base for sauces. Fruit sections can be added to fruit salads, used as a garnish, or made into marmalade. *RAY*, *R.*, *SCHNEIDER* 1986 [Re]; *B71G{PD}*, *C94M{PD}*, *D3M{PR}*, *E13G{PR}*, *G17*, *J61M{PD}*, *N40{PR}*

Doblefina: (Oval Sangre) Fruit medium-small to small, oval to oblong; rind difficult to peel, yellowish orange blushed with rose-colored flecks; flesh firm and moderately juicy, with a distinctive fragrance and a mild, pleasant flavor; virtually seedless; ripens late; hangs poorly but ships and stores unusually well. *REUTHER*; *N18{OR}*

Maltaise Sanguine: (Malta Blood, Portugaise) Medium-sized, oblong fruit; rind peels easily, external blood coloration well developed under favorable conditions; flesh tender, melting, very juicy, with good blood coloration under favorable conditions; seeds few to none. Flavor and aroma excellent. Late midseason in maturity. The

first blood orange to be planted in California. *REUTHER*; *N84*, *R77*

Moro: Fruit medium to medium-large, subglobose, round, or obovoid; seeds few or none; rind medium-thick, moderately adherent, and somewhat pebbled. Orange-colored at maturity with light pink blush or red streaks at advanced maturity. Flesh deeply pigmented (almost violet-red), juicy, flavor pleasant. Very early in maturity, but holds well on the tree and stores and ships well. A distinctive aroma develops with advanced maturity. *REUTHER*; *A63*, *A71*, *B93M{DW}*, *D23M*, *D23M{ES}*, *D37{DW}*, *E3M{DW}*, *G49*, *I49M{DW}*, *I74{DW}*, *H78*, *I83M*, *J22*, *J61M{DW}*, *N18{SC}*, etc.

Ruby: Medium-sized, globose to slightly oblong fruit; rind medium-thick, well-colored, with reddish flush under favorable conditions; flesh orange, streaked (rather than flecked) with red under favorable conditions, tender and juicy; flavor rich; seeds relatively few. Midseason in maturity. Tree moderately vigorous, compact, medium-large, productive. *C29M{SC}*, *N18{OR}*, *N84*, *Q93*, *R77*

Sanguinelli: Fruit similar to Doblefina, but larger, seedier, and often asymmetrical; blood coloration of both rind and flesh much more intense and constant. External red pigmentation rarely equalled by other blood oranges and excelled by none, making the fruit most attractive. Holds on the tree well; also stores and ships well. Tree small to medium, spineless; foliage light-green; productive. *REUTHER*; *A63*, *G49*, *I83M*, *N84*, *R77*

Sanguinello: (Sanguinello Commune) Medium-sized, obovoid to oblong fruit; rind medium-thick, moderately tough and adherent, orange-colored at maturity washed with red; flesh rather deeply red pigmented at maturity (more so and earlier than rind), juicy, pleasantly flavored; seeds few or none. Midseason in maturity. Stores and ships moderately well. *REUTHER*; *B93M{DW}*, *E3M{DW}*, *I74{DW}*, *N24M{DW}*

Sanguinello Moscato: (Paterno) Medium-large fruit of variable shape; rind orange, strongly blushed with red at the apex, moderately adherent; flesh well-colored, very juicy, aromatic, flavor excellent; seeds few or none; ripens in midseason. Holds well on the tree and ships well. One of the most highly reputed blood oranges. The principal cultivar in the Mount Etna region of Sicily. *REUTHER*; *04*

Tarocco: Medium-large to large fruit, variable in form from broadly obovate to globose; rind medium to medium-thick, moderately tightly adherent, yellowish-orange blushed with red at maturity; flesh somewhat firm but juicy, usually well pigmented; flavor rich and sprightly; few or no seeds. Midseason in maturity. Loses quality if left on tree much past maturity and drops badly, but stores and ships well. *REUTHER*; *B93M{DW}*, *G49*, *N18{SC}*

#### COMMON ORANGES

#### VALENCIAS

Campbell: Fruit indistinguishable from Valencia, but the tree is consistently more vigorous, thornier, larger, broad-topped, and slower to come into bearing than Valencia. The fruit is slightly lower in juice content in coastal regions and has a greater tendency to regreen in interior districts. A nucellar budline. Originated in the Early Campbell orchard, Santa Ana, California. Introduced in 1942. *BROOKS* 1972, *REUTHER*; *A71*, *C29M{SC}*, *H78*, *H78{DW}*, *N18{SC}*

Cutter: Fruit large, slightly more round than standard cultivars. Tree initially free of recognized virus diseases; exceptionally vigorous; slightly slower coming into bearing than standard cultivars. A nucellar seedling. Originated in Riverside, California by H.S. Fawcett, California Citrus Experiment Station. Introduced in 1952. *BROOKS* 1972; *A63*, *A71*, *C29M{SC}*, *N18{SC}*

Frost Valencia: fruit typical Valencia, but has greater vigor and better yield than its seed parent. Tree initially free of psorosis virus

carried by seed parent tree. Nucellar seedling of Valencia. Originated in Riverside, California by H.B. Frost, California Citrus Experiment Station. Introduced in 1952. BROOKS 1972; C29M{SC}, N18{OR}

Olinda: Large fruit; skin thin; flesh sweet, quality good. Valencia type but matures slightly earlier than standard cultivars. Tree vigorous, productive; free of recognized virus diseases. Originated in Olinda, Orange County, California, in the garden of Ollie Smith. Introduced in 1957. BROOKS 1972; A63, A71, B58M{SC}, C29M{SC}, N18{SC}

Seedless Valencia: A bud variation of Valencia that differs from it in that the fruit is more oblong or oval in form, less seedy (occasionally one or two seeds), and matures earlier (late midseason). Tree vigorous and upright with large leaves that tend to be bunched, giving it a distinctive appearance, and strongly alternate-bearing. Said to have been discovered in the orchard of W. Eathers at North Richmond, New South Wales, Australia, between 1920 and 1925. REUTHER; G49, I83M

Valencia: Medium-large, oblong to spherical fruit; seeds few or none. Well-colored at maturity, but regreens thereafter under certain conditions. Rind medium-thick, tough, and leathery. Juice abundant and flavor good but commonly somewhat acid. Fruit holds exceptionally well on tree with little deterioration in quality and ships and stores well. Excellent for processing. Latest maturing of all commercial cultivars. Tree vigorous, prolific, but with alternate-bearing tendency. Very wide range of adaptation. REUTHER; D23M, D23M{ES}, D34M{PR}, E3M{DW}, F53M, G49, G96{DW}, H4, H55{PD}, I83M, J22, J22{DW}, L33M{PR}, Q93

Variiegated Valencia:<sup>1</sup> New selection with attractive, tri-colored foliage and fruit. Leaves are 2 shades of green and yellow. The fruit is striped yellowish-orange and green when immature, coloring to a solid orange when ripe. Season of fruiting and flavor are the same as those of standard Valencia. A63, I83M

#### others

Ambersweet: Medium-sized, slightly pyriform fruit; rind moderately thick, easily peeled, bright orange; very tender, deep orange, rag-free flesh; flavor slightly similar to Clementine. Ripens from mid October through December in Florida. Moderately vigorous, upright tree, somewhat cold tolerant. Complex hybrid of Clementine, Orlando tangelo and a seedling orange. SAUNT; G17, I77G

Cadenera: Medium-sized, globose to slightly oval fruit; rind medium-thin, moderately well-colored; flesh very juicy, flavor and aroma excellent; seeds few or none. Medium-early in maturity. Holds well on the tree and retains its quality. The principal common orange of Spain. REUTHER; C29M{SC}

Calabrese: (Ovale) Medium-large, oval fruit; rind very tightly adherent, well-colored at maturity but regreens if held on the tree long thereafter; flesh juicy and well-flavored at maturity; quality excellent; ripens late. Holds especially well on the tree. Stores and ships well. Tree slow growing; sensitive to cold, heat and desert winds. The principal common orange of Italy. REUTHER; O4

Hamlin: Medium-small, globose to slightly oblate fruit; rind thin, well-colored at maturity; flesh well-colored, tender, juicy, lacking in acid; flavor sweet; seeds very few or none. One of the earliest to mature. Tree moderately vigorous, medium-large, productive, more cold-tolerant than most. Discovered in 1879 near Glenwood, Florida, in a grove later owned by A.G. Hamlin. MORTON 1987a, REUTHER; D13, G2M, H4, J17, L33M{PR}, L50G{PR}, N18{OR}, Q93

Joppa: Medium-sized, globose to slightly oblong fruit; rind medium-thin, well-colored under favorable conditions; flesh light orange, medium-tender, juicy; flavor rich; seeds comparatively few. Midseason in maturity. Originated in 1877 from seed imported from

Joppa, Palestine by A.B. Chapman of San Gabriel, California. REUTHER; Q93

Marrs: Medium-large, round to slightly oblate fruit; rind medium-thick, well-colored under favorable conditions; flesh well-colored, juicy, lacking in acid; flavor sweet; moderately seedy (depending on pollination). Holds well on tree with little loss in quality. Originated in Donna, Texas by O.F. Marrs. Introduced in 1940. REUTHER; C29M{SC}, F97G{PR}, N18{OR}

Mediterranean Sweet: (Maltese Ovale) Medium-sized, spherical to oval fruit; rind medium-thick, pale in color at maturity with some tendency to regreen, peels readily; flesh pale-colored, moderately juicy; flavor mild; seeds relatively few. Medium-late in maturity. Tree vigorous, large, spreading, drooping; distinctive in appearance. REUTHER; S59

Parson Brown: Medium-large, globose fruit, well-colored under favorable conditions; rind medium-thick; flesh firm, very juicy, of good flavor; seedy. One of the earliest ripening oranges. Discovered in Webster, Florida in a grove owned by Reverend N.L. Brown. First propagated and distributed between 1870 and 1878. Still relatively popular. MORTON 1987a, REUTHER; G17, Q93, N84, R77

Pineapple: Medium-sized, spherical to slightly obovate fruit; rind highly colored, especially after cold spells; flesh light orange, tender, juicy; flavor rich though sweet; pineapple-scented; moderately seedy. Midseason in maturity. Does not hold on tree as well as some, but is excellent for processing. If the crop is allowed to remain too long on the tree, it may induce alternate-bearing. MORTON 1987a, REUTHER; A63, F97G{PR}, I77G, L33M{PR}, N18{OR}, Q93

Republic of Texas: An old seedling planted by early settlers near Angleton, Texas during the time of the Republic of Texas. Has proven to be a reliable producer of high quality fruit. Very sweet and flavorful, only slightly more seedy than Hamlin but decidedly better tasting. The tree from which this clone is being propagated still exists at the original site. NAGLE; K67

Salustiana: Medium-large, subglobose to spherical fruit; rind medium-thick, unusually well-colored at maturity; flesh melting, juicy; flavor rich and sweet; virtually seedless. Early in maturity; said to hold especially well on tree without much loss of quality. Originated near Enova, Valencia, Spain. Introduced about 1950. REUTHER; C29M{SC}, N18{OR}

Shamouti: (Jaffa) Medium-large to large, oval to ellipsoid fruit; rind thick, tough, leathery, well-colored under favorable conditions; flesh light orange, firm, tender, juicy, fragrant, pleasantly sweet-flavored; seedless or nearly so. Fruit peels and segments separate readily. Ships and stores unusually well but does not process well. Originated some time prior to 1844 in an orchard near Jaffa, Israel. REUTHER; E3M{DW}, I83M, J22, J22{DW}, N18{OR}, N84, R77

Trovita: Fruit medium-small, navel structure usually absent or rudimentary; flesh somewhat more tender and juicy than Washington navel, which it resembles, pleasantly flavored; usually has 2 to 6 seeds. Tree vigorous, upright growing; productive, but with a tendency to alternate bearing. Thought to be a seedling of Washington navel. Originated in Riverside, California by Howard B. Frost. Introduced in 1935. BROOKS 1972, REUTHER; A63, D13, E3M{DW}, G49, H78, I74{DW}, I83M, N18{SC}

#### NAVEL ORANGES

Atwood: Fruit deep orange-red, of a more intense color than that of Washington, which it resembles; matures earlier, remaining firm very late in the season. Stores on the tree especially well without appreciable loss of quality. Bud mutation of Washington navel. Originated in Lemon Cove, California by Frank Atwood. Introduced in 1945. BROOKS 1972, REUTHER; A63, A71, C29M{SC}, H40M, N18{SC}

Cara Cara:<sup>2</sup> (Scarlet Navel) Unique pink-fleshed sport of Washington. Medium-sized fruit, resembles Washington but navel usually small; rind lacking pigmentation; flesh pinkish-red, juicy, subacid, flavor and quality very good to excellent. Vigorous tree, occasionally with faint variegation on young leaves. Originated at Hacienda Cara Cam, Valencia Province; Venezuela. BROOKS 1997; *A63*, *A71*, *D23M*, *D23M{ES}*, *E8M*, *E99G{PR}*, *F85D{PR}*, *G49*, *H4*, *H78*, *I77G*, *I83M*, *J21M{PR}*, *L60M{PR}*, *N18{SC}*, etc.

Cluster Navel: Medium-sized fruit, similar to Valencia but more variable—large, small, and mini-fruit may occur in the same cluster. Flesh sweet, tender and juicy. Matures in January and maintains good eating quality as late as September. Compared to the standard Washington navel, the trees are genetically dwarfed, more dense and compact. Originated as a sport on a Washington navel tree at the Citrus Research Center of the University of California at Riverside. It appeared as a single cluster of 21 oranges resembling a bunch of grapes. *A63*, *C29M{SC}*, *N18{OR}*

Fisher: Very early maturing, but rind color break is not early. High sugar/acid ratio early in the season fits well in early districts. Quality good. Good production and fruit size and holds well on the tree. Most common cultivar planted in Kern County, California. *A71*, *G49*, *H40M*, *I83M*, *J22*, *N18{SC}*

Frost Washington: The first, and one of the most important nucellar budlines of Washington navel. Widely planted in California, Arizona and Morocco. Originated at the University of California Citrus Research Center, Riverside by H.B. Frost. REUTHER; *C29M{SC}*, *N18{OR}*

Lane Late: Late maturing introduction from Australia. Fruit quality, size, and production are good. Excellent sweet flavor; seedless. Holds on the tree as late as June. Offers good opportunity for higher returns in late marketing season for navels. *A63*, *A71*, *B58M{SC}*, *D23M*, *D23M{ES}*, *E3M{DW}*, *G49*, *H78*, *I83M*, *J22*, *N18{SC}*, *Q93*, *S59*

Leng: Fruit medium-small to medium in size, globose; navel uniformly small though well developed; seedless. Color bright orange. Flesh well-colored, juicy, texture medium, flavor only fair. Very early in maturity (a week or 10 days earlier than Washington), but holds fruit well on tree without loss of quality. Originated as a limb sport of Washington at Irymple, New South Wales, Australia. REUTHER; *C29M{SC}*, *N18{OR}*, *Q93*, *S59*

Newhall: Oblong to ellipsoid fruit, slightly smaller than Washington; color reddish-orange, deeper than Washington; flavor excellent; ripens earlier than Washington. Tree somewhat less vigorous than Washington. Originated as a limb sport near Duarte, California. REUTHER; *C29M{SC}*, *N18{SC}*, *N84*, *Q93*, *R77*

Rico W2: Nucellar seedling of Washington that originated in Puerto Rico. Appears to do well in tropical areas and is recommended by the University of Hawaii. Under Hawaiian growing conditions, the fruits develop good flavor and a high sugar content. Bears good crops of fruit that resemble Washington navel. *E8M*

Robertson: Fruit virtually indistinguishable from Washington except for medium-large size, slightly lower quality, and earlier maturity, which is usually 10 days to 2 weeks. Tree precocious in bearing habit, but somewhat lacking in vigor on sweet and sour orange rootstock. Bud mutation of Washington navel; discovered in 1925. Originated in Redlands, California by Roy Robertson. Introduced in 1936. BROOKS 1972, REUTHER; *A63*, *B93M*, *E3M{DW}*, *G49*, *I74{DW}*, *I83M*, *J22*, *N18{OR}*

Skaggs Bonanza: Fruit resembles Washington, but colors and matures about 2 weeks earlier. Tree precocious; very productive; has a smaller, more dense growth habit than Washington. Budline apparently free of psoriasis, exocortis, stubborn, and cachexia. Bud mutation of Washington navel. Originated in Strathmore, California by Everett Skaggs. Introduced in 1964. BROOKS 1972, RAY, R.; *C29M{SC}*, *N18{SC}*

Summernavel: Large, roundish fruit, 3 to 3 1/4 inches in diameter; rind smooth to slightly pebbled, separates easily from flesh; 8 to 12 segments, juicy, seedless; ripens later than its parent which it resembles. Holds on tree especially well with little loss in internal quality. Bud mutation of Washington; discovered about 1934. Originated in Riverside, California by John Albert Workman. Introduced in 1942. BROOKS 1972, REUTHER; *B58M{SC}*, *I83M*

Thomson: (Thomson Improved) Medium-large, globose fruit; less well-colored than Washington; flesh firm, well-colored, moderately juicy, flavor good. Ripens very early, 10 days sooner than Washington; holds on the tree poorly. Tree less vigorous and more compact than Washington. Originated as a limb sport of Washington in Duarte, California. Introduced about 1891. REUTHER; *A71*, *N18{SC}*, *N84*, *R77*

Washington: Large, spherical to obovoid or ellipsoid fruit; navel medium to large and sometimes protruding; rind medium-thick, somewhat tender, easily removed, especially well-colored (deep orange); flesh deep orange, of firm texture, moderately juicy; flavor rich; seedless. Fruit holds on tree well but processes poorly. Originated, perhaps as a mutant, in Bahia, Brazil, before 1820. The most popular orange in the world for eating out of hand. MORTON 1987a, REUTHER; *A63*, *A71*, *B23M{PR}*, *B93M*, *D23M*, *D23M{ES}*, *E3M{DW}*, *F53M*, *G49*, *G96{DW}*, *I83M*, *J22*, *J61M{DW}*, *N18{SC}*, etc.

#### SUGAR ORANGES

Also known as *acidless oranges*, the sugar oranges have a very low acid content and are insipidly sweet. They correspond to the sweet lemons, limettas and sweet limes. Because of the extremely low acidity of the flesh, they attain edibility early, as soon as the juice content is moderately well developed. REUTHER.

Vainiglia: (Vaniglia Biondo Apireno, Maltese) Medium-small to medium fruit, subglobose to spherical; rind medium thick, well-colored at maturity; seedy. Juicy and sweet flavored but lacking in acid and with slight bitterness, though eating quality generally improves with age. Tree vigorous, medium-sized, very productive. A very old Italian cultivar. REUTHER; *O4*

Vainiglia Sanguigno:<sup>2</sup> (Mango Orange) An old Italian acidless orange with unique, pink-colored flesh. The pink coloration is caused by a carotenoid pigment called lycopene, rather than anthocyanin as in the blood oranges. Sweet, aromatic flavor, not bitter or insipid; quality very good. Becoming popular in specialty markets in the United States. Apparently derived from Vainiglia. REUTHER; *A63*, *C29M{SC}*

#### CODES FOR SPECIAL TYPES

1. Variegated
2. Pink-Fleshed

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## PALMS

See Arecaceae in Part I: Botanical Listings.

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## PAPAYA {S}

#### CARICA PAPAYA

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CO-1: Medium-sized fruit, weight 3.3 to 5.5 pounds; flesh yellow, sweet, of good quality for eating fresh. Developed at the Tamil Nadu Agricultural University, Coimbatore, India. Plant dioecious; dwarf; first fruits are borne 3 feet from the ground. MORTON 1987a; *Q45M*, *R0*, *R50*



CO-2: Large, obovate fruit with yellowish-green skin and orange flesh; soft and moderately juicy. Good for eating out of hand. Also a high papain-yielding type. Medium-tall plant. Pure line selection of a local type. Developed at the Tamil Nadu Agricultural University, Coimbatore. BOSE 1990; R0, R50

Coorg Honey Dew: Long to oval fruit, average weight 4.4 to 7.7 pounds; flesh firm, yellow, very sweet; cavity large, has fewer seeds than Honey Dew; keeps well. Low-bearing, prolific plant; produces no male plants, female and bisexual plants occurring in equal proportions. A selection from Honey Dew originated at the Chethalli Station of the Indian Institute of Horticultural Research. MORTON 1987a; N84, S59M

Ekstotika: Small fruits, weight about 1 1/2 pounds; flesh reddish pink; flavor pleasant. Produces 100% bearing plants, about 2/3 being bisexual and 1/3 female. Fruit from bisexual trees are oblong while those from female trees are round. Yields 45 tons per hectare, per year at 18 months of age. Originated in Malaysia by Y.K. Chan, by crossing Sunrise Solo with disease resistant local strains. BROOKS 1997; D33, E8M{PL}

Honey Dew: Large, oval-shaped fruit; sweet, yellow-orange, solid flesh; relatively few seeds. Very good flavor. Bears good crops of fruit. One of the most popular cultivars in India, where it is better suited to the northern parts of the country. P5, Q32, Q45M, R0, R50, S36, S59M

Know-You No. 1: (F.) Large, oblong-elongated fruit; weight 3 1/2 to 6 1/2 pounds; yellow skin and flesh; sweet and flavorful with 12% Brix; ripens early. Thick, sturdy plant; early and heavy yielding; tolerant to papaya ring spot virus. Q39

Mexican: A very sweet and flavorful hybrid papaya from Mexico. Medium to large fruit, weight 2 to 4 pounds; yellowish-orange flesh. Large, vigorous plant, often grows to 12 feet tall; very productive. Generally not as sweet as the Hawaiian Solo types. A79M

Pusa Dwarf: Medium-sized, oval fruit weighing 2 1/4 to 4 1/2 pounds. Dioecious plant, very precocious, begins bearing when 10 to 12 inches tall. Very dwarf in stature. Recommended for high density orchard planting, kitchen gardens and nutrition gardens. Developed at the LARI Regional Station, Pusa, Bihar, India. BOSE 1990; Q45M

Ranchi: Very large, oblong fruits; deep orange-red inside and out; solid flesh; excellent sweet flavor. Compact, Solo type plant; commences to bear fruit when 3 1/2 to 5 feet high. One of the parents of the CO-1 cultivar. Originated in India. N84, N91, 093, Q45M, R0, R50, S36, S59M

Solo: Fruit round and shallowly furrowed in female plants; pear-shaped in bisexual plants; weighs 1.1 to 2.2 pounds; skin orange-yellow when fully ripe; flesh golden-orange, very sweet, of excellent quality. Produces no male plants, only bisexual and female in a 2 to 1 ratio. Introduced into Hawaii from Barbados in 1911. Named Solo in 1919. MORTON 1987a; A28{PL}, A41G{PL}, C9M, D56M, F85, G49{PL}, I83M{PL}, K8, N40M, N84, 053M, 093

Sunrise: (Sunrise Solo, Strawberry) Pear-shaped fruit with a slight neck; averages 22 to 26 ounces depending on location; skin smooth; flesh firm, reddish-orange, sweet, sugar content high; quality and flavor similar to Solo; seed cavity not as deeply indented as other Solo strains, making seed removal easier. Plant precocious, maturing fruit about 9 months after transplanting, at a height of about 3 feet. BROOKS 1972; A79M, B60M{PR}, C20M, D33, E13G{PR}, F15{PR}, I77G, K8, M32M, N40{PR}, N84, 093, Q39, S70

Sunset: (Sunset Solo) Solo type; similar to Sunrise but the pulp is not as deeply colored. Small to medium-sized, pyriform fruit, average weight about 1 pound; orange-ied skin and flesh. Very sweet. Dwarf, high yielding plant. Originated at the University of Hawaii. A79M, M32M, N84, 093

Tainung No. 1: (F.) Oblong to nearly round fruit; weight about 2 1/2 pounds; fragrant, red flesh with 11 to 12% Brix; ripens medium

early. Vigorous, medium dwarf, prolific plant; easy to grow. Good for shipping. Developed at the Fengshan Tropical Horticultural Experiment Station. Q39, S70

Tainung No. 2: (F.) Large, nearly round to oblong fruit with a pointed blossom end; weight about 2 1/2 pounds; tender, orange-red flesh with good flavor and 13 to 14% Brix; ripens early. Suitable for local markets. Medium dwarf plant. Developed at the Fengshan Tropical Horticultural Experiment Station. Q39, S70

Waimanalo: (Waimanalo Solo) Fruit round with a short neck, average weight 16 to 39 ounces; skin smooth and glossy; cavity star-shaped; flesh thick, firm, orange-yellow in color; flavor and quality high; keeps well. Recommended for fresh market and processing. Fruits of female plants are rough in appearance: Average height to the first flower is 32 inches. A79M, D33, D56M, N40M, N84, 093

Washington: Medium to large, oval fruit; excellent, sweet flavor. Heavy yielding. Has dark-red petioles and yellow flowers. Popular in Bombay. MORTON 1987a; N84, 093, Q32, Q45M, R0, R50, S36, S59M

X-77: (Kaymia) Solo type. Small to medium-sized fruit; distinct, blocky shape, very short neck; deep yellow orange skin and flesh; firm, juicy, very sweet flesh. Dwarf, high-yielding plant. Fairly new release from the University of Hawaii. D57{PL}, M32M

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## PARSLEY {S}

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### PETROSELINUM CRISPUM

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#### LEAF PARSLEY

Afro: 80 days. Tightly-curved, frilly, rich dark-green leaves; held upright on long, strong stems which helps to eliminate soil splash. Very sweet flavor for a curled parsley. Will not become grey or moldy when the weather gets cold. Royal Horticultural Society Award of Merit winner for 1984. Moss Curled selection, developed to be vigorous and productive. L91M

Banquet: 75 days. Attractive, deep-green leaves; finely and tightly-curved; strong, erect stems. Rich green color is particularly fine when grown in cooler seasons. Produces well throughout the season. Good cold weather tolerance for wintering over. Ideal for garnishing and flavoring. Developed in Denmark. E91G, F13, N52

Bravour: 75 days. Large, closely-packed, very finely-curved, dark green leaves; long stems. Heavy heads provide excellent yields. Good cold weather tolerance. A leading European cultivar that is a real improvement over older sorts. L42, N84, P59M, S61M, S75M

Champion Moss Curled: 80 days. Deep green leaves, finely cut and curled; almost entirely free from plain leaves; produced in abundance. Compact, vigorous growth habit; to 15 inches tall. Excellent for growing under glass. Very popular with home gardeners. Introduced in 1894. E97, H42, K27M, K71, L42, N84, 053M, S75M

Curlina: 72 days. An early, dwarf, triple-curved strain. Extremely finely-curved, compact leaves; keep their dark green color in hot weather. Globe-shaped, 6 1/2 inch tall plants on very stiff, short stems. An excellent mini parsley for balcony planters or pots. L42, N84, 089, P59M

Dark Green Curled: 80 days. A French Perfection type with finely cut and tightly curled dark-green leaves. Rigid, upright stems. Recovery is rapid, offering multiple harvests throughout the summer and fall. Well adapted for summer crops because the foliage does not "yellow out", even under hot, humid growing conditions. Suitable for over-wintering. K50

**Darki:** 75 days. Leaves very dark-green, closely placed, heavy and intensely curled; short internodes. Excellent cold weather tolerance. Holds its fine qualities longer than other types when cut. Vigorous and widely adapted. Upright growth habit keeps leaves clean in inclement weather. Gold Medal European strain. B49, DI 1M, F70, J9M, L42, L89, N24M, N84, S61M

**Decora:** (Decora Triple Curled) 90 days. Large, well-curved, heavy, dark green leaves; remain curled in hot weather; more resistant to wilting after being cut than others. Compact, vigorous plants with thick stems. Best suited for growing in warm climates as hot weather does not slow growth. *AI, A87M, C20M, G33, G93M, K16M, N84*

**Egyptian:** One of the sweetest large-leaved varieties. Large, dark-green leaves. Used extensively in the Mediterranean and Middle Eastern salad dish known as *tabouli*. Extremely resistant to both heat and drought. **PIG**

**Evergreen:** 75 days. Large, dense, dark-green foliage; rather coarsely cut but closely curled. Very uniform. Vigorous, compact plants; tolerant to extremes of hot or cold; definitely more frost resistant than other cultivars. Recommended for both market and home gardens; for dehydrating, flavoring and garnishing. All America Selections winner in 1940. *B75M, C20M, C28, G93M*

**Exotica:** A selection of Moss Curled developed for winter harvesting in mild winter areas. Dark green, well-curved leaves with long stems. Strong, compact plants with good uniformity. Fresh leaves are continuously produced even under cool weather conditions. *F35M{PL}, K16M, N84*

**Forest Green:** 75 days. A special combination double and triple-curved market cultivar. Dark-green leaves. Long, stiff, upright stems help keep the crop clean and bunch easily. Holds its fresh appearance and deep color over a long season without bleaching or browning. Better flavor than most curled types. Good regrowth ability. Popular among Eastern market growers. *F13, F82, G6, G79, H54, H61, I64, K23{PL}, K73, L7M, L89, M46, M49*

**Garland:** 70-75 days. Improved Forest Green type with a slightly heavier curl. Very uniform, dark emerald-green leaves, double and triple curled. Vigorous and durable plant. Resists discoloration between multiple harvests and adverse weather conditions. *G82, K73, L42, N52*

**Green River:** 65 days. High quality early double-curved type. Finely cut, medium-green leaves with longer stems better suited to bunching. Especially good for bedding plant production as excellent early branching assures plants always look bushy in packs. Withstands repeated harvest without bolting. Cold and heat tolerant; resistant to diseases. *C20M, C85M, D26D, E53M, G13M, G57M, G71, G79, I39, J82, K10, K50, N84*

**Moss Curled:** (Triple Curled, Dark Moss Curled) 80 days. Dark green leaves, extremely finely-cut and deeply-curved, resembling tufts of moss. Vigorous compact plants; 7 to 10 inches tall. Very decorative; especially useful for garnishing. Standard curled-leaf strain. Productive and widely adapted. *B75M, C44, C85M, D82, E24, F92, G16, H61, K49M, K49T, M46, N16*

**Neapolitan:** (Gigante d'Italia, Giant Catalogna, Catalogno, Celery-Leaved, Prezzemolo di Spagna) 90 days. Large, flat leaves that are extremely spicy and flavorful; produced in abundance: Very large leaf-stalks, thick and stout in proportion to their length. Large, bushy, vigorous plants; to 3 feet tall. Prized by Italian cooks for all types of seasoning. Can be grown just like common parsley, or the stalks may be blanched and used like celery. *BURR, VILMORIN; C43M, C43M{PL}, C53, G6, I39, I77, J20, J73, K49M, K66, M82{PL}, Q11M, Q34, S55*

**Plain Leaved:** (Italian Dark Green, Single Leaf, Flat Leaf, Celery Leaf, Common Single, French) 75 days. Flat, glossy, deeply-cut, dark-green leaves on long stems. Vigorous, erect plant. Excellent, strong, aromatic flavor; preferred by many over that of the curled

types. Standard strain for flavoring. Introduced prior to 1806. *B75M, C44, D82, E24, F80, G6, H61, K22, K49T, K66, K73, L7M, S55*

**Sherwood:** 75 days. Relatively coarse, double to triple-curved leaves; rich dark-green appearance. Vigorous, very uniform plants; 10 to 12 inches tall. Stays brighter green than European strains in extreme heat and even after multiple harvests. Excellent for local markets and home gardens. An earlier, brighter green version of Darki for early summer and early fall cutting. *A87M, B49, C20M, D26D, G71, I18M, I77, K10*

**Unicurl:** 73 days. A breeding breakthrough. The finely-curved, dark green leaves curl in instead of out. Foliage readily shakes free of dust and dirt, making it easier to clean than any other strain. The only parsley with a tolerance to fall rust. **L42**

#### HAMBURG PARSLEY

Grown for the thick, parsnip-like roots as well as the flavorful tops. Those which have been subjected to frost usually have a higher sugar content than those harvested during the summer months. Very popular in some parts of Europe, especially Germany. (*P. crispum Radicosum* Group)

**Bartowich Long:** 95 days. Long, narrow-shouldered type with superior taste. Slender white roots, 7 to 8 inches long. Has a very good, distinctive nutty flavor. Excellent eaten raw in salads or used as a soup ingredient. Flat, dark-green leaves. Grown for fall, winter and spring harvests. **G6**

**Berliner Halblange:** (Berlin Half Long) 140 days. Medium-sized, uniform roots of excellent quality. Short and stocky, with wide shoulders and only slight tapering at the base. Only half the length of extra long types, about 4 1/2 inches. Originated in Germai. Introduced in 1908. *N81, S61M*

**Early Sugar:** 78 days. Miniature version of Hamburg Half Long. Small, wedge-shaped roots resemble Chantenay carrots and are very high in sugar content. Roots average only 3 inches in length. Used on heavy soils where longer types can become misshapen easily. **L42**

**Extralange Starke Oberlaaer:** 180 days. A high quality German root parsley with exceptionally long, tapered, sturdy white roots, 7 1/2 to 8 1/2 inches or more in length. Narrow-shoulders. Later maturing than some other cultivars. Named after Oberlaa, a borough of Vienna. **N81**

**Fakir:** 85 days. High quality half long type. Medium-long, smooth, tapered white roots; about 6 1/2 inches in length; fairly wide shoulders; creamy white flesh. Broad, flat, dark-green tops. Excellent sweet, musky flavor. Well suited for dehydrating. Very high yielding. Originated in Europe. *J20, K50, N81, P59M*

**Hamburg Half Long:** 85 days. Refined Berliner type. Half-long, wedge shaped roots with heavy shoulders, resemble Chantenay carrots. Roots average 6 inches in length and are the conical-shaped type preferred in North American. **L42**

**Hamburg Long:** 87 days. Unique, long, slim rooted strain which resembles Harris Model parsnip in shape. Roots average 9 to 10 inches in length and are the long, narrow-shouldered type preferred in Western European. **L42**

**Omega:** 90 days. Long, cylindrical, thick white roots with a very good flavor reminiscent of celeriac. Broad, flat, dark-green parsley-like foliage that can be used for flavoring. Delicious grated raw in salads, added to soups, or cooked as a vegetable. **L91M**

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## PARSNIP {S}

PASTINACA SATIVA

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## HYBRID

Gladiator: 100-105 days. World's first hybrid parsnip. Bred to be more vigorous and consequently a little larger than Cobham Improved Marrow, while retaining the refined shape, smooth white skin, and canker resistance. "True" sweet parsnip flavor. Early maturing. Consistent high quality. Excellent for sowings under adverse conditions because of extra seedling vigor. *G53M*, L89, L91M, N84, R32, S55, *S75M*, TIM

## OPEN-POLLINATED

All American: (All America) 110 days. Smooth, slender white roots, quite free of rootlets; broad and thick at the shoulders, tapering to a length of 12 inches or more; hollow crowned; very sugary, tender, fine-grained white flesh, small core; attains thickness comparatively early. Excellent keeper; will store well for months. Similar to Hollow Crown, but earlier. C92, D76, D82, E97, *H33M*, H85M, 139, K10, K50, L3J

Andover: 110-120 days. Long, smooth, narrow roots with rounded shoulders; 10 to 12 inches in length; more gradually tapered than Harris' Model; firm, bright white flesh, very sweet and flavorful, unusually high brix content of 12%. Superior storage ability. Very high yielding. Tolerant to brown canker disease. A16, *C20M*, D11M, D68, F70, H61, J84, K50, L42, L89, M49, N24M, N52

Avonresister: 100 days. Small, conical, round-shouldered roots; more uniform in size and shape than other cultivars; easy to dig. Has the most resistance to canker at the root tops. Uses less space; thin plants to only 3 inches apart. Suitable for pre-packing. Bred at the National Vegetable Research Station, Wellesbourne, England. B49{OR}, N84, R32, S55

Cobham Improved Marrow: 120 days. Half-long, tapered, smooth white roots with a very high sugar content. Outstanding flavor and appearance. Selected for its smooth white skin, refined shape, and resistance to canker. Award of Merit winner in Royal Horticultural Society trials. I39M, L94, M27, N52, R47, *S75M*

Guernsey: (Long de Guernesey, Demi-Long de Guernesey) 95 days. Long to half-long, tapered roots; relatively flat crown; fine, very clean and smooth, creamy-white skin; quality very good. Excellent flavor, particularly after a frost or even after over-wintering in the ground. D29P, E63D, G68, P59M

Harris' Model: 120 days. Well-shaped, moderately tapered root; 12 inches long, 2 1/2 inches in diameter; almost no hollow crown; skin whiter than others; very tender, sweet, fine-grained white flesh, medium-sized core. Refined and attractive in appearance. The preferred cultivar for packaging because of its uniform shape and remarkable freedom from side roots. A16, A75, D68, E24, F13, F82, G16, H61, H95, J20, K10, K49M, L42, M49

Hollow Crown: (Long Jersey, Hollow-Crowned Guernsey) 125 days. Long, smooth, tapered roots; up to 18 inches long and 4 inches in diameter at the shoulder. The crown is short, and sunk into the shoulder, so as to form a hollow ring around the insertion of the leaf-stalks. Good for general cultivation; does not require as deep a soil as the Common or Guernsey parsnip. Introduced prior to 1852. BURR: A16, A25, A75, B78, C44, E38, F92, H42, H61, H95, I64, K10, L7M, M46

Improved Hollow Crown: 110 days. Moderately tapered root, with very few side roots; 10 to 12 inches long, 3 inches in diameter at the shoulder; hollow crowned; smooth, white skin; tender, fine-grained white flesh, small core. Stores well. Selected for whiter skin color and slightly longer roots. Standard cultivar for home gardeners. B6, FI, *G13M*, G71, G79, H54, I67M, L42, 089

Lancer: 120 days. Refined Harris' Model type. Long, slender, bayonet-shaped roots; smooth, clean bright white skin; very sweet white flesh, sweeter than that of Harris' Model. Has been recommended by some for harvesting early as a "baby" vegetable. More uniform and with better tolerance to canker than Harris' Model. Developed by A.L. Tozer of England. G6, I77, J9M, K20M, *S75M*

Offenham: 100 days. An early cultivar adapted to a wide range of soil conditions, but most useful on thin, shallow soils. Half-long roots with broad, thick shoulders and tender, sweet flesh of good flavor and quality. Reaches 6 to 8 inches in length when mature. Good for freezing. Very heavy yielding. B49, L3J

Tender and True: 100 days. Long, uniform, heavily-tapered roots; at least 3 inches in diameter at the shoulder; smooth, white skin; fine-grained flesh, of excellent quality, tender and very sweet; very little core. Good resistance to canker. Does especially well on deep soils. Excellent for both home garden use and exhibition. Named after a popular song. Introduced in 1897. B49, L3J, L91M, N84, R32, S55, S61

The Student: (Sutton's Student) 95 days. Thick, tapering root; varying in length from 15 to 30 inches, depending on soil and culture; hollow crowned, 3 inches in diameter. The flavor is peculiarly sweet, mild and pleasant, perhaps the best of any parsnip. Thrives in dry summers on sandy soils. Originally selected from the wild parsnip by Professor Buckman of the Royal Agricultural College at Cirencester, England. Introduced in the 1860's. BURR: A2, B49, N24M, N81, R32

White Gem: 120 days. A much improved Offenham type bred for increased resistance to canker. Medium-length, wedge-shaped roots with broad, rounded shoulders; very uniform; smooth, exceptionally white skin; of good quality and very sweet flavor. Early maturing and heavy cropping. Good for all soil types, especially clay; very easy to lift. Ideal for home gardens. C95, N81, S55, S61, S61M

White Model: 115 days. Medium length, perfectly straight roots; 6 1/2 to 8 inches long, 2 to 2 1/2 inches in diameter at the shoulder; hollow crowned and with very few side roots; smooth, pure-white skin; tender, sweet, fine-grained white flesh. Well adapted to muck land. J20

## PEA {S}

## PISUM SATIVUM

## GARDEN PEAS

## COMMON

*Large-Seeded*

Alaska: (Earliest of All) 55 days. Smooth, round light-green pods, 2 to 2 1/2 inches long; 5 to 7 peas per pod; smooth, round light green to whitish-green peas, quality fair to good fresh. Light-green vines, to 30 inches tall; heavy bearing; wilt resistant. Popular with home gardeners; the standard among canners. Also used as a dry pea and for sprouting. Introduced prior to 1880. HEDRICK 1928; A75, B6, B75M, B78, E60P{SP}, F82, G57M, H85M, I64, J20, K10, M46, N16

Blue Bantam: 64 days. Broad, moderately plump pods, about 3 1/2 inches long; 6 to 8 peas per pod; large deep blue-green peas, sweet, of very good quality. Short, stout vines, 15 to 18 inches tall; very productive. Introduced by Burpee Seed Company in 1902. HEDRICK 1928; E5T, F73D, G57M

Burpeeana Early: 63 days. Pods straight, slightly curved at the tip, about 3 inches long; tightly filled with 8 to 10 medium to large, sweet tender peas of excellent quality. Retain color and flavor when quick-frozen. Short, vigorous vines; 18 to 24 inches tall; prolific. B6, B75

Daisy: (Dwarf Telephone) Broad, straight, paired pods, about 4 1/2 inches long; 8 to 10 seeds per pod; large, smooth, light-green peas, of excellent quality but slightly thick-skinned. Seeds moderately wrinkled. Vine grows 1 1/2 to 2 feet tall; bears heavily. Introduced in 1892. HEDRICK 1928; E5T, FI, G57M, K71, Q11M

Early Frosty: 64 days. An improved Little Marvel type with twice the yield. Blunt-ended pods, 3 1/2 to 4 inches long; 7 or 8 peas per pod; very uniform, dark green peas, sweet, of very good quality. Excellent for freezing. Vigorous vine, to 28 inches tall; resistant to wilt; produces numerous double pods. A25, B6, B78, D11M, D68, FI, F70, G57M, G83M, H33M, H85M, H95, J97M, K71, M46, etc.

Early Onward: 62 days. Blunt-nosed, deep green pods, about 3 inches long; well-filled with 6 medium green peas, of excellent sweet flavor. Vigorous, compact vine, 2 to 2 1/2 feet tall; very prolific. For spring sowings. Introduced in 1908. Still one of the most popular cultivars in England. J39, 053M, R32, R83, S61, S75M

Feltham First: 58 days. Large pointed pods, about 4 inches long; well-filled with sweet, deep-green peas. Excellent for freezing. Vigorous vine, grows 18 inches tall; bears heavy crops; very haidy. Suitable for spring and autumn sowing, or growing under cloches. Popular with market growers in England. B49, N81, R32, R83, S55, S61, S75M

Freezonian: 63 days. Blunt-ended, dark green pods, 3 1/2 inches long; 7 to 8 large, well-flavored peas per pod. Dark green vines, to 30 inches tall; resistant to wilt. Excellent for home gardens and quick-freezing. All America Selections winner in 1948. B6, B73M, B75M, D65, F63, G57M, G71, H49, K10, K50, K71, M46, M95M

Gradus: 60 days. Large, pointed, dark-green pods, about 4 inches long; 5 to 8 very sweet peas per pod, of fine quality. Vigorous vines, 4 to 4 1/2 feet tall; moderately heavy bearing; requires a trellis. Originated in England about 1890. HEDRICK 1928; R32, R83, S61

Green Arrow: 65 days. Long pointed pods, average 4 to 4 1/2 inches in length; set in pairs near the top of the plant for easy picking; 8 to 11 small, sweet, bright green peas per pod. Vines grow 28 inches tall; resist downy mildew and wilt; can be grown with or without a trellis; are high yielding. Very popular maincrop cultivar. A16, A25, C44, D11M, D82, E24, E38, F13, F70, G16, K10, K73, M46, M49, M95M, etc.

Hundredfold: (Laxtonian) 64 days. Broad, straight dark-green pods, about 4 1/2 inches long; 8 or 9 peas per pod; large dark-green peas, tender and sweet. Vigorous, dwarf vines, to 18 inches tall; never need staking. Withstands heat and adverse weather conditions well. G57M

Hurst Beagle: 55 days. One of the earliest wrinkle-seeded peas. Blunt-ended pods, 3 to 3 1/2 inches long; 7 or 8 peas to the pod; excellent sweet flavor. Good for freezing. Vine grows 18 inches high; produces heavily; resists wilt and mosaic viruses. For spring or fall sowings. K17M, R83

Hurst Green Shaft: (Greenshaft) 70 days. Large, pointed pods, 4 to 4 1/2 inches long; 9 to 10 peas per pod; very sweet, of excellent flavor. Very good for freezing. Wrinkled seed. Vine grows 2 1/2 feet tall; produces double pods, all at the top for easy picking; resists downy mildew and fusarium wilt; bears heavily. B49, E33, 053M, R32, R83, S55, S61, S61M, S75M

Kelvedon Wonder: (Kelvedon) 65 days. Medium sized, dark-green pointed pods, to 3 inches long; well-filled with medium green, very sweet peas. Excellent for quick-freezing. Dwarf vine, to 18 inches tall; heavy yielding; resistant to mildew. For early spring and successive sowings. Very popular in England. B49, N81, 053M, R32, R83, S55, S61, S75M

Knight: 60 days. Large, broad pods, 3 1/2 to 4 inches long; 9 to 10 peas per pod; medium-sized, bright green, flavorful peas. Vigorous, large-leaved vine, 24 inches tall; bears a single and double set of pods; resists mosaic viruses, powdery mildew and wilt. One of the earliest large-podded peas. For home gardens and local markets. E24, FI, F13, G1M, G6, G13M, G71, H54, H61, J97M, K73, L79, L89, M49, M95M, etc.

Lacy Lady:<sup>3</sup> 60 days. Semi-leafless type. Produces strong tendrils that intertwine and act as a self-support system to hold pods above the soil. Well-filled, 2 1/2 inch long pods are produced in pairs at the top of the plant for easy picking. Fewer leaves allows for greater air movement and more light, reducing the chances of disease and insect infestation. Can be used fresh, canned or frozen. M46

Laxton's Progress #9: 60 days. Broad, moderately curved pods, about 4 inches long; 7 to 9 peas per pod; large, oval, dark-green peas, of very sweet flavor. Vigorous, compact vines, 14 to 16 inches tall; resistant to wilt; productive, with mostly single pod set. Standard early market and home garden cultivar. A16, A25, A75, C85M, FI, G16, G57M, G71, H61, K73, M46, N16, N52

Lincoln: (Homesteader) 67 days. Medium-sized pointed pods, about 3 1/2 inches long; well-filled with 8 or 9 medium-green, small succulent peas. Excellent for freezing. Compact vine, to 28 inches tall; produces well in hot weather; resistant to wilt. Long time favorite of home gardeners. A16, A25, B75M, C53, C85M, D11M, D65, D82, E24, E38, F70, F92, G57M, H42, H95, K49M, M46, etc.

Little Marvel: 65 days. Blunt-ended, straight pods, about 3 inches long; 7 or 8 peas per pod; medium-sized, dark green peas, of exceptional quality. Dwarf vine, to 18 inches tall; resistant to wilt; high yielding. An old standard cultivar, popular with home gardeners. Introduced in 1908. HEDRICK 1928; A16, A25, B75M, D11M, E38, F70, F82, H61, H85M, K10, K49M, L7M, M46, M95M, N16, etc.

Maestro: 60 days. Slender, attractive pod, 3 1/2 to 4 inches long; bears well over an extended picking period; 8 to 10 large, dark-green peas per pod. Vigorous vine, 24 to 36 inches tall; can be grown with or without support; produces a high number of double pods; resists mosaic viruses, powdery mildew and common wilt. B6, B75, D11M, D76, D82, E24, F44, F70, G6, G16, G79, H33M, H85M, I64, K71, L89, etc.

Novella:<sup>3</sup> (Bikini) 65 days. Semi-leafless or "affilia" type. Produces a profusion of tendrils which interlock and support each other in row spacings of 12 inches or less, forming a "hedge" for easy picking. Sweet, tender peas hold well over a long harvest period; freeze well. Tendrils are tender and fiberless; can be steamed or boiled. Bushy vines; productive, with mostly double pod set; resistant to wilt. B6, C53, C85M, D11M, D27, D82, E97, FI, F70, G57M, H42, K71

Olympia: (Early Olympia) 62 days. Improved Progress #9 type. Large pods, averaging 4 to 4 1/2 inches in length, containing approximately 9 peas per pod. Excellent flavor and tenderness. Vine reaches 16 to 18 inches tall, with very vigorous early growth; produces a high percentage of double pods; does not require trellising. Highly disease resistant. C85M, D65, F63, F82, 167M, K10, L42, L89C

Onward: 70 days. Blunt-nosed, dark green pods, about 3 inches long; 8 or 9 large, very sweet peas per pod. Wrinkle-seeded. Vigorous, short-jointed, dark green vine; height 2 feet; extremely productive, producing pods in pairs; resists wilt. Excellent for successional sowing. The most popular cultivar in the United Kingdom. B49, 053M, R32, R83, S61, S75M, TIM

Patriot: 65 days. Large, compact pods, 4 inches long; tightly packed with 8 to 10 peas. Dark green, medium-sized peas; tender but firm, with an excellent sweet flavor; retain their texture and flavor after freezing. Medium-sized, double-podded vines, 20 to 22 inches tall; high yielding even under stressful growing conditions. B6, D68, 191, K71, L42, M46, M95M

Perfection: (Perfection Dark Green, Dark Skin Perfection) 65 days. Medium-sized, dark green pods, about 3 1/2 inches long; 7 to 9 bright green peas per pod, sweet and tender. Vine grows 30 inches tall; benefits from staking; tolerant of heat and drought; can be planted late in the season. A75, D12, D26D, F24M, F46, F63, G57M, H95, M32

Prussian Blue:<sup>1</sup> 75-95 days. Small, round pods, 2 1/2 inches long; smooth, attractive, dark bluish-green to gray seeds, about 7 or 8 per pod. Excellent for shelling or split peas. Ripens very late. Tall, narrow, highly branched vines, around 3 1/2 feet long. At one time very popular in England and colonial America. Originated in Germany. WEAVER 1997; D29P, F24G, F73D

Purple Podded:<sup>1</sup> Ornamental, purple colored pods containing well-flavored green peas. Tall, climbing plant, grows approximately 5 feet in height. Attractive, purple flowers. Should be planted from March through May. H21, S61

Sole di Sicilia: Very rustic dwarf pea from Italy. Attractive, very straight, bright-green pods; 8 or 9 peas per pod; quality excellent. Produces over a long period. Widely adapted to early cultivation in Sicily, Sardinia and especially Puglia. Q11M

Sparkle: 55 days. Blunt medium-green pods, 3 inches long; well-filled with medium-sized, tender, sweet peas. Good for fresh use or processing. Vine grows 18 to 24 inches tall; requires no support; sets a concentrated crop. Resistant to wilt. Standard early, short-vined cultivar for freezing. B6, C44, D65, FI, F73D, G57M, G71

Sweet Parsley:<sup>4</sup> (Parsley) 68 days. Unique dual-purpose pea. Both the peas and leafy tendrils are sweet and tender. Strong lateral branches carry the peas at the top for easy picking. Leafy tendrils are high in nutrition and resemble curled parsley; can be used fresh or dried; ideal as a garnish for salads or adding flavor to soups or stews; also good stir-fried. C95, N84

Tall Telephone: (Alderman) 75 days. Broad, curved, dark-green pods, 4 to 5 inches long; 8 to 10 peas per pod; very large, bright dark-green peas, tender and sweet, of excellent quality. Large, heavy, dark green vines, 5 to 6 feet tall. Popular for growing on trellises. Introduced about 1878. HEDRICK 1928; A25, B49, C44, C85M, D11M, E38, FI, F70, F73D, F82, G57M, G71, M46, M49, R32, etc.

The Pilot: 60 days. Large, deep-green pointed pods, 2 1/2 to 4 inches long; 4 to 6 large medium-green peas per pod; quality very good. Also good for drying. Extremely hardy vine; grows 3 1/2 to 4 feet tall. Well suited to spring or autumn sowing. Originated in England prior to 1903. HEDRICK 1928; B49, J39, K17M, R32, R83, S61

Thomas Laxton: 60 days. Blunt, dark-green pods, about 3 1/2 inches long; 7 or 8 peas per pod; very large, medium-green peas, sweet and tender. Excellent for canning and freezing. Vine grows 2 1/2 to 3 feet tall; yields heavily; resists wilt. Introduced in 1898. HEDRICK 1928; A25, A27M, A75, D12, G57M, G79, 167M, K10, K71, M49, M95M, N16

Tom Thumb:<sup>2</sup> 58 days. Smooth-seeded heirloom pea. True dwarf-type plant, grows 6 to 8 inches tall. Traditionally planted between rows of other crops, otherwise rows are spaced 10 inches apart. Very productive in relation to the size of the vines. Well adapted to cold frames. Excellent drought and cold tolerance. Introduced in the 1850's by D. Landreth and Sons. WEAVER 1997; B49

Whndo: 70 days. Straight, dark-green pods, about 3 inches long; 7 to 9 medium-sized, dark green peas per pod. Vine grows 24 to 30 inches tall; pollinates well under cold as well as warm growing conditions. Resistant to heat; can be planted later in the season than most cultivars. A25, A75, B6, B73M, C44, E24, G16, G57M, G71, G79, K49M, L7M, N16

Willet Wonder: 70 days. Smooth-seeded pea with better cold tolerance than most other peas. Bushier and shorter than Alaska, and similar to Thomas Laxton in disease resistance. Grown primarily in the Deep South for fresh peas. Also freezes well. G57M

World Record: 60 days. Broad, plump, round to oval pods, 3 1/2 to 5 inches long; 5 to 7 peas per pod; peas round to slightly indented, oval, light green in color, of excellent quality. Slender, productive plant, height 2 1/4 to 2 1/2 feet. Originated by Sutton and Sons before 1907. HEDRICK 1928; A25

### Small-Seeded

Known as *petit pois* in France, these are considered the finest flavored of all peas. They are bred never to grow very large. Very sweet and delicate, it is best to harvest them no more than an hour before cooking. The traditional French method is to cook them in their pods and then shell them. Not as productive as other peas. KRAFT [Cul, Re].

Darvon: 58 days. Wrinkled-seeded *petit pois* type, Very small, tender, bright-green seeds; very sweet, delicate flavor. Somewhat more difficult to shell than other varieties. Excellent for fresh use, canning or freezing. Grows to about 20 inches tall and does well in most climates. M46

Giroy: 65 days. Straight, plump pods, about 3 inches long, each filled with 9 to 10 seeds. Tiny, extra sweet seeds, tender and delicate, of excellent flavor. Vigorous, bushy plant, height at maturity about 36 inches; very productive. Resistant to Fusarium Wilt and Top Yellows. 191

Petit Pois: 58 days. True small-seeded French pea widely used in gourmet dishes. Small pods, about 2 inches long; well-filled with sweet, tender peas of excellent quality. Retains color and flavor when frozen or canned. Very prolific vine; height 20 inches; very hardy; produces double pods. E9{PD}

Petit Provençal: (Meteor) 60 days. *Petit pois* type from France; one of the best for early production. Small, curved, pointed pods; 7 or 8 very sweet peas to the pod. Should be harvested when young for the best quality. Small, compact vine, 16 to 18 inches tall; should be trellised. Very hardy; can be sown from fall through winter in mild climates. B75, E63D, R32, R83, S17, S55, S61

Precovil: 60 days. Small, medium-green pods, 2 1/2 inches long; very small peas, tender and sweet. Bush-type vine, 18 to 24 inches tall; very early and productive; requires support; resistant to wilt and top yellows. Does well in hot summer areas as well as short season areas. D74B, G68, S95M

Proval: An improved *Petit Provençal*. One of the best of the early dwarf peas. Small pods, about 2 1/2 inches long; 6 to 8 peas per pod. Very good for freezing. Vine grows 16 to 24 inches tall; produces abundantly. Good for field or cold frame production. P59M

Serpette: (Serpette Guilloteaux) Very large, attractive, light green pods; resemble a curved pruning knife in form; each pod contains 10 to 12 small, sweet peas. Smooth seeded type. Ripens in midseason. Tall, upright vine; highly productive. G68, P59M, S17

Waverex: Small, straight, blunt-ended pods; 7 or 8 very small, very sweet, tender peas per pod. Excellent raw, cooked or frozen. For best quality pick when only 1/6 inch in diameter. Semi-climbing vine, 18 inches tall; requires staking; produces a heavy crop; grows well in any cool climate. Developed in Germany for the European market. B49, C53, 053M, R32, R83, S55, S61

### EDIBLE-PODDED

#### Sugar Peas

Also called *snow peas* or *Chinese peas*, these lack the parchment-like inner lining of common garden peas. They can be eaten whole and remain sweet and tender until quite large. Widely used in oriental cuisine, especially stir-fried dishes. E13G{PR}

Carouby de Maussane: (Roi de Carouby) 65 days. Thin, flat pods, distinctively shaped; 5 inches long, up to 1 inch wide; very sweet and tender. Should be harvested when the peas are barely visible. Vigorous vines; height 3 to 5 feet. Very attractive purple flowers, suitable for ornamental as well as culinary plantings. Originated near Avignon, France in the village of Maussane. C53, E63D, F73D, G68, P59M, Q11M, R32, R47, R83, S77, S55

Dwarf Gray Sugar: 65 days. Broad, slightly curved, light-green pod; 3 inches long, 1/2 inch in diameter; sweet and tender. Can be

used as a shell pea when past the edible-pod stage. Young leaves and shoots are also commonly eaten. Slender, determinate vines; height 26 to 30 inches; heat and cold tolerant; resists wilt. Standard mid-season cultivar. A16, A75, B49, C44, C85M, D82, E59Z, F80, F92, G79, H73{DF}, K71, L59, M46

**Dwarf Sweet Green:** Small flat, deep green pods, 2 1/2 to 3 inches long; very sweet and tender; excellent flavor. Best picked when 2 inches long. Dwarf vine, grows 1 1/2 to 2 feet tall; extremely prolific. True French green mangetout. R32, R83, S55, S75M

**Dwarf White Sugar:** 50 days. Thick, succulent pods, 2 to 2 1/2 inches long; sweet, tender and stringless. Retains high quality even if picked over-mature. Vine grows 30 inches tall; remains vigorous and productive longer if pods are picked when peas are one-third to one-half developed. D27, D68, F63, G57M, 184

**Golden Sweet:**<sup>5</sup> 75 days. Unusual yellow-podded sugar pea from India. Large lemon-yellow pods, 3 inches long, set in pairs; tender, sweet, mild in flavor, of very good quality. Easy to pick as their bright yellow color stands out among the green foliage. Vigorous vine, 3 1/2 to 4 feet tall; drought resistant; high-yielding; has attractive bi-color purple flowers. Potential specialty market item. C95, F73D, J39, K17M, K49M, L77D, L88J, N24M, N84

**Kosaya Endo:** (Chinese Small Pod) Oriental cultivar with small, somewhat curved pods; crisp, sweet, and tender. Red-flowering, dwarf vine, 24 to 30 inches tall; highly productive, requires no support. Resistant to fusarium wilt. G33

**Mammoth Melting Sugar:** 75 days. Thick, succulent light-green pods; 4 to 4 1/2 inches long, 3/4 inch wide. Distinct, sweet flavor. Uniform, productive vine; height 4 to 5 feet; requires support; resistant to wilt; hardy and vigorous. Bears over a long period, making it ideal for home gardens. Occasionally used for *pea shoots*. A75, C44, E38, G57M, G93M, H42,177, J73, K10, K27M, K49M, K71, M46, N16

**Norli:** 55 days. Thin, succulent pods, 2 1/2 inches long; very sweet and flavorful. Perfect for using whole in salads and stir-fries. Excellent for freezing. Dwarf, white-flowered vine, grows only 18 inches tall; high yielding. Very early maturing; ideal for small-space gardens. C85M, J39, K66, P59M

**Oregon Giant:** 60 days. The first large-podded snow pea with a sweet flavor. Extra large, flat, sweet, medium-green pods; 4 1/2 to 5 inches long by 1 inch wide; mild, sweet seeds. Uniform, highly productive plants, about 2 1/2 feet tall; can be grown with or without support. Tolerant to powdery mildew, common wilt, and enation mosaic virus. A2, B8M, B49, D55, E24, G6, G16, G82,139, J9M, K10, K27M, K49T, K66, L4, L42, M32, M49, etc.

**Oregon Sugar Pod:** 65 days. Smooth, light green pod; 4 inches long, 3/4 inch in diameter; mild flavor, good for freezing. Vigorous, hardy vine; height 24 to 30 inches; widely adapted; very productive over a long period; sets double pods. Resistant to viruses and fusarium wilt. A16, C97, G71, G71M, H85M, J97M, K49M, L59, N84, S55{SP}

**Oregon Sugar Pod II:** Smooth, bright green pods, 4 to 5 inches long; frequent double pods; tender, mild and sweet. Excellent fresh or frozen. Vigorous, very productive plant, non-climbing, does not require support. Resistant to common wilt, powdery mildew and viruses. Recommended for fresh markets and home gardens. A1, A2, B75, C92, D55, D74B, E24, E97, F13, F82,139, J97M, K49T, K50, K71, L89, L91M, M29, etc.

**Osaya Endo:** Oriental cultivar with medium to large, straight bright green pods, sweet and tender. Suitable for eating raw, as tempura, or stir-fried. Vigorous, climbing, white-flowered vine, grows 6 to 7 feet tall. Can be sown in spring and fall. D68, G33, M27

**Schweizer Riesen:** (Swiss Giant) Large, tender pods with very good flavor. Vigorous vines, grow to 5 feet tall, require trellising. Attractive purple flowers. An old heirloom from Switzerland. M27

**Snowbird:** 58 days. Very early maturing cultivar. Heavy yields of 3-inch pods, usually borne in double or triple clusters. Dwarf, erect plant, 16 to 18 inches tall; needs no support; widely adapted. Resembles Dwarf White Sugar. Ideal for short season areas or where space is limited. Also good for fall crops. Introduced in 1978. B75

**Snowflake:** 65 days. Short-vined type with extra-large pods. Large, dark-green flat pods; 4 inches long, 1 inch in diameter; remain straight. Vine grows 2 to 3 feet tall; resists powdery mildew. May be grown with or without support. D11M, D26D, E5T, F63, F70, G13M, G57M, G71, G87, H85M, J25M, K10, M95M, Q34

**Super Sugar Pod:** 70 days. High quality snow pea grown especially for the Chinese restaurant trade in San Francisco. Large, flat pods, 4 1/2 inches long and 3/4 inch wide. Must be picked before peas are visible to avoid excessive stringiness. Extra long, climbing vines, spreading to 4 feet. Resistant to wilt but not powdery mildew. L42

### Snap Peas

A distinct type that produces both thick, crisp, succulent pods and a row of sweet, full-sized peas. When the pod is bent it will snap like a fresh snap bean pod. Pods and peas can be eaten together, or the peas can be shelled out and used alone. Developed by Calvin Lamborn of Gallatin Valley Seed Co. A prototype was described by Vilmorin and called *butter pea*. FELL 1982b, SCHNEIDER 1986 [Cul, Re], VILMORIN; B91T{PD}, E13G{PR}, F15{PR}, N40{PR}

**Cascadia:** 58 days. Dwarf, Sugar Ann type with sweet pods and peas. Larger, darker green pods, 3 to 3 1/2 inches long; thick and juicy, very sweet and flavorful. Short, compact vine, yields abundantly. Resistant to pea enation virus; more tolerant of powdery mildew. Developed by Dr. James Baggett. C53, C95, D1T, D12, F44, F46, G6, G57M, G93M, 139,177, J9M, K10, K27M, K49T, L42, L89, etc.

**Early Snap:** 62 days. Thick, fleshy pods, 3 to 3 1/4 inches long. Eating quality and yields comparable to Sugar Snap, but matures 10 to 14 days earlier. Compact vine, 18 to 22 inches tall; requires little or no trellising; resists bean yellow mosaic. Suitable for fresh market and U-pick operations. Released by the Nov York Agricultural Experiment Station. C20M, C44, D65, G57M, G79, K50, N16

**Honey Pod:** 70 days. Medium-green, round pod, 3 inches long; thick-walled, very crisp and sweet, nearly stringless; 6 pods per plant; 5 to 7 sweet, tender peas per pod. Uniform in shape and appearance. Compact vine, 20 to 28 inches tall, requires support; very prolific, produces 2 pods per node. Resistant to fusarium race 1. Introduced in 1983. D76, H49, L79, L91M

**Sugar Ann:** 56 days. Round, bright green pods, 2 1/2 inches long; crisp and sweet. Very good for freezing. Dwarf vine, 16 to 24 inches tall; does not require support; widely adapted; prolific. Ideal for limited-space gardens. All America Selections winner in 1984. A25, B73M, C44, C85M, D65, D82, E24, E38, E59Z, G6, G16, G71,139, K73, M46, M49, etc.

**Sugar Bon:** 60 days. Round, slightly curved pod; 2 1/2 to 3 inches long; crisp, tender, sweet. Large, medium-green peas, 6 or 7 to a pod. Compact vine, only 18 to 24 inches tall; requires no support; very productive; heat tolerant; resistant to powdery mildew. B75, D26D, D76, G13M, G57M, G93M, /59M, 191, M29, N24M, TIM

**Sugar Daddy:** 75 days. The first snap pea with stringless pods. Attractive, dark-green pods, 2 1/2 to 3 inches long; slender and stringless; borne in pairs at each fruiting node; will not split during freezing or cooking. Medium-green peas, 6 or 7 per pod. Dwarf vine, 24 to 30 inches tall; resistant to powdery mildew and pea leafroll. A2, A16, B49, D65, D76, E97, G16, G71, H85M, H95, 191, K10, K71, L42, L89, M46, etc.

**Sugar Gem:** 60 days. Thick, medium-sized pods, about 3 inches long, completely stringless; sweet, crisp and succulent; quality excellent. Short, compact plant, grows 24 to 26 inches tall; very productive; resistant to powdery mildew. Can be sown in succession throughout the summer for harvesting in the fall. E33, L91M

**Sugar Mel:** (Super Sugar Mel) 68 days. Thick, round pods, up to 4 inches long or more; borne in pairs; 7 or 8 peas per pod. Vigorous vine, 3 to 4 feet tall, requires support; resistant to powdery mildew; high yielding. Rated highest in yield and eating quality of 7 cultivars tested by Organic Gardening magazine. B75M, E24, F13, G13M, G71M, G93M, 191, J20, K66, K73, L7M, M95M, N24M

**Sugar Pop:** 60 days. Stringless snap pea with early yield, up to 2 weeks earlier than Sugar Daddy or Sugar Snap. Round, thick pods, 2 1/2 to 3 inches long; crisp and sweet. Excellent for freezing. Dwarf vine, only 18 inches tall; needs little support; can be planted closer for higher yields; resists powdery mildew and pea leafroll. 191, J39, N24M

**Sugar Rae:** 70 days. Round, dark green pods, 3 to 3 1/2 inches long; borne in pairs; crisp and sweet. Produces 7 or 8 sweet peas per pod. Vigorous dwarf vine, 2 1/2 feet tall; resistant to powdery mildew. Unique in that the plants "stool" at the base, producing up to 5 vines per plant. All vines blossom and bear pods over a long harvest period. J39, N24M, R32, S55

**Sugar Snap:** 70 days. Round, plump, slightly curved pod; 2 1/2 to 3 1/2 inches long; crisp, sweet, juicy; requires stringing. Medium-green peas, 6 or 7 per pod. Freezes well, but not recommended for canning. Vigorous vine, 6 feet or more tall; needs strong support; resistant to wilt; productive over a long season. All America Selections winner in 1979. A25, B75M, B78, C44, E24, E38, G6, G16, H33M, H61, H85M, 184, L7M, L59, M49, etc.

**Super Sugar Snap:** 65 days. Improved earlier maturing Sugar Snap with plumper pods and increased yield potential. Crisp, sweet and juicy. Excellent fresh or frozen. Vigorous vine, 55 to 65 inches tall; requires support; produces double pods at each node. Resistant to powdery mildew; tolerant to bean leaf roll virus. B49, B75, C85M, E97, F13, F82, G13M, G16, 139, 191, J20, K10, K66, K71, M29, M46, M49, etc.

**Sweet Snap:** 65 days. Medium-green pods, 2 to 3 inches long; crisp and tender; free of fiber. Good for cooking and freezing, not recommended for canning. Semi-climbing vine, 34 inches tall; requires support; high yielding; tolerant to powdery mildew and bean yellow mosaic. C92, G87, H42

#### FIELD PEAS

Also called *soup pea*, *dry pea*, *gray pea* and *dun pea*, this type is grown almost exclusively for the dried seeds which are used in soups and stews or other cooked dishes, and are also sprouted. D68, J99G, K95M, N81, P17M, P83M. (see also Sprouting Seeds, page 524)

**Amplissimo Victoria:** Round, medium to large, light-colored seeds; very rich flavor. Excellent in soups. Climbing vine, about 6 feet tall; white flowers. Staking required for best results. K17M

**Australian:** Small, brown, rectangular seeds speckled with white; delicious, very rich, full flavor. Excellent for soups and dais. Luxuriant, very prolific climber, 5 to 8 feet tall; small leaves; pink and purple flowers. K17M

**Austrian Winter:** Small, grayish-brown seeds. Very good as a dry soup pea, keeping its firm texture when cooked. Also good for sprouting. Widely sold as a green manure seed. Germinates and grows in cooler soils than most legumes. Occasionally used for the production of Japanese *an* (sweet bean paste). LUMPKIN; A91, B49, D47M, E24, E53, F11, G1M, I99M, J99G, K49T, L89, M25, M95M

**Bill Jump's:** 80 days. Old time soup pea of good quality. Doesn't break up when cooked. Also excellent for sprouting. Produces 4 to 6 very small, speckled, gray-brown seeds per pod. Tall growing

vine, up to 5 or 6 feet. Very attractive purple flowers. Heirloom from Washington state. A2, K17M

**Blue Pod Capucijners:** 85 days. Bluish-purple pod, 3 to 4 inches long. Large, grayish-brown seed; makes its own rich, dark-brown gravy. Semi-climbing vine, to 4 feet tall, requires support; has attractive purplish-red flowers. Originally developed by Capuchin monks in Fiance or Holland in the 17th century. C85M, E5T, F73D, J39, 089

**Blue Pod Desiree:** Similar to Holland Brown, but the pods dry to a deep vibrant purple. Large, rectangular seeds. Very good in soup. Bush type plant, staking helpful but not necessary if rows are planted side by side. K17M

**Carlin:** (Carling) Short pods; dark colored, semi-shriveled peas. Has a distinctive flavor. Seeds are soaked for 24 hours and are then at their best when sprinkled with brown sugar and cooked slowly. Tall growing vine, to 6 or 7 feet; needs support; resists rust and mildew; has purple, sweet-scented flowers. The name Carlin is derived from Carlin Sunday, a Medieval feast day still observed in northeastern England. GENDERS 1975, WEAVER 1997; J39, K17M

**Holland Brown:** Heirloom dry pea, brought from Holland by the first settlers of the Gallatin Valley, Montana. Large, rectangular green and brown seeds. Fine texture and flavor. Not for shelling green. Leave to ripen on the vines and then thresh. Cook and serve like dry beans. Pink and scarlet flowers. Very good producer. K17M

**Holland Capucy'ners:** (Grey Pea, Monk Pea) 85 days. A traditional dry pea, unique to the farm communities of northern Holland. The name Capucijner is derived from the peas markings, said to resemble the ancient cowls of Capuchin friars. Large, wrinkled brown-grey peas are cooked whole and make their own rich brown gravy. Also eaten fresh, although not particularly sweet. Ornamental vines, profusely covered with violet-red and pink flowers. A45{DF}, A45{PD}, C95, D68, E5T, E23T{DF}, F73D, I39M, K17M, L3J, L77D, N84, R47

**Mexican Soup:** 80 days. Round, yellow peas are dried and used in soups. Very productive plant; keeps producing far into the summer, long after other peas have succumbed to the heat. Should be planted further apart than normal, as plants become large and bushy. Originally from Zacatecas, Mexico. F73D, J25M

**Raisin Capucijners:** 65 days. Large flat seeds, mottled with brown and buff; excellent flavor, makes delicious and distinctive pea soup. Can also be used as a green shell pea. Dwarf vine, 24 inches tall; high yielding. Selected by Capuchin monks in Holland. C85M, C95, F73D, J39, N84

**Tall Capucijners:** Excellent soup pea from Holland. Vibrant, purple pods. Large, rectangular seeds. One of the best flavored dry peas. Robust vine, climbs 6 to 8 feet; fragrant pink and purple blossoms. K17M

**Trapper:** Grown mainly as a cover crop or for green manure but it can also be used for producing small, yellow peas that are good for soup because they don't become musty. Reaches 3 to 4 feet in height. Sow 200 pounds per acre in the spring. A15Z, E24, G6, G19T, G50, 193M

#### PEA SHOOTS

Also called *seedling pea*, *hoh loan tau* or *dau miu*, these are grown for their young shoots which are used in noodle or chow mein dishes. Plants are grown prostrate on the ground. They are not allowed to develop pods and the flowers are removed as they appear, forcing the sweet pea flavor into the leaves and tender stems. Harvested when 4 to 5 inches tall. Sold in bunches in the markets of Hong Kong and Taiwan. Very popular in Shanghai. COST 1988 [Cul], DAHLEN [Cul, Re], HERKLOTS, PASSMORE; D3M{PR}, D55, F80, H24, H73{PR}, K17M, L59, L79G, N84

Meguro Usui: Primarily grown for the young shoots, which are used in Chinese stir fry dishes. Pods grow 3/12 to 4 inches long and contain 6 to 8 large, round, green peas. Mature seeds are white with a black eye. *S70*

#### CODES FOR SPECIAL TYPES

1. Blue-Podded
2. Dwarf
3. Semi-Leafless
4. Edible-Leaved
5. Yellow-Podded

## PEACH {GR}

AMYGDALUS DAVIDIANA

AMYGDALUS PERSICA

### CLINGSTONE PEACHES

Most clingstone peaches are more suitable for canning and processing than other types because the firm flesh retains its shape, the juice remains clearer and the color of the flesh remains brighter. Generally more disease resistant than freestones.

#### RED-FLESHED

Indian Blood: (Indian Cling, Red Indian, Blood Cling) Irregularly shaped, somewhat compressed fruit; skin dull greenish-white, mottled with pink and dark red; flesh red, lighter colored near the stone, juicy, coarse, stringy; quality fair; ripens very late. Widely used for pickling and preserving. Tree large, vigorous; hardy; unproductive. Low chilling requirement. Introduced prior to 1871. HEDRICK 1917; *A63, A82, A82{DW}, C30M, D76, E97, E99M, F61M, F93, G8, G65M, I53M, L90, M83, N33, etc.*

Strawberry Cling: Fruit medium to large; skin creamy white, blushed with red; flesh white, marbled with strawberry-red, firm, juicy, richly flavored; ripens late. Excellent for home canning. Tree vigorous; spreading; susceptible to insects and disease. Medium chilling requirement. *B93M, C54, F91T{SC}, K88T, L47*

#### WHIIE-FLEgHED

Arctic Supreme: Large, round white fruit; flesh firm, perfect for slicing, clingstone; flavor sweet, tangy, excellent for dessert; ripens in late July. Tree self-fruitful; requires approximately 700 hours of chilling. Originated in Modesto, California by Floyd Zaiger. *A88M, N20*

Chinese Cling: (Shanghai) Small to medium-sized, round-oval fruit; skin tough, adherent, creamy-white blushed on one side with lively red; flesh white, tender, juicy, aromatic; flavor excellent, being finely balanced between sweetness and sourness, with a distinct, pleasant taste of almond; ripens late. Tree rather weak in growth, upright-spreading, not very hardy, moderately productive. Introduced into England from Shanghai, China by Robert Fortune, in 1844. HEDRICK 1917; *F91T{SC}*

Mayflower: Medium to large fruit; oval, pointed at the apex; skin greenish-white with a dark red blush; flesh greenish-white, juicy, tender, subacid; quality fair; ripens wry early. Tree productive; relatively resistant to leaf curl. Originated prior to 1909. HEDRICK 1917; *E84, F91T{SC}, I41P*

White Heath: (White English, Heath Cling) Medium to large, round-oval fruit; skin creamy white blushed with red; flesh white, juicy, firm but tender, sweet or somewhat sprightly vinous-flavored; very good in quality; ripens 6 days after Elberta. Susceptible to brown rot. Popular for home canning. Tree vigorous; upright-spreading; hardy; unproductive. Medium chilling requirement. Origin unknown; first raised prior to the Revolutionary War. HEDRICK 1917; *A88M{OR}, C54, K88T, L47, N20*

#### YELLOW-FLESHED

Corona: Fruit large, up to 3 1/3 inches in diameter, nearly round; skin golden-yellow, blushed or streaked with red; flesh yellow, red next to the pit, fine-grained, firm; flavor very good; ripens late. Commercial canning clingstone. Tree vigorous, productive. BROOKS 1972; *A9, B71M, E4*

Dixired: Medium-sized, round fruit; skin bright red, attractive; flesh yellow, medium-firm, clingstone; ripens early, about 10 to 12 days before Redhaven, 5 to 6 weeks before Elberta. Quality good for very early shipping and local markets. Tree moderately vigorous; blooms late; tolerant to leaf curl. BROOKS 1972; *A82, C75M, E99M, F61M, G72, G72{DW}, I9M, I41P, K28, K28{DW}, M25M, N33*

Dixon: Early season clingstone with very good flavor. Developed for canning, but dessert quality also excellent. Flesh yellow, turning red if overripe. Ripens in early August in central California. Very high yielding. Requires 800 hours of chilling. Recommended for backyard plantings. Originated in Linden, California by F.A. Dixon. Introduced in 1956. *N20*

EarlGrande:<sup>1</sup> Medium to large fruit; skin yellow, 25 to 75% blushed with red; flesh yellow, slightly red next to the pit, firm, of good flavor; clingstone; ripens wry early, 55 days before Elberta. Tree very vigorous. Low chilling requirement, 250 hours or less, particularly well adapted to the south Texas area. *A9, A63, C54, E99M, F61M, G49, H4, I68, J59, L47, M83, N20, N33*

Empress:<sup>3</sup> Medium-sized fruit, about 2 1/4 inches in diameter; skin yellow, blushed with bright red, attractive; flesh yellow, firm, juicy, melting, subacid to mild, of very good flavor; clingstone; ripens ewnly, about 3 weeks before Golden Glory; resembles Golden Glory and Rio Oso Gem. Tree genetically dwarf; mature height only 5 to 8 feet; self-fruitful, productive; ornamental. BROOKS 1972; *C30M, C54, C75M, E99M, F61M*

Everts: Fruit medium to large; skin yellow, with a medium blush, very attractive; flesh clear yellow, with a pink pit; flavor outstanding when canned; ripens with Halford. Tree productive. Commercial canning clingstone. Named for Major W.S. Everts, for many years manager, California Cling Peach Advisory Board. BROOKS 1972; *B71M, K88T*

Flordaking:<sup>1</sup> Medium to large fruit, 2 to 2 1/2 inches in diameter; skin yellow, blushed with red; flesh firm, sweet, golden-yellow, clingstone; ripens wry early, 57 days before Elberta. Chilling requirement low, 450 hours. Adapted to the warmer areas of the Deep South. Introduced by the University of Florida. *A85M, C75M, D37, E45, E99M, F61M, F93, G17, I53M, I68, K76, M69M{DW}, M83, N20, N33, Q93, etc.*

Halford: Large, uniform fruit; skin yellow; flesh yellow, non-melting, clingstone; canning quality excellent; ripens late. Tree a heavy producer. Medium chilling requirement. Traditional commercial canning cultivar in California. Also widely used as a seedling rootstock. Originated in Modesto, California by John Halford. Introduced in 1921. BROOKS 1972; *A9, B71M, B93M, D18, E4, K73M, K88T, L47, N20*

Klamt: Medium to large fruit; skin yellow, with a medium blush; flesh clear yellow; pit brown; flavor superior when canned; maintains its high quality well. Tree consistently sets good crops. Originated in Davis, California. Introduced in 1964. BROOKS 1972; *B71M, E4, K73M, K88T*

Lemon Cling: Fruit large; oval, resembling a lemon; apex terminating in a large nipple; skin deep yellow, brownish-red where exposed; flesh firm, deep lemon-yellow with red at the stone, juicy, sprightly, vinous, with an agreeable acidity; quality very good when perfectly ripe; ripens in September. Excellent for home canning. Tree vigorous; highly productive; bears regularly. Dates back to before the Rewlutionary War. HEDRICK 1917; *T49M{SC}, U7G{SC}*



Loadel: Uniformly large fruit; flesh clear yellow, firm, with a small pit; ripens in mid-lily. Tree vigorous and productive. One of the most widely planted early-ripening commercial clingstones. Originated in Yuba City, California. Introduced about 1950. BROOKS 1972; A9, B71M, D18, E4, K73M, K88T

Orange Cling: Fruit large, round; skin clear golden-orange, blushed with red; flesh dark golden-yellow, very firm, juicy, with a vinous flavor; clingstone; ripens midseason to late. Very popular for home canning. Tree vigorous and productive. Medium chilling requirement. Originated prior to 1832. HEDRICK 1917; A88M{OR}, F91T{SC}, K88T, L47, N20

Tuskena: (Tuscan Cling) Very large fruit; flesh firm but melting, acidic until fully ripe when it has a good flavor; ripens wry early, with Early Crawford. Suitable for both dessert and canning. Possibly a clingstone version of the Crawford type. At one time valued as an early shipping peach. Originated in Mississippi prior to 1873. WICKSON; T49M{SC}, U7G{SC}

#### FLAT PEACHES

A very distinct type with fruit that is very compressed and oblate. Most have holes in the flesh below the pit. Also called *ping-tzu-t'ao*, *pen-tao*, *doughnut peach* or *saucer peach*. Genemlly, they have low chilling requirements. A88M, N20, N40{PR}, R77. (A. persica Compressa Group)

Australian Saucer: Small to medium-sized, vertically compressed fruit; skin white, blushed with red on the exposed side; flesh white, cloyingly sweet offset by a pronounced bitter almond flavor; ripens late June to early July. Tree blooms wry early, nearly evergreen in mild climates. Relatively low chilling requirement, approximately 300 to 400 hours. Good in warm winter areas, especially hot interior parts of California. T49M{SC}

Peento: Flattened, saucer-shaped fruit; skin creamy yellow, mottled and delicately pencilled with red; flesh white, stained red at the stone, juicy, strirgy, tender and melting, sweet, mild, with a slight bitter almond-like flavor; quality very good; clingstone; ripens early. Susceptible to blossom end decay. Tree vigorous, open-topped. Adapted to Florida and the warmest parts of the Gulf States. Introduced prior to 1877. HEDRICK 1917; G8

Stark Saturn: Fruit vertically compressed and oblate; skin creamy yellow, highly blushed with red; flesh white, melting, tender, mild and very sweet; freestone; ripens approximately with Redhaven. Unlike most flat peaches, it has a small, tight scar and flesh covering the pit rather than holes in the flesh below the pit. Tree large, vigorous; very productive; resistant to bacterial spot. Considered the best of the flat peaches. E13G{PR}, I49P, 168, J61M

#### FREESTONE PEACHES

##### RED-FLESHED

Indian Free: (Indian Blood Freestone, Blood Free) Similar to Indian Blood, but freestone. Medium-sized fruit; skin greenish-white, overspread with splashes and stripes of dark red; flesh blood-red throughout, juicy, course, tough and meaty; quality fair; ripens very late. Tree vigorous, haidy. Introduced prior to 1869. HEDRICK 1917; A88M, B93M, C54, I68, LI, N20

Strawberry Free: Medium-sized fruit; skin white, blushed with pink; flesh white marbled with strawberry-red, firm, very sweet and rich, of excellent flavor; freestone; ripens early. Tree vigorous, spreading. Relatively low chilling requirement. Very popular in parts of California. A88M, B93M, C54, E23Z, F91T{SC}, I68, K88T, LI, N20

##### WHITE-FLESHED

Amsden: (Amsden June) Medium-sized, nearly round fruit; skin greenish-white, blushed with dark red on the side exposed to the sun; flesh yellowish-white, very soft, flavor good; stone large, partially clinging until fully ripe; ripens early. Tree moderately vigorous;

bears regularly; haidy. Introduced about 1868. SIMMONS 1978; LI, O81, R77

Babcock:<sup>1</sup> Small to medium-sized fruit; skin light pink, blushed with light and deep red, attractive; flesh nearly pure-white, red near pit, tender, very juicy, mild, very sweet; quality good; pit small, free; ripens 2 weeks before Elberta. Tree medium to large; vigorous, spreading; very productive. Low chilling requirement, less than 200 hours. BROOKS 1972, RUCK; A63, A88M, C54, D23M, E4, G49, I50D{DF}, I68, I83M, K88T, L47, N20

Belle of Georgia: Large, roundish-oval fruit; skin creamy white, blushed with red, very attractive; flesh white, tinged with red at the pit, juicy, strirgy, tender, sweet and mild, quality good; stone semi-free to free; matures in midseason. Tree large, vigorous; hardy; very productive. Originated in Marshallville, Georgia from seed planted in 1870. HEDRICK 1917; A39, A82, B53, C75M, D37, E99M, F53, G8, G79M{DW}, I9M, L33\*M11M{PR}, M39M, M83, N33, etc.

Carolina Belle: New release from North Carolina State University. Developed to fill the need for a firm, white-fleshed peach intended for local markets. Fruit 2 1/2 to 3 inches in diameter; skin brilliant bright red over creamy-white; ripens about 10 days after Redhaven. Requires approximately 750 chilling hours. E99M, F61M, F91T{SC}, L33

Champagne: Large fruits; skin creamy-white blushed with light red; sweet, white flesh, low in acid; mild, pleasant flavor; quality very good. Ripens late, in early August in Central California. Moderate chilling requirements, approximately 500 hours. A good home garden variety. Origin unknown. Introduced by Armstrong Nurseries. N20

Champion: Small to medium-sized fruit; skin creamy white, blushed with light and dark red; flesh white, tinged red at the stone, very juicy, exceedingly tender, sweet, of excellent flavor; stone semi-free to free; matures in early midseason. Tree large, vigorous; very productive. Originated in Nokomis, Illinois by I.G. Hubbard. Introduced in 1890. HEDRICK 1917; D76, G72, H49, H65, I9M, K28, LI, L12, M11M{PR}, M25M

Cumberland: Medium to large, oval-pointed fruit; skin greenish-white, overspread with dull red, fuzzy; flesh white, red at the pit, soft, melting, texture coarse; semi-freestone; ripens 3 weeks before Elberta, hangs well on the tree. Tree vigorous; moderately productive; resistant to bacterial spot; flower large, showy, light pink. Chilling requirement 850 hours. BROOKS 1972; F91T{SC}

Early White Giant: (Stark Early White Giant) Fruit very large; skin white, highly blushed with bright red, attractive; flesh white, juicy, sweet, flavorful; ripens in early Jdly. Tree vigorous and productive; tolerant to bacterial spot. Adapted to Zones 5 through 8. L33, L33{DW}

Eden: Large, roundish fruit; skin creamy white, 60% overspread with red; flesh thick, firm, juicy, sweet and rich; oxidizes slowly for a white-fleshed peach; freestone; ripens in midseason. Good for canning as well as fresh eating. Tree vigorous, very productive, as hardy as Redhaven. Introduced in 1972. C76M, F91T{SC}

El Dulce:<sup>1</sup> Medium-sized fruit, weight about 5 ounces; skin light pink to red; flesh white, rather dry, very sweet; seed small; ripens 7 days later than Babcock. Excellent for eating out of hand, drying or canning. Tree vigorous, spreading, has a low chilling requirement. Seedling of Babcock. Originated in Escondido, California by Orton Englehart. T49M{SC}

Erly-Red-Fre: Fruit large, round; skin attractive red, thick; flesh white, greenish near pit, firm, melting; pit small, mostly freestone; ripens 5 to 6 weeks before Elberta. Tree vigorous; hardy; moderately productive. High chilling requirement. BROOKS 1972; A5, B53, D37, I61M{SC}

Flordahome: (A. davidiana x) Medium to large, oval fruit; skin yellowish-white, 50% blushed with red; flesh white, soft, of fair

quality; ripens early. Tree ornamental, flower about 2 inches in diameter; fairly resistant to root-knot nematode. Relatively low chilling requirement, about 400 hours. BROOKS 1972; *E45, K76, M83*

Flory:<sup>3</sup> Small, white fruit; flesh tender, aromatic, freestone; flavor bland; cans well; ripens in late July. Tree a genetic dwarf, growing only 3 to 5 feet tall at maturity; very large, showy, double red blossoms. Requires approximately 400 hours of chilling. Primarily a home garden ornamental. Originated in Modesto, California by C.R. Flory. Introduced in 1945. *C54, G49,168, L47*

Four Star:<sup>1</sup> (4-Star Daily News) Medium-sized fruit, 2 1/2 inches in diameter; skin color high; flesh white, quality high, freestone; ripens middle of June. Tree vigorous; flowers large, 2 inches in diameter, double, light pink, abundant. Low chilling requirement. *A63, C54, H4*

George IV: Small to medium-sized fruit; skin creamy white, blushed with pink; flesh whitish, deeply tinged with red near the pit, juicy, stringy, tender, mild, pleasantly flavored; quality good; stone semi-free to free; matures in midseason. Tree large, vigorous; hardy; unproductive. Originated about 1821, in the garden (J a Mr. Gill, Broad Street, New York City. HEDRICK 1917; *LI, L12*

Giant Babcock:<sup>1</sup> Fruit large; skin predominantly red; flesh ivory yellow, streaked outwardly from the stone with shades of red; freestone; resembles Babcock but larger; matures about 12 to 14 days after Babcock. Tree medium to large; vigorous; productive; flowers large, more colorful than Babcock. Low chilling requirement. BROOKS 1972; *C54,168, K88T, N20*

Greensboro: Medium-sized, oblong-oval fruit; skin rather tough, creamy-white blushed with red, pubescence heavy; flesh white, very juicy, tender and melting, mild, sweet, sprightly, freestone when fully ripe; ripens early, keeps and ships well. Tree very large, spreading, very productive, widely adapted. Originated in Greensboro, North Carolina by W.G. Balsey, about 1891. HEDRICK 1917; *F91T{SC}*

Honey Dew Hale:<sup>2</sup> Large, roundish fruit; skin white with a pink blush; flesh white, marbled with yellow, with a thin yellow segment from the pit through to the skin along the suture; freestone; ships well. Tree medium in vigor, open, spreading. Bud mutation of J.H. Hale. Originated in New Cumberland, Pennsylvania. Introduced in 1949. BROOKS 1972; *C75M*

Iron Mountain: Medium-sized, highly pubescent fruit; pale greenish or creamy-white; flesh white, juicy, tender, sweet and mild; quality very good. Matures very late, in October. Large, vigorous, upright-spreading tree; hardy; somewhat of a shy bearer. Introduced by J.H. Lindley of Whitehouse, New Jersey. Local favorite in New York and New Jersey. Sold at New York City farmers' markets. HEDRICK 1917; *U13{SC}*

J.M. Mack: Fruit medium to large; round, one-half bulging, unequal; skin cream-colored, lightly streaked and mottled with pink, attractive, smooth, pubescence very short; flesh pure creamy-white right to the stone, firm but very tender, very juicy, with a distinctive aroma and flavor, quality very good; stone free, extremely small; ripens a few days after Champion. Origin unknown, but believed to be Australian. Introduced into the United States in 1926. BROOKS 1972; *L12*

Lady Nancy: White-fleshed sport of Jerseyqueen. Large to very large, non-symmetrical fruit; skin greenish white, 75% blushed with scarlet red; flesh white, streaked with yellow, firm, subacid; quality excellent. Ripens with Jerseyqueen. Large, very vigorous, spreading tree; regularly productive. Originated near Hammonton, New Jersey by Medio DeMarco. BROOKS 1997; *A5*

La White: Large, very attractive fruit; skin white, blushed with rose-pink and red; flesh white flecked throughout with rosy red, juicy, very sweet, low in acid, flavor excellent; freestone; cans well; ripens mid to late June, about 27 days before Elberta. Tree vigorous

and productive; requires 650 hours of chilling. Originated in Calhoun, Louisiana. *A85M, C75M, E99M, F61M, F91T{SC}, G17*

Lola Queen: Fruit medium-sized; skin pale greenish-white, blushed with pink and red, attractive; flesh white, very juicy, tender and melting, sweet, sprightly; quality very good; stone free; ripens a few days after Champion. Originated in Fayetteville, Arkansas by Professor J.R. Cooper, from a cross made in 1920 of Lola and an old North Carolina peach called Wine. *L12*

Nectar: Fruit large to very large; round-ovate, apex pointed; skin blushed pink to red; flesh white tinged with red, juicy, soft-melting, sweet, aromatic, of very good quality; pit medium-sized, free, with some split pits; ripens 3 weeks before Elberta; susceptible to brown rot. Tree vigorous; flower non-showy. Considered to be an open pollinated seedling of Stanwick nectarine. BROOKS 1972; *A88M{OR}, B93M, C54, C75M, E4, E99M, F61M, H15T{ED}, K88T, M63M{ED}, N20*

Okubo: Very productive freestone peach that is excellent for canning. Milk white skin, heavily blushed with red. Firm white flesh. Exceptional, highly distinctive aroma. Ripens in late July and early August. Originated in Okayama, Japan by Shigegorou Okubo. Introduced in 1928. *C60D{PD}*

Oldmixon Free: Medium-sized fruit; skin creamy white blushed with red, pubescence coarse, thick; flesh white, deeply tinted with red near the pit, juicy, stringy, tender and melting, sweet and sprightly, quality very good; stone free or nearly free; matures late. Tree very large, vigorous; hardy; rather unproductive. Introduced prior to 1817. HEDRICK 1917; *L12*

Peregrine: Medium to large, round fruit; skin bright crimson, nearly as smooth as a nectarine; flesh white, firm, melting, very juicy, flavor excellent; ripens in early August. Originated by Thomas Rivers as a seedling of Spencer nectarine. Introduced in 1906. Still a popular commercial cultivar in England. SIMMONS 1978; *F91T{SC}, LI, L12, 081, Q30{SC}, R77, R83*

Polly: Fruit small to medium-sized; skin white, blushed with red; flesh white, juicy, aromatic, of high quality; ripens in midseason; resembles Champion. Tree very cold-hardy. Well adapted for home orchards in Iowa. Originated in Glenwood, Iowa by S.A. Beach. Introduced in 1934. BROOKS 1972; *A88M{OR}, C54, D76, D76{DW}, F91T{SC}, L12, N20*

Raritan Rose: Medium to large, round fruit; skin attractive red; flesh white streaked with red, fine-textured, soft, melting, watery; quality good; freestone; ripens 4 weeks before Elberta. Tree vigorous, spreading; hardy; productive; tolerant to bacteriosis. High chilling requirement. *A5, B53, E99M, F53, F91T{SC}, I49M, L12, M11M{PR}, M99G*

Red Ceylon:<sup>1</sup> Medium-sized, oval fruit with a protruding knob at the apex; skin greenish, blushed with deep-red when ripe; flesh white, a rich strawberry-red near the pit, tender, juicy; flavor excellent, sweet-acid with a hint of bitter-almond; seed free, relatively small; ripens in April and May. Tree dwarf, slender; requires no more than 50 hours of chilling. Introduced into Florida in the late 1880's. MORTON 1987a; *T73M{SC}*

Silver Logan: Little-known white peach of great merit. Large, highly blushed, greenish-white fruit, very attractive; firm but melting flesh with an excellent balance of acid and sugar. Ripens in late August. Moderately vigorous and productive tree. Originated in Cedar Ridge, California by Mabel A. Logan. Introduced in 1965. *E4,199M, LI*

Springtime: Small to medium-sized fruit, globose with a distinct point; skin yellow, highly blushed with red, pubescence short and abundant; flesh white, tender, soft and juicy; semi-freestone; ripens early. Flowers small to medium, pink, non-showy. Moderately low chilling requirement. Originated in Ontario, California. Introduced in 1953. BROOKS 1972; *K88T, 081, R77*

Stump-the-World: (Stump, Stump-of-the-World) Medium-sized fruit; skin creamy white, blushed, mottled and splashed with red; flesh white, strongly stained with red near the pit, juicy, tender and melting, sweet, richly flavored, aromatic; quality very good; ripens late. Tree vigorous and productive. Originated in New Jersey prior to 1840. HEDRICK 1917; LI

Sugar Lady: New white-fleshed freestone, already a favorite at fruit stands. Skin cream-colored with an attractive, dark red blush. Very firm flesh, sweet and rich, slightly taqgy. Ripens in early July. Tree self-fruitful; needs approximately 700 hours of chilling. Originated in Modesto, California by Floyd Zaiger. 168, N20

Tropic Snow:<sup>1</sup> Large, white fruits, about 25% blushed with brilliant red; medium firm, melting white flesh; distinctive lemon-peach flavor. Ripens 18 to 20 days after Flordaprince. Showy blossoms. Resistant to bacterial leaf spot. Very low chilling requirements, only 200 hours. Originated in Gainesville, Florida. Introduced in 1988. BROOKS 1997; A9, B71M, C54, E99M, F61M, 168,183M, J59, N20, Q93

White Hale: Fruit large; round, uniform, slightly pointed; skin greenish-white to cream, overspread with red, fairly attractive, hairs short; flesh white, red around the pit, firm, melting, juicy; quality good; ripens with J.H. Hale. Tree vigorous, upright; very productive; self-fruitful. Originated in New Brunswick, New Jersey by M.A. Blake. Introduced in 1932. BROOKS 1972; A5, C75M, E99M, F61M, F91T{SC}, L12, M99G

White Lady: Medium to large fruits; skin highly blushed with red, pubescence medium; flesh white, very firm, low in acid; mild, sweet flavor; quality excellent. Ripens 5 days after Redhaven. Vigorous, upright-spreading tree. Chilling requirement 800 hours. Scores highly in blind tastings. Originated in Modesto, California by Floyd Zaiger and colleagues. A5, E4, F53,168, N20

Wildrose: Medium to large, round-ovate fruit; skin yellow-green, prominently mottled with dull red, pubescence light; flesh white, red at pit, firm, melting, quality good; pit small, free; ripens 3 weeks before Elberta. Tree vigorous; moderately productive; self-fruitful. Chilling requirement 750 hours at or below 45° F. BROOKS 1972; B53, C75M, F61M, F91T{SC}, H65

#### mLQW-FLESHEP

Admiral Dewey: Small to medium-sized, round-oblate fruit; skin thin and tender, adherent, deep orange-yellow blushed with dark red; flesh yellow, juicy, striqgy, tender and melting, sweet but sprightly, very good in quality; stone semi-free to free; ripens early. Tree large, vigorous, upright-spreading, haidy, very productive. Originated in Vineyard, Georgia in the latter part of the 19th century. HEDRICK 1917; F91T{SC}

August Etter: Medium-sized fruit; skin yellow; flesh yellow, somewhat fibrous, of good flavor; ripens in late August. Good fresh and for jam; excellent for freezing; not recommended for canning. Tree resistant to leaf curl. Originated in Mendocino County, California by August Etter. E84

August Pride:<sup>1</sup> Large, round fruit; skin yellav, blushed with red, tart; flesh yellow, fine-grained, sweet, aromatic, richly flavored, of very good quality; ripens in midseason, 3 to 4 weeks after Mid Pride. Tree vigorous, upright; productive; blooms early; low chilling requirement, 300 hours or less. Adapted to most mild-winter areas of California. Developed by Floyd Zaiger. A88M, I83M, N20

Baby Crawford: (Phil Adrian) Small, sweet, intensely flavored yellow freestone. Rated very highly for flavor by the Santa Clara Valley Chapter of the California Rare Fruit Growers. Golden orange skin with a slight red blush. Texture and quality excellent. Ripens in late July in Central California, about 1 week before Elberta. Requires 800 hours of chilling. A88M, LI, N20

Biscoe: Medium-sized, round fruit; skin deep yellow, 50 to 75% covered with a bright red blush, attractive; flesh yellow, firm, melting, fine-textured, of good flavor; ripens about with Redhaven.

Tree moderately vigorous; hardy; productive; very resistant to bacterial spot. B53, C75M, E99M, F53, F61M, I41P, M11M{PR}

Blake: (M.A. Blake) Large, round fruit; skin an attractive red, pubescence slight; flesh yellow, red near the pit, firm-melting, quality good, sometimes too acid, freestone; freezing quality good; excellent for home canning; ripens 1 week before Elberta; resembles J.H. Hale. Tree vigorous; productive; susceptible to bacteriosis. BROOKS 1972; A5, B53, B83, E99M, F61M, M39M

Bonanza:<sup>13</sup> Medium to large fruit; skin moderately blushed with red; flesh sweet, low in acid, mild and refreshing. Ripens a few days after June Gold. Tree a genetic dwarf, bushy, 5 to 6 feet tall. Showy, pink, semi-double blossoms. Chilling requirement 250 hours or less. Very popular in California. Introduced in 1962 by Armstrong Nurseries. A88M, C54, H63M, 168, M83, N20, R77

Bonita:<sup>1</sup> Medium to large fruit; skin light yellow with a deep red blush, attractive; flesh yellow, dark pink near the pit, somewhat fibrous, firm, sweet to subacid, quality good; freestone; ripens in midseason. Tree vigorous, upright; productive. Low chilling requirement. Originated in Riverside, California. Introduced in 1943. BROOKS 1972; A63, A88M, C54,168, K88T, N20

Canadian Harmony: Large, round fruit, 2 3/4 to 3 inches in diameter; skin yellow, 80% covered with a red blush, pubescence scant; flesh yellow, slightly red at pit, firm but melting, quality good; ripens 2 weeks before Elberta. Tree very vigorous; hardy; moderately tolerant to bacterial leaf and fruit spot. Recommended for southwestern Ontario. BROOKS 1972; A5, B83, C45M, C75M, E45M{PR}, E99M, F53, G23, M39M, N20

Candor: Uniformly round fruit; skin rich-yellow, 75% covered with a bright red blush, very attractive; flesh yellow, texture very fine, flavor unusually good, highly resistant to browning; semi-freestone; ripens just before Dixired. Tree moderately vigorous; self-fruitful; foliage somewhat resistant to bacterial spot. BROOKS 1972; A5, A39, C75M, E99M, F53, F61M, F91T{SC}

Cresthaven: Medium to large, nearly round fruit; skin bright red over gold, very attractive; flesh clear yellow, firm, very resistant to browning; satisfactory for home canning, freezes unusually well; easily pitted by mechanical means; ripens about 1 week before Elberta. Tree vigorous; productive; self-fruitful; above average in hardiness. BROOKS 1972; A5, B53, B83, C75M, C76M, E45M{PR}, E99M, F53, F61M, K73M, M39M

Desertgold:<sup>1</sup> Medium-sized, round fruit; skin yellow blushed with red, attractive; flesh yellow, moderately firm, semi-clingstone; quality good; ripens early midseason. Tree moderately vigorous; productive; self-fertile. Low chilling requirement, 350 to 400 hours. Recommended for warm winter areas. BROOKS 1972, RUCK; C54,168, /6S{ES}, I83M, L47, N20

Duke of York: High quality English peach comparable to Peregrine. Large, round fruit; skin cream-colored, blushed with bright red; flesh pale greenish-yellow, juicy, very soft, subacid, flavor very good to excellent. Ripens in late July and early August. Hardy and productive. Introduced in 1902 by Thomas Rivers. SIMMONS 1978; 081, Q30{SC}, R77

Earlired: Medium-sized, round fruit; skin yellow, 85% covered with a bright red blush, pubescence very light; flesh yellow, firm but melting, medium in texture, of good flavor; clingstone when firm ripe, semi-cling at the soft ripe stage; ripens 19 days before Redhaven. Tree vigorous and productive; requires heavy early thinning for best size. A5, B53, F61M, F91T{SC}

Early Crawford: Medium-sized fruit; round-oval, bulged near the apex, with unequal halves; skin golden-yellow blushed with dark red, attractive, pubescence thick; flesh deep yellow, rayed with red near the pit, juicy, tender, sprightly, highly flavored, quality very good; ripens in early midseason. Tree large, vigorous; often unproductive. Originated in Middletown, New Jersey by William Crawford, early in the 19th century. HEDRICK 1917; E84,

## F91T{SC}, K88T

Elberta: Fruit large; skin orange-yellow blushed with red, pubescence thick and coarse; flesh yellow stained with red near the pit, juicy, striqgy, firm but tender, sweet to subacid, quality good; resistant to browning; matures in midseason. Tree large, vigorous; very productive; widely adapted to soil and climate. Originated in Marshallville, Georgia from a seed planted in 1870. HEDRICK 1917; A88M, B53, B73M, B73M{DW}, B83, C75M, E45<sub>o</sub>, G79M{DW}, I9M, I53M, J83, J83{DW}, M39M, M99G, N33, etc.

Eldorado:<sup>3</sup> Round fruit, 2 1/2 to 3 inches in diameter; attractive, red-blushed skin; firm, yellow flesh, richly flavored; quality very good to excellent. Ripens in early to mid-June. Tree a genetic dwarf, 3 to 5 feet tall, vigorous and productive. Semi-double blossoms. Requires 500 hours of chilling. Introduced in 1980 by Jackson & Perkins. BROOKS 1997; A88M, J61M, N20

Emery: Medium-sized, round fruit; skin dull yellow, 50% covered with a red blush; flesh yellow, with less red pigment than Redskin, firm, melting, fine-grained, less juicy than Elberta, flavor excellent; fully freestone; ripens 5 to 7 days later than Elberta. Tree vigorous, productive; resistant to bacterial spot; flower large, showy, self-fertile. BROOKS 1972; F91T{SC}

Encore: (Stark Encore) Medium to large fruit; skin yellow, blushed with red; flesh yellow, firm, juicy, sweet and flavorful; ripens very late. Good fresh or for canning. Tree productive; resistant to blossom-season frost; very tolerant to bacterial leaf spot. Adapted to Zones 5 through 8. A5, E45M{PR}, L33

Fairtime: Large, round fruit; skin yellow, 20 to 25% covered by a bright red blush; flesh yellow, with considerable red near the pit, firm but melting, texture smooth, flavor good; suitable for fresh market and freezing; ripens 7 days after Summerset. Tree vigorous and productive; self-fertile. BROOKS 1972; A9, B71M, C30M, C75M, E45M{PR}, E99M, F61M, K88T, L47<sub>o</sub>, N20, N33

Fay Elberta: (Late Elberta) Fruit large; skin yellow blushed with red, attractive; flesh yellow, firm but melting, sweet, fine-grained, of very good flavor; ripens midseason to late; resembles Elberta, but more colorful. Excellent for eating fresh, canning, or freezing. Tree productive, requires heavy thinning; flowers pink, showy. Medium chilling requirement. B71M, B93M, C54<sub>o</sub>, C75M, E4<sub>o</sub>, E99M, F61M, G49, I68, 199M, K73M, K88T, LI, L47<sub>o</sub>, N20<sub>o</sub>, etc.

Flavorcrest: Medium to large, round fruit; skin yellow, 80% covered with a red blush; flesh yellow, very firm, smooth-textured, flavor rich, quality excellent; stone semi-cling to free; ripens early to midseason. Tree moderately vigorous; productive. Medium chilling requirement. Released by the USDA. A9, B71M, B83, C75M, E4, E99M, F61M, K73M

Flordagrande:<sup>1</sup> Fruit medium-sized but large for its season; skin bright yellow, 60% blushed with red; flesh yellow, firm, freestone; ripens 103 days from bloom. Tree hardy; tolerant to bacterial spot; flower large, showy, self-fertile. Exceptionally low chilling requirement, only 50 hours. Originated in Gainesville, Florida. Introduced in 1984. B71M, E99M, F61M, J59

Flordaprince:<sup>1</sup> Medium-large, round fruit; skin yellow, blushed and striped with red; flesh yellow, firm, quality good; clingstone to semi-free; ripens 7 to 10 days earlier than Desert Gold. Tree very vigorous and productive; more tolerant of desert heat than Desert Gold. Very low chilling requirement, only 150 hours. Widely planted as an early commercial peach in southern California and Arizona. A9, B71M, C54<sub>o</sub>, D23M, E99M, F61M, G49, I68<sub>o</sub>, 183M, J59, K76, N20<sub>o</sub>, Q93

Fortyniner: (Merrill 49'er) Fruit large; skin yellow, blushed with bright red, very attractive; flesh yellow, firm, quality excellent; ripens 1 week before J.H. Hale and Elberta; resembles J.H. Hale. Tree vigorous; productive; susceptible to bacterial spot. Medium-high chilling requirement. Originated in Red Bluff, California by Grant Merrill. BROOKS 1972; C54, E4, K73M, K88T, L47, N20

Frost: Medium to large fruit; skin fuzzy, green-shouldered; flesh pale yellow, soft, sweet, juicy, mostly freestone; quality good for dessert and drying, fair for canning; ripens in mid-August. Tree self-fertile; bears very heavily, must be thinned for best results. Strongly resistant to leaf curl, though not immune. Discovered in Washington by Herb Frost. A88M, B74, C34, C54<sub>o</sub>, D28J, D95, E87, H49, H89M, H89M{DW}, I49M, 174, 199M, J61M, N20<sub>o</sub>, etc.

Garden Gold:<sup>3</sup> Fruit large, up to 3 inches in diameter; skin yellow, slightly blushed with red; flesh yellow, red near the pit, soft, melting, of good flavor; ripens 2 to 3 weeks after Elberta. Tree genetically dwarf; mature height only 5 to 6 feet; productive; blooms a week later than other miniature peaches and nectarines; self-fruitful; ornamental. A88M, H65, I68<sub>o</sub>, N20

Garden Sun:<sup>3</sup> Large full-sized fruit; skin yellow-orange, blushed with red; flesh yellow, sweet, mild, low in acid; freestone; ripens 1 week after Elberta. Tree a genetic dwarf, growing only 4 to 6 feet tall; self-fruitful; flowers large, showy. Needs approximately 500 hours of chilling. Ideal for container growing. Originated in Modesto, California by Floyd Zaiger. G23, N20

Garnet Beauty: Medium to large, oval fruit; skin yellow, overlaid with bright red; flesh yellow, streaked with red, firm, melting, flavor excellent; semi-freestone; ripens 8 to 10 days earlier than Redhaven; hangs on tree well until over-ripe. Tree vigorous and productive; slightly susceptible to bacterial spot. BROOKS 1972; A5, B53, C75M, D37, E45M{PR}, E99M, F53, F61M, K36, K73M

Glohaven: Large, nearly round fruit; skin mostly red over deep yellow, attractive, pubescence light; flesh clear yellow, nearly free of red at pit, firm, very resistant to browning; freestone; easily pitted by mechanical means; ships unusually well; cans and freezes well; ripens about 2 weeks before Elberta. Tree vigorous and productive; self-fruitful. BROOKS 1972; A5, B53, B83, C75M, C76M, D37, E99M, F53, F61M, G8, 161M{SC}, K73M, M39M

Gold Dust: Small to medium-sized fruit; skin yellow, mottled and streaked with red, smooth; flesh yellow, firm, fine-grained, non-acid but flavorful, of excellent quality; ripens 14 days earlier than Redhaven. Tree large, vigorous; hardy; productive. Relatively low chilling requirement. BROOKS 1972; A88M, L47<sub>o</sub>, N20

Golden Glory:<sup>3</sup> Large fruit, averaging 2 3/8 inches in diameter; skin yellow, partially mottled with orange-red; flesh yellow, red next to the stone, soft, melting, subacid to mild, quality fair to good; ripens late. Tree genetically dwarf, spreading; mature height 6 to 8 feet; vigorous and productive; self-fruitful; ornamental. BROOKS 1972; C54

Golden Jubilee: Fruit medium to large; oval to oblong, flattened; skin mottled bright red over 1/3 of surface; flesh yellow, red at pit, firm, melting, texture coarse, of very good quality; ripens 3 weeks before Elberta; drops early from tree. Tree sets heavily but is self-thinning. BROOKS 1972; A82, G72, G72{DW}, G79M{DW}, H49, H65, 19M, I53M, K28, K28{DW}, M39M, M99G, N20

Halehaven: Medium to large, round fruit; skin dark red over most of surface, very sweet; flesh yellow, red at pit, firm, melting, quality excellent, freestone; ripens 2 weeks before Elberta. Tree vigorous and productive. Excellent home garden cultivar. BROOKS 1972, STEBBINS; A82, B73M, E99M, H65, 19M, I68<sub>o</sub>, J16, K28, L90, M39M, M83, N33

Halloween: Large fruit; flesh yellow, firm, freestone; ripens extremely late, about 70 days after Elberta or about October 10 at place of origin. Tree medium-sized, moderately vigorous, productive. Originated in Red Bluff, California by Grant Merrill. Introduced in 1954. BROOKS 1972; C54<sub>o</sub>, K88T

Harbelle: Round fruit, 2 3/4 inches in diameter; skin yellow, 60% covered with a bright red blush, pubescence short; flesh yellow, melting, firm, quality good, freestone; ripens early. Tree small, moderately vigorous; hardy; tolerant to bacterial spot. Originated in

Harrow, Ontario, Canada. BROOKS 1972; B53, E99M, F53, F91T{SC}

Harbrite: Fruit ovate, 2 1/2 inches in diameter; skin yellow, 80% covered with a brilliant red blush, attractive; flesh yellow, tinged red at the pit, firm, melting, quality good, freestone; ripens 4 weeks before Elberta. Tree hardy; exceptionally productive; highly tolerant to bacterial spot. Recommended for southwestern Ontario. BROOKS 1972; A5, B53, E99M, F53, 161M{SC}, M11M{PR}

Harken: Fruit large; skin yellow, about 80% covered with a dark red blush, attractive; flesh yellow, medium firm, juicy, fine-textured, sweet and rich; quality good; very resistant to browning; ripens just after Redhaven. Good for canning and freezing. Tree moderately vigorous; productive; moderately hardy; resistant to bacterial spot. B53, E99M, F61M, I49M, 161M{SC}, J61M, N20, R77

Honey Babe:<sup>3</sup> Fruit large, up to 3 inches in diameter; skin yellow, blushed with deep red, attractive; flesh yellow-orange flecked with bright red, firm, sweet and flavorful, highly aromatic, of excellent quality; ripens just before Redhaven. Tree genetically dwarf; productive; ornamental. Chilling requirement 500 to 600 hours. Developed by Floyd Zaiger. A88M, C34, G49, I49M, 168, N20

J.H. Hale: Very large, round fruit; skin lemon-yellow blushed with dark red, pubescence light; flesh yellow, red at pit, juicy, fine-grained, sweet or somewhat sprightly, of good quality; matures in mid-season. Tree vigorous and productive. Originated in South Glastonbury, Connecticut by J.H. Hale. Introduced in 1912. HEDRICK 1917; A5, A82, B53, B83, C75M, E99M, G72, G72{DW}, H63M{DW}, I9M, K73M, LI, L90, M39M, M83

Jefferson: Fruit large; skin bright red; flesh yellow, very firm, fine-textured, of good flavor; fully freestone; ripens 3 days after Elberta; resembles J.H. Hale. Cans and freezes well. Tree vigorous; reliably productive; buds and flowers tolerant to blossoming-season frost. BROOKS 1972; C30M, C75M, E99M, F61M, F93, M83, N33, R77

Jerseyqueen: Large, oval fruit; skin yellow blushed with bright red, attractive; flesh yellow, firm, mild but flavorful, of excellent dessert quality; ripens about with Elberta; resembles Blake. Tree vigorous, moderately productive; flower large, showy; buds tender, subject to winter kill. BROOKS 1972; A5, C75M, E99M, F61M, F91T{SC}, L12

July Elberta: (Kim Elberta, Early Elberta) Medium-sized, round fruit; skin greenish-yellow, blushed and streaked with dull red, pubescence heavy and dense; flesh yellow, only slightly red at pit, firm, melting, of very good quality; pit small, free; ripens about 2 weeks before Elberta. Tree vigorous; highly fruitful; susceptible to bacteriosis. Originated in Sebastopol, California by Luther Burbank. Introduced in 1930. BROOKS 1972; B93M, B93M{DW}, C41M, C54, E45, G49, H89M, H89M{DW}, 168, K76, K88T, L33, L33{DW}, L47, L90, M83, N20, etc.

June Gold: Fruit very large; skin highly colored red; flesh yellow, firm, semi-freestone; ripens early, 15 to 20 days before Redhaven; J.H. Hale type. Suitable for shipping. Tree very productive; flowers showy. Relatively low chilling requirement, 650 hours at or below 45° F. Ideal for South Texas planting. BROOKS 1972; A85M, C54, C75M, E45M{PR}, E99M, F61M, K76, L90, M69M, M83, N20, N33

Kalamazoo: Medium-sized, roundish-oval fruit; skin thin, tough, greenish-yellow becoming yellow; flesh light yellow, stained with red near the pit, juicy, tender, sweet, mild in flavor, of high quality for either dessert or culinary purposes; stone free or nearly so; ripens late. Tree large, spreading, vigorous, very productive. Originated in Kalamazoo, Michigan about 1869. HEDRICK 1917; F91T{SC}

La Feliciana: Medium to large fruit, 2 1/2 to 2 3/4 inches in diameter; skin yellow, blushed with red; flesh yellow, juicy, sweet,

of high quality; ripens in late June or early July. Good fresh or frozen. Tree highly productive\* disease resistant. Chilling requirement 550 hours at or below 45° F. Excellent home garden cultivar for the lower South. A85M, C54, C75M, E99M, F61M, H4, J59, K76, L90, M83, N20, N33

La Premier: Fruit large, up to 2 3/4 inches in diameter; round, with unequal halves; skin yellow, highly blushed with red, very attractive; flesh clear yellow, firm, fine-grained, quality very good; cans and freezes very well; ripens about 12 days before Elberta. Tree vigorous; very productive; resistant to bacteriosis and brown rot. Originated in Calhoun, Louisiana. BROOKS 1972; C75M, E99M, F61M

Late Crawford: Medium to large fruit; roundish-oval, with unequal halves; skin deep yellow, blushed and splashed with light and dark red; flesh yellow, red at the pit, juicy, firm but tender, sweet but sprightly, richly flavored, quality excellent; ripens late. Tree large, vigorous; not very productive; comes into bearing late. Originated in Middletown, New Jersey by William Crawford, early in the 19th century. HEDRICK 1917; L12

Loring: Fruit large; round to ovate; skin yellow, highly blushed with red, very attractive; flesh yellow, red at pit, firm, melting, of medium texture, quality very good; ripens 10 days before Elberta. Tree very vigorous; productive; tolerant to bacteriosis. Originated in Mountain Grove, Missouri. Introduced in 1946. BROOKS 1972; A5, A82, B53, B83, C75M, D37, E45, E45M{PR}, E99M, F53, F61M, F93, L90, M11M{PR}, M39M, M83, N33, etc.

Lovell: Uniformly large, almost perfectly round fruit; skin yellow with a slight blush; flesh fine-grained, firm, solid, clear yellow to the pit; freestone. Superior for canning and shipping; also dries well. Tree high yielding, produces vigorous rootstocks for grafting. Originated in Winters, California by G.W. Thissell. Named in 1882. WICKSON; F91T{SC}, G66{PL}, K73M, K88T

Madison: Medium to large fruit; skin bright orange-yellow, blushed with bright red, very attractive; flesh orange-yellow, bright red next to pit, exceedingly firm, fine-textured, flavor mild and rich, quality very good; ripens 7 days before Elberta. Tree moderately vigorous; very tolerant to blossom-season frost; self-fruitful. Adapted to mountainous areas of Virginia. BROOKS 1972; A5, A39, C75M, E99M, F53, G16{DW}, G23, G23{DW}, K36, L33, L33{DW}, M39M, M99G

Mid Pride:<sup>1</sup> Medium to large fruit; skin yellow, blushed with red; flesh yellow, firm, sweet, very flavorful, quality excellent; ripens in midseason. Good fresh or for canning. Tree very vigorous and productive; blooms early; low chilling requirement, less than 300 hours. Adapted to most mild-winter areas of California. Developed by Floyd Zaiger. A88M, D23M, I83M, LI, N20

Monroe: Fruit large, 2 1/2 to 3 inches in diameter; skin rich orange-yellow, with 60% bright medium-red blush, attractive; flesh orange-yellow, pinkish-red near the pit, firm, smooth, flavor mild, quality very good for its season; ripens about 11 days after Elberta. Tree very vigorous; moderately productive; self-fruitful. BROOKS 1972; B83, C75M, E99M, F61M, N33

Muir: Large to very large fruit; flesh clear yellow, dense, rich and sweet; stone small, perfectly free. Good for canning and shipping; peculiarly adapted to drying because of exceptional sweetness and density of flesh. Once the standard dried peach of California. Tree vigorous and productive if grown on rich soil. Originated as a chance seedling on the place of John Muir, near Silvey ville, California, about 1880. WICKSON; A88M, K88T, LI, L97G{DF}, N20

Norman: Round, medium to large fruit, skin medium yellow, prominently blushed with dark red; flesh deep yellow, slightly tinged with red, very firm, fine-textured, melting, flavor good when ripe; very resistant to browning; ripens 3 to 5 earlier than Ranger. Tree productive; moderately resistant to bacterial spot. BROOKS 1972; C75M, E99M, F61M, F91T{SC}

O'Henry: Medium to large fruit, 2 1/2 to 3 inches in diameter; skin brightly colored, pubescence short; flesh yellow streaked with red, very firm, quality good, freestone; ships well; ripens about with Rio Oso Gem. Tree moderately vigorous; productive; flower pink, large, showy. Originated in Red Bluff, California. BROOKS 1972; A9, A63, A88M, B71M, B83, C54, C75M, E4, F61M, I99M, K73M, K88T, LI, L47, M39M, N20, etc.

Parade: Fruit large, averaging 2 5/8 inches in diameter or more; skin bright yellow, blushed with red; flesh yellow, light red near pit, moderately juicy, firm, flavor mild, subacid, vinous, non-browning; quality good; mostly freestone; ripens very late, 30 days after J.H. Hale. Tree medium-sized, productive; self-fruitful. BROOKS 1972; A5, A9, B71M, C75M, E45M{PR}, E99M, F61M

Peacot: Fruit of good size if thinned early; skin nearly glabrous; flesh yellow, very juicy, somewhat fibrous, rich in flavor; resembles a nectarine. Tree very productive, has a relatively low chilling requirement. Accidental cross of a seedling peach and an experimental nectarine, discovered at Armstrong Nurseries. T49M{SC}

Pekin: Medium-sized fruit; skin light yellow, 75 to 85 % covered with a bright red blush, pubescence short; flesh yellow, melting, flavor pleasant, more resistant to browning than Redhaven; freestone when soft-ripe; ripens 2 to 3 days earlier than Redhaven. Tree vigorous and productive; self-fruitful; highly resistant to bacterial spot. BROOKS 1972; F91T{SC}

Pix Zee:<sup>3</sup> Fruit orange blushed with red, attractive; flesh firm, yellow, flavor very good, freestone when fully ripe; ripens very early, 3 weeks before Honey Babe. Tree a genetic dwarf, growing only 5 to 7 feet tall; self-fruitful. Needs approximately 500 hours of chilling. Ripens in short season areas where others fail. Originated in Modesto, California by Floyd Zaiger. A88M, I49M, I68, N20

Ranger: Medium to large, nearly round fruit; skin greenish-yellow to yellow, mottled and striped with red; flesh yellow, red at pit, medium firm, melting, medium textured, flavor good; ripens 3 to 4 weeks before Elberta. Tree productive, moderately vigorous; self-fruitful; resistant to bacterial spot. BROOKS 1972; C30M, C54, C75M, E45, E99M, F61M, F93, I41P, I68, L47, L90, M69M, M83, N20, N33, etc.

Red Baron:<sup>1</sup> Ornamental peach with surprisingly good eating qualities. Large, round fruit, about 3 inches in diameter; lightly blushed; flesh firm, juicy, melting, richly flavored. Ripens in early to mid-July. Profuse, showy, double red blossoms. Requires 250 to 300 hours of chilling. Very popular in southern California. Introduced in 1977 by Armstrong Nurseries. C54, D23M, G49, N20, N33

Redhaven: Medium-sized, round fruit; skin yellow, overlaid with red to deep red, attractive; flesh yellow, red at pit, very firm, melting, quality good; non-browning; pit large, usually free when ripe; ripens early, 30 days before Elberta. Tree vigorous; hardy; highly productive, nearly always requiring thinning; self-fruitful. Most widely planted cultivar in the United States. BROOKS 1972; A5, A38M{PD}, A88M, B73M, B83, C75M, G23, G23{DW}, G79M{DW}, K73M, L12, M11M{PR}, M39M, M99G, N33, etc.

Redskin: Medium to large, nearly round fruit; skin deep red over yellow, attractive; flesh yellow, red at pit, melting, of fine flavor, quality somewhat better than Elberta, non-browning; ripens with or slightly ahead of Elberta. Tree vigorous; very productive; self-fruitful; resistant to bacteriosis. BROOKS 1972; A82, B53, B83, C75M, E45M{PR}, E99M, F53, F93, G79M{DW}, I41P, L12, M11M{PR}, M39M, M83, N33, etc.

Reliance: Medium-sized, round fruit; skin yellow, splashed with dull red; flesh bright yellow, moderately firm, slightly stringy, of good flavor; ripens evenly, about with Golden Jubilee. Tree productive; extremely winter-hardy. Originated in Durham, New Hampshire by E.M. Meader. Introduced in 1964. BROOKS 1972; C75M, C76M, D69, F53, G16{DW}, G23, G23{DW}, H42, H65, M39M, M99G, N24M

Rio Oso Gem: Fruit large, averaging 2 3/4 to 3 3/4 inches in diameter; round to slightly elongated; skin bright red, very attractive; flesh yellow, firm, fine-grained, melting, of good quality; ripens 1 week after Elberta, about 2 weeks after J.H. Hale which it resembles. Tree productive; self-fruitful; susceptible to bacterial spot. BROOKS 1972; A5, A88M, B53, B71M, E4, E99M, F61M, I68, I68{ES}, LI, L47, M39M, N20

Rochester: Medium to large fruit; skin orange-yellow, blushed with deep dark-red; flesh yellow, stained with red near the pit, very juicy, tender and melting, sweet, highly flavored, very good in quality; matures in early midseason. Tree large, vigorous; productive. Originated near Rochester, New York. Introduced in 1912. HEDRICK 1917; H65, 081, Q30{SC}, R77

Salway: (Salwey) Large, roundish-oblate fruit; skin dowry, creamy yellow blushed with crimson, attractive; flesh deep yellow, stained with red at the pit, juicy, vinous, rich and sweet; freestone; ripens very late. Of good dessert quality; excellent for canning, preserving and evaporating. Tree vigorous, hardy, very productive. Originated in England about 1844. HEDRICK 1917, WICKSON; K88T

Sam Houston: Medium to large fruit; skin red, attractive; flesh yellow, fine-grained, firm, low in acid, flavor mild; pit unusually small, freestone; ripens with Sunhigh. Tree productive, requires heavy thinning; susceptible to bacterial spot. Relatively low chilling requirement. Originated in College Station, Texas. BROOKS 1972; A85M, C54, E45, E99M, K76, K88T, L90, M83, N33

Slappey: Medium-sized, roundish to conic fruit; skin golden-yellow blushed with red and crimson, extremely thin, pubescence slight; flesh yellow, somewhat mealy, sweet, flavor distinctive, quality good; ripens just before Champion. Popular for home canning. Tree productive. Origin unknown. Introduced prior to 1903. HEDRICK 1917; B53, F91T{SC}

Southern Rose:<sup>1 3</sup> Large, yellow fruit blushed with red; flesh yellow, firm, freestone; dessert quality good; ripens late, in early August. Compares favorably with commercial peaches. Tree a genetic dwarf, with mature height only 5 feet; blooms early. Relatively low chilling requirement, approximately 300 hours. C54, D23M, I83M

Southern Sweet:<sup>3</sup> Medium-sized fruit; skin yellow, slightly blushed with red, attractive; flesh yellow, flavorful; freestone; ripens early to mid-June. Tree genetically dwarf; mature height 4 to 5 feet; productive. Chilling requirement about 500 hours at or below 45° F. Originated in Le Grand, California by F.W. Anderson. Introduced in 1975. C54

Southland: Medium to large, round fruit; skin yellow, blushed and striped with red, attractive; flesh yellow, red near the pit, firm, melting, non-browning, quality very good to excellent; ripens 18 days before Elberta; resembles Halehaven. Tree vigorous; quite susceptible to bacteriosis; flower large, showy, self-fruitful. BROOKS 1972; C75M, F61M, F91T{SC}, I41P

St. John: Medium to large, round-oblate fruit; skin thick and tough, orange-yellow blushed with deep, dark red; flesh yellow, very juicy, tender, melting, sweet and rich, sprightly, very good in quality; ripens in early midseason. Tree medium to large, vigorous, upright-spreading, unproductive. Reproduces itself from seed. Originated in the South prior to 1869. HEDRICK 1917; F91T{SC}

Summergold: Medium to large, round fruit; skin yellow, 60% covered with a bright red blush, attractive; flesh yellow, firm but melting, of fine texture, flavor good; freestone; ripens with Loring. Excellent for processing. Tree moderately vigorous; somewhat resistant to bacterial spot; self-fertile. BROOKS 1972; C75M, E99M, F61M, F91T{SC}

Summerset: Large, round fruit; skin yellow, 25 to 30% blushed with bright red, attractive, pubescence light; flesh yellow, firm but melting, of good texture and flavor; quality high; freestone; ripens

5 to 6 weeks after Rio Oso Gem. Good for canning and freezing. Tree vigorous and productive. BROOKS 1972; A88M, B71M, B93M, E4, F91T{SC}, K88T, LI, N20

Suncrest: Large, round fruit; skin yellow, two-thirds covered with bright red, attractive; flesh yellow, firm but melting, texture and flavor very good; ripens about 10 days before Elberta; suitable for distant shipping. Tree vigorous and productive; self-fruitful; susceptible to bacterial spot disease. Highly rated at fruit tastings. BROOKS 1972; B71M, B83, E4, E99M, F53, G92{DF}, H89M, I49M, K73M, K88T, M39M, N20

Sunhigh: Fruit medium to large; oval to round, ribbed, apex pointed; skin very attractive, golden-yellow, blushed with bright red, pubescence very short and soft; flesh yellow, flecked with red, fine-textured, flavor very good to excellent, very resistant to browning; freestone when fully ripe; ripens 10 days before Redhaven. Tree vigorous and productive; self-fertile. BROOKS 1972; B53, C75M, D37, E99M, F61M, J16, L12, M99G

Suwanee: Large, round fruit; skin yellow, about 80% covered with a red blush, attractive; flesh yellow, firm, melting, texture medium fine, flavor good; freestone; ripens with Golden Jubilee. Tree moderately vigorous; productive; self-fruitful. Chilling requirement 650 hours. Originated in R>rt Valley, Georgia. BROOKS 1972; E45, E99M, F61M, F93, G17, I53M, K76, K76{DW}

Topaz: Large, round fruit; skin 100% red over a bright yellow background, attractive, pubescence light; flesh yellow, very firm, fine-textured, of high quality, non-browning; ripens 20 days before Elberta. Tree vigorous, upright; resistant to bacterial spot; tender to winter cold. Chilling requirement 850 hours at or below 45° F. A5, C75M, E99M, F53, F61M, K73M, M39M

Trio gem: Fruit medium to large; round to oval; skin yellow, overlaid with dull red, attractive; flesh yellow, streaked with red, firm, melting, of high quality; stone large, free; ripens slowly and early, 19 days before Elberta; ships well. Tree vigorous, upright; self-fruitful; sets good crops, requires thinning. BROOKS 1972; A5, F91T{SC}, M99G

Ventura:<sup>1</sup> Small, oblate fruit; skin yellow, blushed with wine-red, attractive; flesh yellow, firmer than Babcock, subacid, quality fairly good, freestone; ripens midseason, or in early July in southern California. Tree vigorous, upright; productive. Low chilling requirement, less than Babcock. BROOKS 1972; A63, B93M, C54, G49, I68, L47

Veteran: Medium to large, round-oblate fruit; skin yellow splashed with red, attractive; flesh yellow, melting, soft, quality good, low in tannin; semi-freestone to freestone; matures 8 to 10 days before Elberta. Tree vigorous; highly productive; self-fruitful. Originated in Vineland Station, Ontario, Canada. Introduced in 1928. BROOKS 1972; A91, A91{SC}, B74, B83, D28J, I49M, I61M{SC}, M39M, N20, N33

Washington: Fruit large; skin an attractive red; flesh yellow, firm, quality above average; freestone; ripens about 3 weeks before Elberta; superior to Elberta for canning and freezing; resembles Sunhigh. Tree vigorous and productive; somewhat resistant to bacteriosis; flowers showy. Originated in Blacksburg, Virginia. BROOKS 1972; A5, E99M, F91T{SC}, I41P

#### HONEY PEACHES

A unique class of peaches from southern China with oval, long-pointed, white-fleshed fruit. Regarded by many as the finest flavored of all peaches, they have a very sweet honey-like flavor offset by a hint of bitter almond. The fruit has a tendency to drop prematurely. Relatively low chilling requirements.

Eagle Beak: Small, oblong fruit with a pronounced beak; skin greenish-white blushed with carmine; flesh greenish-white, very juicy, low in acid, exceedingly sweet with a slight bitter almond-like flavor; freestone; ripens the last of July in Zone 7. Tree an annual and heavy bearer. T49M{SC}, U7G{SC}

Melba: (Improved Pallas) Large fruit; skin pale yellow, blushed with red; flesh white, juicy, honey-sweet; stone small, free; ripens over a long period, early June to mid-July. Tree bears regularly; stands low freezing weather during blooming season. Originated in San Antonio, Texas. Renamed Melba since parentage is unknown and Improved Pallas was misleading. BROOKS 1972; C54, N33

Pallas: Small to medium-sized, oval fruit; skin thick and tough, pale white or greenish-white, occasionally blushed with bright red; flesh white, aromatic, very juicy, tender and melting, honey-sweet, rich in flavor, of excellent quality; freestone; ripens in early mid-season. Tree medium in vigor, upright-spreading; a regular, heavy bearer. Chilling requirement approximately 750 hours. Originated in Augusta, Georgia in 1878. HEDRICK 1917; U7G{SC}

#### CODES FOR SPECIAL TYPES

1. Low-Chill
2. Marble-Fleshed
3. Genetic Dwarf

## PEANUT {S}

### ARACHIS HYPOGAEA

Early Spanish: 105 days. Small, sweet kernels of fine quality and flavor. Small, solid, well-filled pods; 2 to 3 kernels per pod. Upright, compact, heavy yielding plants. Easy to grow and very early maturing. Can be grown reliably as far north as Canada. E97, G16

Ecuadorian Purple: Heavy producer of dark purple-skinned peanuts with a mild, sweet flavor. Bushy plant that grows to 2 feet tall; produces numerous yellow flowers. Requires a long, warm growing season of approximately five months. Occasionally available in Latin American markets. F73D

Florunner: 135 days. Leading commercial runner type, popular in the extreme Southeast. Selected for high percentage of sound mature seed, flavor, quality and yield. Prostrate growth habit with the sequential branching pattern typical of runner and Virginia types. Sixty percent of runner type peanuts are used for peanut butter, and runners account for 72% of the total U.S. production. Released by the Florida Agricultural Experiment Station in 1969. G27M, L89G

Garoy: 100 days. A cultivar developed in Canada, Garoy is 7 to 10 days earlier than older types and is also much more productive. Slightly smaller pods than regular varieties, but each pod is very well filled. Each pod contains 3 good-sized kernels of excellent quality. D11M, F70

Improved Virginia: 120 days. A productive, large-podded Virginia type. Large, rich-flavored kernels; 1 to 2 kernels per pod. Bush type plant; grows only 18 inches tall which makes cultivation and harvesting easier. Hardy; does well in the North. D76

Jumbo: (Mammoth Jumbo) 125 days. Extra-large, sweet kernels; 2 to 3 kernels per pod; shells easily. Heavy yielding and early maturing. With ordinary growing conditions will produce a crop as far north as Wisconsin. Easy to grow and harvest. G71, H54

Langley: 120 days. Runner type, released by the Texas Agricultural Station in 1986. Selected for its early maturity and high yield potential. In comparison with the commercial standard Florunner, Langley matures about 2 weeks earlier; yields are comparable; seedling vigor is much better, and shelling and processing qualities are equivalent. L89G

McConnell Giant: Heirloom developed by Dr. 'Pete' McConnell of Pendleton, South Carolina. Unusually large seeds, often 3 per pod. Excellent for roasting and peanut butter. Ready for harvesting in mid October. Vigorous growing vine, about 4 feet wide, relatively free of pests. L4

North Carolina 7: (NC-7, Carolina Jumbo) Very large-seeded Virginia type with excellent yield potential. Produces a high percentage of fancy size and jumbo nuts with superior flavor. Early maturing. Intermediate in growth habit. Less susceptible to early leafspot than other popular cultivars. Released by the North Carolina Agricultural Research Service. 164, J97M, L4

Spanish: 110 days. Small, sweet, reddish-brown kernel; 2 to 3 kernels per well-filled pod. Compact, upright growth habit. Rapid-growing and heavy bearing; will produce nuts in northern areas if grown in light, sandy soil with a southern exposure. Spanish type peanuts are used for peanut candies, peanut butter and peanut oil, account for 11% of total U.S. production, and are primarily grown in Oklahoma and Texas. A86{DF}, C20M, F73D, K71

Starr: (Starr Spanish) 110-115 days. Pods and seeds are larger than those of the small Spanish types. Pods are thick and therefore percentage of kernels is generally low. Shelling tests have shown that Starr generally yields fewer split kernels than other commercial cultivars. Spanish type developed at the West Cross Timbers Experiment Station, Stephenville, Texas. Introduced in 1961. L89G

Tennessee Red: (Tennessee Red Valencia) 120 days. Small, red-skinned kernels; 3 to 4 kernels per pod; flavor very sweet and mild. Upright plant, to 2 feet high; produces high yielding, easily harvested underground clusters. Will grow as far north as New York if planted by the end of May. C92, H85M, 191, J73, N84

Texas Red and White: Distinctive heirloom strain with bright red skins, streaked with bright white Very attractive and sweet tasting. Dwarfish plants that grow about 12 inches tall; early and productive. F73D

Valencia: (Valencia Early Spanish) 115 days. Small, high-quality kernels; very rich and sweet; 3 or more kernels per well-filled pod. Large, productive plants; adapted to a wide range of soils Valencia type peanuts are in demand for roasting in the shell, account for only 1% of the total U.S. production, and are grown primarily in New Mexico. C85M, D27, G27M, G44M{DF}, I66M{DF}, I66M{PD}, I67M, M63M{DF}, M63M{PD}

Virginia: (Virginia Bunch, Early Bunch) 120 days. Large, tan-skinned kernels of high quality; 1 to 2 kernels per pod; matures about a week earlier than Virginia Jumbo. Upright growth habit. Commercially, Virginia type peanuts account for most of the roasted, salted, and inshell or "ball park" peanuts, about 16% of the total U.S. production, and are grown mostly in Virginia and the Carolinas. A86{DF}, E97, H42, I66M{PD}, 089

Virginia Jumbo: (Mammoth Virginia) 120 days. A special, select strain of the Virginia type. Extra large, rich-flavored kernels; 1 or 2 kernels per pod; produces fewer imperfect pods than most other cultivars. Runner type; vines grow 18 inches tall with a spread of 3 1/2 feet. Dependable and productive; well adapted to the North. B6, B75, C20M, G57M, H49, H85M, 191, K71, M95M

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## PEAR {GR}

PYRUS COMMUNIS  
PYRUS USSURIENSIS

PYRUS X LECONTEI

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### EUROPEAN PEARS

**COOKING** While most dessert pears can be used for culinary purposes, they need to be picked before they are fully ripe and cooked very slowly in syrup. True culinary pears are hardy and prolific and the fruits possess long-keeping qualities. They are not acid but are hard and generally lacking in flavor and juice.

### *Green/Yellow-Skinned*

Belle Angevine: (Pound, Uvedale's St. Germain) Large to very large, handsomely-shaped fruit, often 3 pounds in weight; skin brilliant in color, very attractive; ripens very late. Dessert quality poor, only fair for cooking. Originated prior to 1867. HEDRICK 1921; F88G, L12, M22, Q30{SC}

Bellisime d'Hiver: Large, oval fruit; skin pale yellow with red flush and conspicuous dots; flesh white and soft; keeps well from November to April. One of the best cooking pears; considered superior to Catillac although it does not turn the same dark red when stewed. A French pear of unknown parentage, known since the 17th century. SIMMONS 1978; Y83{SC}

Catillac: Very large, roundish fruit; skin dull green to yellow, blushed with brownish-red; flesh hard, rough, white, turning deep-red when cooked; ripens very late; will keep until spring. Usually considered to be the best culinary pear. Tree spreading, vigorous; productive; very haidy. A very old French pear, first described in 1665. HEDRICK 1921, SIMMONS 1978; Q30{SC}, R83

Vicar of Winkfield: (Viker) Fruit very large; oblong-pyriform, with a long, tapering neck; skin pale green, shading to pale yellow; flesh pale yellow, firm, dry, more or less astringent, with a sprightly muskiness; quality inferior for dessert, but excellent for all culinary purposes; ripens very late; keeps well. Tree large, vigorous, very productive. Discovered in France in 1760. HEDRICK 1921, SIMMONS 1978; E84, L12, 081, Q30{SC}

### *Red/Purple-Skinned*

Belle Picarde: Large to very large fruit; skin orange-red, often speckled on the side exposed to the sun; flesh white, melting, very sugary; juice rather abundant, sweet and of a pleasant flavor; ripens very late, and must be carefully ripened off the tree. Good for dessert, but highly recommended for cooking, turning a light pink color. Originated in the village of Charmes, Aisne, France in the middle of the 19th century. HEDRICK 1921; L12, M11M{PR}

Black Worcester: (Black Pear of Worcester) Very distinctive cooking pear from England. Small to medium-sized, knobby, irregular fruit; deep dark-purple, nearly black, heavily russet skin; firm, grainy, very dense flesh, cooks to a superb flavor. The cooking pear that appears on the Worcester coat of arms. BISSELL; 081

### DESSERT

### *Green/Yellow-Skinned*

Abbe Fetel: (Abate) Fruit large to very large, more or less elongated; skin rather thin, pale yellowish-green, bright red on the side exposed to the sun; flesh whitish, melting, very juicy, sugary, aromatic, of excellent quality; ripens late. Originated in France prior to 1889. HEDRICK 1921; E4, F88G, F91T{SC}, L12, M11M{PR}

Atlantic Queen: Very large fruit, up to 1 1/2 pounds; skin yellow-green; flesh fine-grained, melting, very juicy, sweet, very aromatic; ripens in September. Tree highly prolific; resistant to fireblight; grows well under adverse conditions, including poor soils and close proximity to the seashore. G79M, G79M{DW}

Aurora: Large, pyriform fruit; skin bright yellow, slightly russet, very attractive; flesh melting, smooth, juicy, sweet, aromatic, of high dessert quality; ripens with or just after Bartlett; keeps well in cold storage until December. Very well suited for the home garden and fresh fruit market. Tree vigorous, spreading; productive. BROOKS 1972; F88G, F91T{SC}, J93{SC}, L12

Bartlett: (Williams\* Bon Chretien) Medium to large fruit; skin pale green, turning to golden-yellow; flesh white, fine-grained, juicy, sweet, slightly subacid with a strong musky flavor; ripens early; keeps for only 2 to 3 weeks in natural storage. Tree moderately vigorous, spreading; very productive. Leading cultivar in the United States. Originated in England about 1770. HEDRICK 1921, SIM-



MONS 1978; B83, B93M, C75M, D81{PO}, D81M{PO}, E4<sub>y</sub>, G16, G16{DW}, G23, G23{DW}, G92{DF}, I23M{PD}, I58P{PD}, J83, L97G{DF}, M39M, M89G{PD}, etc.

Beierschmitt: Medium to large, oval-pyriform fruit; skin thin and tender, greenish-yellow to clear pale yellow when ripened, with slight russet; flesh firm, tender, free of stone cells, very juicy, highly aromatic, non-browning when cut; quality excellent; matures in midseason, and ripens well on the tree. Tree somewhat resistant to fireblight. Originated in Fairbanks, Iowa. Introduced in 1927. BROOKS 1972; D37, E84, J93, J93{SC}

Belle Lucrative: (Fondante d'Automne) Medium-sized, round-conical fruit; skin dull greenish-yellow; flesh tinged with yellow, firm, fine-grained, crisp, buttery, juicy, sweet, quality very good; ripens in midseason. Should be picked when still green; will ripen in 7 to 14 days. Tree vigorous; hardy; productive. Originated in Belgium about 1827. HEDRICK 1921; F88G, F91T{SC}, G79M{DW}, L12, Q30{SC}

Bergamotte d'Esperen: Medium-sized, round to conical fruit; skin greenish-yellow with dark russet patches; flesh pale yellow, very smooth, of soft texture, pleasantly aromatic, quality excellent; ready for use during December, keeps well until March. Tree upright-spreading, bears well in the right climate, self-fertile. Not suitable for wet or cold areas. Originated in Belgium about 1830. SIMMONS 1978; Q30{SC}

Bergamotte d'Pentacote: (Easter Beurre) Medium-sized, pyriform fruit; skin thick and tough, yellow often with a dull brownish-red blush; flesh tinged with yellow, very aromatic, melting, juicy, sweet, with a rich pleasant flavor; quality very good; in season late December to February. Tree medium in size, vigorous, upright-spreading. Grows well only in comparatively warm climates and on light, warm, limy soils. Originated at Louvain, Belgium, about 1823. HEDRICK 1921; Q30{SC}

Beurre Clairegeau: Large, roundish-pyriform fruit; skin yellow, blushed with bright red; flesh white, quite granular, tender and melting, very juicy, sweet, aromatic, with a rich, vinous flavor; quality good; ripens late. Tree vigorous, unusually upright; hardy; reliably productive. Originated in Nantes, France, about 1830. HEDRICK 1921; E84, F88G, G79M{DW}, LI, M22, Q30{SC}

Beurre Giffard: Medium-sized fruit; skin dull greenish-yellow, blushed with pinkish-red; flesh tinged with yellow, granular at the center, melting, very juicy, vinous, highly aromatic; quality very good; ripens early. Tree spreading, vigorous; hardy; productive. Discovered in France in 1825. HEDRICK 1921; A91, F88G, G79M{DW}, LI, L12

Beurre Hardy: (Hardy) Fruit large, obtuse-pyriform, with a rather long neck; skin dull greenish-yellow, with heavy bronze russet; flesh granular, melting, buttery, very juicy, sweet, richly aromatic and somewhat vinous; quality very good to excellent; ripens in mid-season. Tree upright, very vigorous. Originated in France, about 1820. HEDRICK 1921; F91T{SC}, I61M{SC}, LI, M22, 081, Q30{SC}, R77, R83

Beurre Superfin: Medium-sized, round to conical fruit; skin yellow, netted and streaked with light russet; flesh pale yellow, granular, melting, buttery, very juicy, sweet yet with a rich, brisk, vinous flavor, aromatic; quality very good; ripens in October. Tree moderately vigorous and productive. Originated in Angers, France from seed planted in 1837. HEDRICK 1921; F91T{SC}, J93{SC}, LI, L12, Q30{SC}, R77

Bose: (Beurre Bose) Fruit large; very long, with a tapering neck; skin dark yellow, russet; flesh yellowish-white, tender, juicy, sweet, with a rich, aromatic flavor; quality very good to excellent; ripens late. Tree large, upright; vigorous; very susceptible to fireblight. Originated in Belgium from seed planted in 1807. HEDRICK 1921; A5, B74, B83, D81{PO}, D81M{PO}, E4<sub>y</sub>, E84, G23, G23{DW}, G79M{DW}, H65, I23M{£D}, K73M<sub>y</sub>, LI, M39M, etc.

Butirra Precoce Morettini: (Early Morettini) Medium to large fruit; skin greenish-yellow blushed with red, smooth; flesh white, juicy, flavor excellent; ripens 2 to 3 weeks before Bartlett; drops readily as it approaches maturity. Tree very vigorous; self-compatible; susceptible to fireblight. Originated in Firenze, Italy by Alessandro Morettini. B74, D28J, E4, F88G, J61M, L12, M11M{PR}, 081

Chapin: Small to medium-sized, round-oval fruit; skin greenish-yellow, with considerable russet; flesh juicy, melting, richly aromatic, very sweet, of high quality; ripens with Clapp's Favorite; resembles Seckel, but larger. Tree vase-shaped, moderately vigorous; productive. Originated in Geneva, New York by U.P. Hedrick. Introduced in 1945. BROOKS 1972; F88G, J93{SC}, L12, M11M{PR}, M22

Clapp's Favorite: Medium to large fruit; skin pale lemon-yellow, mottled with bright red; flesh tinged with yellow, granular at the center, very juicy, melting, sweet, rich; quality very good; ripens in August and September. Tree large, upright; very productive. Originated in Dorchester, Massachusetts by Thaddeus Clapp, prior to 1860. HEDRICK 1921; A5, D76, G16, G16{DW}, G79M{DW}, H49{DW}, H65, J16, J89M

Colette: Medium to large fruit; skin golden-yellow, blushed with pink; flesh firm, melting, juicy, aromatic, sweet, of fine flavor; ripens in August and September, and over a long period of time; resembles Bartlett. Tree spreading; hardy; blooms over a long period of time. Originated in Freeport, Illinois. Introduced in 1953. BROOKS 1972; D76, H65, H90M{SC}, J93, J93{SC}, M99G

Comice: (Doyenne du Comice) Fruit large; oval-pyriform, with unequal sides; skin greenish-yellow, blushed with red, russet; flesh tinged strongly with yellow, melting, tender, buttery, very juicy, sweet and vinous, aromatic; quality excellent; ripens late. Tree upright, vigorous; usually productive. Widely used in Holiday gift packs, where they are sometimes called Royal Riviera. Originated in Angers, France in 1849. HEDRICK 1921; B23P{PR}, B74, B83, B93M, E4, E84, F15{PR}, H69{DF}, J21M{PR}, J61M, K73M<sub>y</sub>, LI, L33{DW}, L47<sub>y</sub>, M39M, etc.

Concorde: Conference x Comice. Medium to large, long-pyriform fruit; skin yellowish-green, less russet than Conference; tender, juicy, white flesh, flavor excellent. Ripens in mid-September, 2 weeks after Conference. Moderately vigorous, spreading tree; precocious. Pollinate with Bartlett, Comice or Conference. Originated in England. BROOKS 1997; B83, C41M, E4<sub>y</sub>, I61M{SC}, M39M, 081, Q30{SC}, R77, R83

Conference: Medium to large fruit; calabash-shaped; skin greenish-yellow, with some golden-brown russet; flesh creamy white with a slight salmon-pink tinge, melting, very juicy, sweet, flavor pleasant; ripens in October and November. Tree moderately vigorous; very productive. Leading commercial cultivar in England. Originated there in 1894. HEDRICK 1921, SIMMONS 1978; C34, F88G, H90M{SC}, I49M, I61M{SC}, J61M, LI, 081, R77, R83

D'Ai\jou: (Beurre D'Anjou) Fruit large, elongated-oval; skin light green at harvest, cream to green after ripening; flesh yellowish-white, firm, but slightly granular, tender, very juicy, with a rich, aromatic flavor; ripens late. Tree large, vigorous; slow to come into bearing. Standard market cultivar for fall and winter. An old French pear of unknown origin. HEDRICK 1921; A5, B83, D81{PO}, D81M{PO}, E4<sub>y</sub>, G79M{DW}, H65, K73M, L47<sub>y</sub>, M39M, M99G

Dana Hovey: Small to medium-sized fruit; skin golden-yellow, covered with a thin russet; flesh tinged with yellow, melting, juicy, sweet, highly perfumed, of excellent quality; ripens late. Tree large, upright-spreading; vigorous; productive. Originated in Rcxbury, Massachusetts by Francis Dana. Introduced about 1854. HEDRICK 1921; LI, L12, M11M{PR}

David: (P. ussuriensis x) Medium-sized fruit; 2 3/4 inches long, 2 1/4 inches in diameter under non-irrigated field conditions; skin thin; flesh quality good, not breaking down quickly. Tree extremely

hardy. Originated in Saskatoon, Saskatchewan, Canada by CF. Patterson. Introduced in 1960 for home gardens. I49G, I49G{SC}, L27M, M35M

Des Urbanistes: (Urbaniste) Fruit medium-sized, roundish-pyriform; skin pale yellow, often with a faint russet-red blush; flesh tinged with yellow, granular especially around the core, tender and melting, buttery, juicy, sweet, pleasantly aromatic; quality very good; ripens late. Tree vigorous; productive with age. Originated in the gardens of the religious order of Urbanistes, Mechlin, Belgium about 1783. HEDRICK 1921; L12

Docteur Jules Guyot: (Jules Guyot) Medium to medium small fruit, oval-pyriform in shape; skin somewhat rough, pale yellow with a faint blush and russet dots or patches; flesh white, fine-grained, flavor lair, slightly musky; ripens just before Bartlett, which it resembles. Tree upright, becoming slightly spreading; very productive but tends to be biennial. Originated in France in 1870. SIMMONS 1978; F91T{SC}, LI, Q30{SC}

Doyenne d'Ete: (Doyenne de Juillet) Small, conical fruit, 1 1/2 inches long; skin pale yellow, blushed with brownish-red, thin and smooth; flesh white, fine-grained, sweet, very juicy; flavor very good for an early pear; ripens in late July and early August. Tree small, weak growing; a heavy and regular bearer. Good pollinators are Conference, Beurre Hardy and Bartlett. First raised about 1700 by Capuchin monks, at Mons, Belgium. SIMMONS 1978; A91, B74, J61M, Q30{SC}, R77

Doyenne Gris: Medium to large, globular fruit; skin yellow-ocher, nearly covered with cinnamon-colored russet, smooth, unblemished; flesh white, tender, melting, very buttery, rich and delicious; of excellent quality; ripens in October. Originated in the garden of the Chartreux Monastery at Paris around 1750. HEDRICK 1921; L12

Duchesse d'Angouleme: Large to very large fruit; skin dull yellow, russet; flesh white, firm becoming somewhat melting and quite tender when fully mature, juicy, sweet, richly flavored; quality good to very good; ripens late. Tree upright, vigorous; hardy; productive. Originated near Angers, France, early in the 19th century. HEDRICK 1921; A74, D76, D76{DW}, E97, F91T{SC}, G79M{DW}, LI, Q30{SC}

Duchesse d'Angouleme Bronzee: Sport of Duchesse d'Angouleme with bronze or reddish-brown skin. Large to very large fruit; fine, melting, juicy, sugary; dessert quality slightly superior; ripens October to December. Originated in the garden of M. Weber, Dijon, France. Introduced in 1873. HEDRICK 1921; LI, L12, M11M{PR}

Dumont: Medium to large, obtuse pyriform fruit; skin attractive yellow, slightly blushed; flesh firm, juicy, flavor rich and sweet; quality very good; ripens late, stores until the end of December. Tree productive; tends toward alternate bearing when older; moderately susceptible to fire blight. An old European cultivar that has not been widely tested in America. L12, M11M{PR}

Flemish Beauty: Large, roundish fruit; skin clear yellow, blushed with red; flesh yellowish-white, firm, becoming melting and tender, juicy, sweet, aromatic, with a slightly musky flavor; quality very good; ripens in midseason. Tree spreading, vigorous; hardy; productive. Originated near Alost, East Flanders, Belgium, about the beginning of the 19th century. HEDRICK 1921; A91, A91{SC}, C58, J89M, LI, L12, L27M, M39M

Forelle: (Trout Pear) Small to medium, shortened pyriform fruit; skin greenish-yellow, with a brilliant red blush and many conspicuous dots; flesh white, fine-grained, with a delicate sweet flavor; ripens late, November to January. Tree vigorous, spreading; moderately productive. Commonly exported from Europe, and popular in specialty markets. Known since 1670. SIMMONS 1978; B53M, E4, F88G, F91T{SC}, LI, Q30{SC}, R77

Glou Morceau: Medium to large, oval-pyriform fruit; skin greenish-yellow, smooth; flesh white, very smooth in texture, with

an excellent very sweet flavor. In season December to January, but ripens in succession over a long period, a number of pickings being recommended. Tree spreading, of moderate to vigorous growth, bears good crops regularly. Originated in the 18th century. SIMMONS 1978; F88G, 081, Q30{SC}, R83

Golden Spice: Fruit small; skin clear yellow, blushed with red; flesh light yellow, juicy, aromatic, flavor pleasant, tart, spicy; ripens in midseason; resembles Seckel in size, but not as sweet. Excellent for canning. Tree very hardy; productive; a good parent for further breeding. Originated in Excelsior, Minnesota. BROOKS 1972; A65, A74, B15M, D69, H85, I49G, I49G{SC}, J89M, K64, L27M

Gorham: Fruit large; skin bright yellow, slightly russet; flesh juicy, melting, sweet and vinous, of excellent quality; ripens 10 days later than Bartlett, which it resembles; keeps 6 to 8 weeks longer than Bartlett. Tree upright, dense; vigorous and productive. Originated in Geneva, New York by Richard Wellington. Introduced in 1923. BROOKS 1972; B53, F88G, F91T{SC}, L12, Q30{SC}

Harrow Delight: Medium-sized, pyriform fruit; skin yellow blushed with red, attractive; flesh very smooth, free of stone cells, juicy, flavor and quality very good; ripens 2 weeks before Bartlett. Tree hardy; very resistant to fireblight. Released by the Harrow Research Station, Harrow, Ontario, Canada. A39, A91, C27T{SC}, C30M, C45M, E84, F53, F88G, J61M, J93{SC}, L33, M11M{PR}, M99G, 081

Harvest Queen: Ovate-pyriform fruit, slightly smaller than Bartlett which it resembles; flesh quality high, equal to that of Bartlett but less gritty. Ripens about 1 week before Bartlett. Upright, moderately vigorous tree, strongly resistant to fire blight. Pollen compatible with Harrow Delight. Originated in Harrow, Ontario, Canada. Introduced in 1982. A91, C27T{SC}, C30M, C45M, E84, F16, F43M, F53, I49G, I61M{SC}, J93{SC}, M11M{PR}, 081

Highland: Large, pyriform fruit; skin smooth, greenish-yellow covered with a thin russet; flesh melting, juicy, sweet, richly flavored; ripens late, keeps well in refrigerated storage until January. Develops better quality if stored about a month before ripening. Tree moderately vigorous; productive; as susceptible to fireblight as Bartlett. Bartlett x Cornice. B74, F53, F88G, H90M{SC}, J61M, J93, L12, Q30{SC}

Jargonelle: (English Jargonelle) Medium-sized, very long conical fruit; skin greenish-yellow, faintly blushed with brownish-red; flesh pale yellow, sweet, very tender and juicy, flavor somewhat musky; ripens in August. Spreading tree, needs careful summer pruning. Beurre Superfin recommended as a pollinizer. Known in France before 1600. SIMMONS 1978; G79M{DW}, LI, 081, Q30{SC}, R83

John: (P. ussuriensis x) Medium to large fruit; 3 inches long, 2 1/2 inches in diameter under non-irrigated field conditions; skin thin, yellowing well before flesh becomes soft; quality good; ripens in late September. Tree hardy. Originated in Saskatoon, Saskatchewan, Canada by CF. Patterson. Introduced in 1960 for home gardens. BROOKS 1972; A65, A91, A91{SC}, B47, K64, L27M, M35M

Josephine de Malines: Small to medium, short conical fruit; skin pale green shading to pale yellow; flesh pinkish at the center when fully mature, very smooth, sweet, perfumed; should be picked as late as possible, preferably the second half of November. At its best for eating during February. Tree moderately vigorous, somewhat weeping; bears heavy crops regularly. One of the best-keeping late pears for a small garden. SIMMONS 1978; M22, 081, Q30{SC}

June Sugar: Fruit of excellent quality; ripens very early, the end of June in Georgia. Good to eat out of hand or for canning. Tree resistant to fire blight; blooms relatively late; somewhat slow to come into bearing. An heirloom cultivar from Georgia. E84, G65M

Luscious: Small to medium-sized fruit; skin bright yellow blushed with red; flesh firm, very juicy, sweet and flavorful, of very good

quality; ripens in early midseason. Not recommended for canning. Tree vigorous; very hardy; productive; resistant, but not immune to fireblight; ornamental. Released by South Dakota State University. A91, A91{SC}, D65{DW}, D69, F53, F88G, G66, H90{DW}, I49G, L27M, M11M{PR}, M35M, N24M

Madeleine: (Citron des Carmes) Small, roundish-pyriform fruit; skin thin, very tender, dull green, occasionally with a faint brownish blush; flesh slightly tinged yellow, granular at the center, tender and melting, very juicy, sweet, vinous; quality good to very good; ripens in early August. Tree large, vigorous, upright; tender to cold; productive but short-lived. Of ancient and somewhat uncertain origin. HEDRICK 1915; L12

Magness: Medium-sized, oval fruit; skin greenish-yellow, lightly covered with russet; flesh soft, very juicy, almost free of grit cells, sweet, highly perfumed; of very good quality; ripens a week later than Bartlett. Tree very vigorous and spreading; very resistant to fireblight. BROOKS 1972; A5, A39, A82, C27T{SC}, D2{PR}, E84, E99M, F88G, G79M{DW}, J93, J93{SC}, LI, L12, N33

Marguerite Marillat: Fruit large, pyriform-turbinate; skin golden-yellow, blushed with brilliant red, slightly russet; flesh yellowish-white, semi-fine, extremely juicy, aromatic, slightly musky, very rich; ripens in September. Tree very upright, highly productive. Originated near Lyons, France in 1874. HEDRICK 1921, SIMMONS 1978; M22, 081

Mericourt: Fruit medium-sized; short-pyriform; skin greenish-yellow, occasionally blushed with dark red; flesh creamy white, buttery, nearly free of stone cells, very juicy; flavor sweet, sprightly subacid; quality excellent; ripens in early midseason. Tree vigorous; hardy; tolerant to fireblight and leaf spot. BROOKS 1972; J93{SC}, L12

Merton Pride: Large, conical to pyriform fruit; skin golden yellow, almost covered with brown russet; flesh creamy, fine-grained, flavor excellent; ripens during the second half of September. Tree moderately vigorous; not very productive; requires two other cultivars for good fruit set. SIMMONS 1978; F88G, 081, Q30{SC}

Moonglow: Medium to large fruit; skin yellow, blushed with red; flesh white, rather soft, moderately juicy, nearly free of grit cells, flavor mild, subacid; quality good; ripens about 7 days earlier than Bartlett. Tree very upright; vigorous; fruits heavily at an early age; very resistant to fireblight. BROOKS 1972; A82, A82{DW}, C27T{SC}, C75M, E99M, F93, G8, G79M{DW}, H65, L33, L90, M11M{PR}, M22, N33

Olivier de Serres: Medium-sized, round fruit; skin deep olive with patches of fawn, rough; flesh white, fairly smooth, sweet and juicy, flavor good, musky; in season February to April. Tree small, rather weak growing, an irregular bearer. Does best in the long summers of southern France and Italy. First fruited in 1861. SIMMONS 1978; Q30{SC}

Orcas: Fruit large; skin yellow, blushed with carmine, very attractive; flavorful; good for canning, drying or eating fresh; ripens in midseason. Tree vigorous, spreading, open; a consistently heavy producer; resistant to scab. A regional favorite; discovered by Joe Long on Ocas Island, Washington. C34, F88G, F91T{SC}, H90M{SC}, I49P, J61M

Packham's Triumph:<sup>2</sup> Medium to large, conical-pyriform fruit; skin thin, lemon-yellow when ripe, russet, sometimes with an orange blush; flesh fine-grained, very juicy, melting, flavor particularly rich and pleasing; ripens about 30 days after Bartlett. Tree upright, moderately vigorous; reliably productive. Chilling requirement relatively low, 250 to 500 hours. Originated in Molong, New South Wales, Australia. Introduced at the turn of the century. BROOKS 1972, RUCK; A91, A91{SC}, B83, D81M{PO}, E4, LI, M22, 081, R83

Parker: Fruit medium to large; pyriform, rounded; skin yellow, blushed with red; flesh whitish, juicy, sweet, of pleasant flavor; quality good; ripens in late September. Tree upright, vigorous; fairly hardy; susceptible to fireblight. Originated in Excelsior, Minnesota. Introduced in 1934. BROOKS 1972; 474{DW}, D65{DW}, F91T{SC}, G4, L70

Passe Crassane: Large, round-oval fruit; skin dull pale green, somewhat russet, yellow on the exposed side; flesh white, smooth, very juicy, aromatic, sweet, agreeably sprightly; quality very good; ripens in winter. Very popular in specialty stores. Tree compact and bushy; moderately vigorous and productive. Originated in Rouen, France, in 1855. HEDRICK 1921, SIMMONS 1978; F91T{SC}, LI, L12, M11M{PR}, Q30{SC}

Patten: Medium to large fruit; skin yellow; flesh tender and juicy, of excellent quality fresh, fair when canned. Should be picked 7 to 10 before its ripening season on the tree, and allowed to ripen normally. Tree among the hardiest of large-fruited cultivars; moderately resistant to blight. Good for home orchards and local markets. Introduced in 1922. BROOKS 1972; 474{DW}, C58, D65{DW}, F91T{SC}, I49G, I49G{SC}, L27M, L70

Precoc de Trevoux: Fruit medium-sized, pyriform-truncate; skin fine and tender, vivid yellow, very finely dotted with green and washed and streaked with carmine on the exposed side; flesh white, fine, melting, juicy, aromatic, sweet and rich; quality good to very good; ripens in August. Originated in France about 1862. HEDRICK 1921; Q30{SC}

Rescue: Large to very large, elongated-pyriform fruit; skin yellow, striped and blushed with bright orange and red, very attractive; flesh juicy, smooth, buttery, mild and sweet, of excellent quality; ripens slightly later than Aurora. Good for canning due to its small core. Tree upright, vigorous. Discovered in Canada by Knox Nomura of Sumner, Washington. F88G, H90M{SC}, I49M, I49P, J61M, LI, L12, N20

Rocha: Round, medium-sized fruit with a short neck; golden-yellow skin; light russet, but with pronounced russetting at the stem end; turns from firm and crisp to mouth-wateringly juicy. In season from the end of September to January. Originated in Portugal. RICHARDSON, J.; G65M

Rotkottig Frau Ostergotland:<sup>1</sup> Small to medium, pyriform fruit with red-streaked flesh of fair quality. Grown mostly as a novelty but may have potential in breeding a red-fleshed pear of good quality. Introduced into the United States from Sweden in 1964. C30M

Rousset de Rheims: Small to medium-sized, oval-turbinate fruit; skin greenish-yellow, blushed with reddish-brown; flesh white, fine or semi-fine, almost melting, not very juicy, highly perfumed, rich in sugar; flavor spicy or musky, causing it to be called Spice or Musk pear in colonial America; ripens in September. Very good for candying. Of very ancient, unknown origin, a favorite of Louis XIV of France. HEDRICK 1921; L12

Sanguinole:<sup>1</sup> Small to below medium, variably shaped fruit; skin rather thick and tough, green dotted with gray and red, russet, sometimes blushed with carmine on the exposed side; flesh transparent, red, juicy, sweet, acidulous, more or less musky, agreeable; ripens in August and September, decomposes rapidly. Known in Germany in 1500. HEDRICK 1921; U7D{SC}

Santa Claus: (Hn du Dixneuvieme Siecle) Very large, round-conical fruit; skin dull brown-red, practically covered with russet; flesh creamy white, melting, flavor excellent; ripens during Christmas and New Year. Tree upright, vigorous; moderately productive. Originated in France. HEDRICK 1921, SIMMONS 1978; L12, 081, Q30{SC}

Seckel: Small, round-oval fruit; skin yellowish-brown, marked with russet-red; flesh white, melting, buttery, very juicy, sweet, with a very rich, aromatic, spicy flavor; quality very good to excel-

lent; ripens in October. Tree upright; hardy; productive. Originated near Philadelphia, Pennsylvania by Dutch Jacob, early in the 19th century. HEDRICK 1921; A5, B74, B83, B93M, D69, *E4*, E84, G79M{DW}, H65, J16, LI, M11M{PR}, M39M, M99G

Sheldon: Medium to large fruit; uniform and symmetrical; skin dull greenish-yellow, with a brownish-red blush; flesh whitish, somewhat granular, tender and melting, very juicy, sweet and vinous; quality very good to excellent, ripens in October. Tree large, vigorous; hardy; moderately productive. Originated in Huron, New York, about 1815. HEDRICK 1921; L12

Sierra: Large, long-pyriform fruit; skin yellowish green when ripe, thin, very tender; flesh very fine and smooth, juicy, very sweet, quality excellent; ripens with Anjou, keeps until February at 31° F. Tree large, vigorous, spreading; hardier than Bartlett. Recommended for home gardens or commercial plantings. Originated in Summerland, British Columbia. BROOKS 1972; F88G, J93{SC}, I61M{SC}

Sirrine: Medium-sized, short-pyriform fruit; bright yellow skin, occasionally blushed with bronze; smooth, juicy, melting flesh, very rich and sweet. Ripens with Bartlett, about the first week in September. Large, vigorous and productive tree, slightly more blight tolerant than Bartlett. Originated in Riverhead, Long Island, New York. BROOKS 1997; F88G, F91T{SC}, H90M{SC}, L12, M11M{PR}

Sucree de Montlagon: Fruit medium-sized, oval-conic, uneven; skin lemon-yellow; flesh palest yellow, transparent, extremely juicy, buttery, lightly acidulous, aromatic, of excellent flavor; ripens in October. Fruit grows in clusters if not thinned. Discovered at Montlagon, France, about 1812, by M. Rochet. HEDRICK 1921; L12

Summer Blood Birne:<sup>1</sup> Unique red-fleshed pear with good quality fruit. Medium-sized fruit; greenish-yellow skin, blushed with red; red flesh and thick, red juice. Ripens in mid-July to early August. Dessert quality very good, also good for drying. Vigorous, productive tree; resistant to scab. A very old European cultivar. D28J, I49M, I66T

Summercrisp: Medium-sized, pyriform fruit; skin green with prominent red lenticels and a red blush; flesh crisp and juicy with a sweet, mild flavor. Should be refrigerated immediately after harvest while the flesh is still firm. Should not be allowed to ripen on or off the tree as grit cells and browning of the flesh around the seeds then reduce quality. Not suitable for canning. Released by the University of Minnesota in 1986. A74{DW}, B15M, C58, G4, G66, I49G, I49G{SC}, J93, L27M, L70, N24M

Triomphe de Vienne: Medium to large, oval-pyriform fruit; skin greenish-yellow, often blushed with red; flesh white, melting, juicy; flavor rich, sweet, spicy, very good; ripens in midseason. Tree vigorous; hardy; reliably productive. Originated in Vienne, France, in 1864. HEDRICK 1921, SIMMONS 1978; F88G

T<sup>^</sup>son: (Summer Seckel) Medium-sized fruit; round-pyriform, with unequal sides; skin deep yellow, usually blushed; flesh tinged with yellow, tender and melting, very juicy, sweet, aromatic, quality very good; ripens early. Tree very large; vigorous; hardy; productive. Originated in Jenkintown, Pennsylvania about 1794. HEDRICK 1921; A91, A91{SC}, C30M, G65M, L27M

Ure: Small to medium-sized, oval-conical fruit; skin greenish-yellow; flesh sweet, very juicy, aromatic; of good quality; ripens in mid-September. Excellent for canning. Tree relatively small, finely branched; very hardy; ornamental. Released by the Morden Research Station, Morden, Manitoba, Canada. A65, A74, A91, A91{SC}, B47, C58, F67, G54, H42, H85, I49G, K64, L70, L79

Vermont Beauty: Medium-sized fruit; skin pale lemon-yellow, blushed with brilliant scarlet, fading at the sides into pinkish-red dots; flesh tinged with yellow, tender and melting, very juicy, with a rich, vinous flavor; quality very good; ripens a week later than

Seckel. Tree vigorous and productive. Originated in Grande Isle, Vermont, in the late 19th century. HEDRICK 1921; F88G, F91T{SC}, J93{SC}, L12, M11M{PR}

Warren: Medium to large fruit; size and shape variable; skin dull green, with an occasional red blush, slightly russet; flesh melting, juicy, sweet, flavor and quality very good; stores very well. Tree very resistant to fire blight, even under conditions of extreme heat and humidity; widely adapted, hardy in Michigan. Discovered by T.O. Warren, Hattiesburg, Mississippi. A39, C27T{SC}, C75M, D3M{PR}, F43M, F61M, G8, H4, I49P, I53M, J61M, K67, L90, N20, N33, etc.

White Doyenne: Medium-sized fruit; skin pale yellow, with a bright-red blush on the exposed side; flesh yellowish-white, granular, melting when fully ripe, juicy, sweet, with a rich, aromatic flavor; quality very good; matures in early October. Tree large, upright; vigorous; hardy; very productive. Of ancient and unknown origin. HEDRICK 1921; LI

Winter Nelis: (Bon de Malines) Fruit small to medium-sized, round-conical; skin dull greenish-yellow, almost covered with thin dark-brown russet; flesh yellowish-white, smooth, very juicy, sweet, richly flavored, aromatic; quality very good; ripens very late; stores well. Tree spreading; hardy; productive. Originated by Jean Charles Nelis, Mechlin, Belgium, early in the 19th century. HEDRICK 1921; B93M, C54, D81M{PO}, E4, E84, H45M{PL}, L12, L47, M22, N20, 081

#### *Red-Skinned*

Canal Red: Red Bartlett x Forelle. Very attractive, medium to large fruit; skin bright reddish-orange, somewhat "freckled" like Forelle; flesh smooth, melting, mildly sweet, low in acid; quality excellent. Ripens about 5 days before Bartlett, does not keep well. Very upright, moderately vigorous tree; susceptible to fire blight. Originated in Medford, Oregon by F.C. Reimer. A5, E4

Cascade: Large, obovate-pyriform fruit; skin 60 to 90% blushed with bright red, smooth, thin; flesh white, smooth-textured, very juicy, melting, sweet; quality excellent; harvested at the end of the Bartlett season, stores well. Tree vigorous, upright, a heavy and regular bearer. Red Bartlett x Comice. Developed at the Southern Oregon Experiment Station, Medford, Oregon. Introduced in 1987. E4, M39M

Red Bartlett: (Max-Red Bartlett) Bud mutation of Bartlett. Skin dark cranberry red, changing to an attractive bright red after picking; flesh finer grained and higher in sugar than Bartlett; ripens with Bartlett. Shoots and leaves reddish. Produces some limbs that revert back to regular Bartlett; these must be pruned to maintain the red strain. BROOKS 1972; A5, A63, B53, B93M{DW}, C89{PR}, D37, G49, H65, I68, 199M, LI

Red Clapp's Favorite: (Crimson Red, Kalle, Super Red) Medium to large fruit; round-bodied, with a short, slender neck; skin bright red; flesh white, medium-firm, fine-grained, flavor very good; ripens with Clapp's Favorite. Tree vigorous; precocious, very productive; susceptible to fireblight. Cross-pollinate with D'Anjou, Bartlett and Bose. B53M, C41M, E4, I61M{SC}, J93ISC}, K73M, LI, M39M

Red Comice: (Scarlet Comice) Bud mutation of Comice discovered in Medford, Oregon. Skin an attractive red; flavor and texture similar to Comice; ripens one week after regular Comice. Tree similar to Comice, but not as vigorous; foliage tinged with red in the spring and autumn; ornamental. E4

Red D'Anjou: Bud mutation of D'Anjou. Skin deep red, turning brighter red after ripening; texture and flavor comparable to D'Anjou. Ripens in midseason; keeps well in storage. Tree similar to D'Anjou, but not as vigorous; bark and veins reddish. Produces some limbs that revert back to regular Bartlett; these must be pruned to maintain the red strain. A91, A91{SC}, B53, B53M, B83, C41M, E4, E97, F15{PR}, H65, H89M, J21M{PR}, M39M

Reimer Red: Medium-sized, short pyriform fruit, resembles Red Bartlett more than Comice; skin yellowish-green prominently blushed with red, more so on the side exposed to the sun; flesh aromatic, buttery, melting. Tree a shy bearer. Red Bartlett x Comice. Originated in Oregon. F91T{SC}, I61M{SC}, LI

Rogue Red: Fruit similar in shape to Comice; skin 60 to 80% covered with a red blush; flesh quality excellent; ripens in winter. Tree unusually upright, vigorous; moderately but reliably productive; moderately susceptible to fireblight. BROOKS 1972; F91T{SC}, J93{SC}, M22

Sensation: (Red Sensation, Sensation Red Bartlett) Large, ovate-pyriform fruit; skin yellow, 80 to 95% covered with a dark red blush; flesh creamy white, melting, tender, moderately juicy, sweet, quality good; ripens in early midseason. Tree medium-sized, upright; somewhat less vigorous than Bartlett. Originated in Australia. BROOKS 1972; A63, A88M, A91, B83, C41M, C54, D76, E4, F53, H49{DW}, L47, M11M{PR}, M39M, N20

Ubileen: Large, Bartlett-size, pyriform fruit; skin prominently blushed with attractive red; flesh sweet, buttery, flavor very good; ripens early. Best picked firm in early to mid Ally, as it ripens in 1 week or less. Appears to be very disease resistant. Originated in Bulgaria. A91, A91{SC}, B74, C30M, D28J, I49M, I49P, 174, J61M

#### SOUTHERN-CROSS PEARS

The fruit is crisp-fleshed like that of the Asian pear and is ready to eat when picked, requiring no further ripening and will remain edible for several days to several months. Some cultivars will improve in quality when stored in a cool, dark place. They can be stewed for pies, canning or eating as-is, and are also used for preserves, marmalade and relish. Southern style canned pears and pear preserves have a unique chewy, crunchy texture. Sometimes simply called hybrid pears, they are primarily grown in the southern United States. (*P. x lecontei*)

Ayres: Small to medium-sized fruit; skin golden-russet with an attractive rose tint; flesh juicy, sweet, nearly free of grit cells; good for eating fresh, average for canning; ripens in mid-August. Tree relatively resistant to fireblight. Requires 700 hours of chilling. Garber x D'Anjou. Originated in Knoxville, Tennessee. Introduced in 1954. BROOKS 1972, MCEACHERN; A82, C30M, C75M, E45, E99M, F61M, H4, J93{SC}, L90, M69M, M83, N33

Baldwin:<sup>2</sup> Medium to large, oblong fruit; skin light green lightly overlaid with russet; flesh semi-firm, quality good fresh, excellent for canning; ripens in September and October. Tree blooms early; fairly resistant to fireblight; susceptible to early leafspot, resistant to late leafspot. Low chilling requirement. A85M, F93, G17, I53M, I83M, J59, K76, M69M

Douglas: Fruit large, obovate-pyriform; skin pale yellow, heavily russet; flesh tinged with yellow, firm but tender, granular, very juicy, sweet yet with an invigorating flavor; quality good; matures in October. Tree upright, moderately vigorous; very productive. Originated in Lawrence, Kansas about 1897. HEDRICK 1921; E97, H8

Fan Stil:<sup>2</sup> Medium-sized fruit; skin yellow, blushed with red; flesh white, crisp, juicy; ripens in midseason. Tree upright, vigorous; resists fireblight and damage from extreme temperatures. Low chilling requirement. Originated in Texas. A63, A88M, C54, I83M

Flordahome:<sup>2</sup> Large fruit; skin green, thin, tender; flesh white, juicy, melting, sweet, flavor mild; ripens mid to late July, stores well. Good fresh; excellent for canning, holding its snow white color for months. Very productive. Low chilling requirement, 150 hours or less. Released by the University of Florida. A63, C54, E45, E99M, G17, I53M, I68, I83M, J59, K76, N20, Q93

Garber: Large, roundish-oblong fruit; skin pale yellow, often blushed with brownish-red; flesh white, granular, crisp but tender, juicy, neither sweet nor sour, but with a peculiar, pleasant flavor;

dessert quality fair, excellent for canning or preserves; ripens in September and October. Tree vigorous, upright-spreading; productive with age; moderately resistant to fireblight. Originated in Columbia, Pennsylvania, sometime prior to 1880. HEDRICK 1921, MCEACHERN; M83

Hood:<sup>2</sup> Large, golden yellow fruit; flesh creamy white, crisp, juicy, sweet, very good for fresh eating; ripens late July to mid August. Tree vigorous; resistant to blight; an excellent pollinator for Flordahome. Low chilling requirement, 150 hours or less. A63, A88M, C54, E45, G17, I53M, I83M, J59, K76, N20, Q93

Kieffer: Medium to large fruit; skin yellow, blushed with dull red, russet; flesh yellowish-white, very granular and coarse, crisp, juicy, not sweet, often astringent; quality poor; ripens late. Excellent for cooking and canning. Tree upright, vigorous; resistant to fireblight; very widely adapted. Originated near Philadelphia, Pennsylvania, in 1863. HEDRICK 1921; A82, A82{DW}, A85M, B73M, B73M{DW}, C75M, E45, F93, I9M, I53M, K76, L47, M83{DW}, N33

Le Conte:<sup>2</sup> Large, roundish-oval fruit; skin pale yellow, occasionally marked with russet; flesh white, firm but tender, juicy, sweet, strong-flavored; dessert quality good, excellent for preserves; ripens in September and October. Tree upright, vigorous; very productive; a regular bearer; somewhat susceptible to fireblight. Low chilling requirement, 100 to 250 hours. Originated about 1850. HEDRICK 1921, RUCK; A19, E45, K76, L90, M83

Maxine: (Starking Delicious; Century Yellow) Medium to large fruit; skin greenish-yellow, attractive; flesh white, medium-firm, moderately granular, subacid, juicy, strong-flavored; quality above average for a hybrid, good fresh, excellent canned; ripens late. Tree vigorous and productive, resistant to fireblight. A39, A91, A91{SC}, C27T{SC}, C75M, F88G, G8, G65M{DW}, J93, J93{SC}, L12, L33, N33

Monterrey:<sup>2</sup> Fruit quite large, round to pyriform; skin yellow; flesh soft, smooth, nearly free of grit cells, quality very good for fresh market and canning; ripens in late August; stores well. Tree vigorous; very resistant to fireblight. Low chilling requirement, recommended for mild winter areas. Originated in Monterrey, Nuevo Leon, Mexico. Introduced in 1952 by Aldridge Nursery. BROOKS 1972; A19, A88M, C54, H4, I83M, N33

Orient: (The Orient) Large, nearly round fruit; skin yellow, russet; flesh firm, juicy, slightly sweet, lacking in flavor; good for canning; ripens in mid-August. Tree upright-spreading, vigorous; reliably productive; very resistant to fireblight. Relatively low chilling requirement. Recommended for Tennessee and southward. BROOKS 1972; A82, C75M, D77M, E45, E99M, F93, G65M, H4, I9M, I53M, L90, M69M, M83, N33

Pineapple:<sup>2</sup> Fruit large to very large; pyriform; skin yellow, heavily russet; flesh crisp, flavor somewhat reminiscent of pineapple; good fresh, excellent for canning; ripens in August. Tree vigorous; productive; blooms early; moderately resistant to fireblight, susceptible to early and late leafspot. Low chilling requirement, 100 to 250 hours. RUCK; A85M, C54, C75M, E45, G8, G17, H63M, K76, L90, M83

#### PERRY PEARS

Comparable to cider apples, perry pears are recognized by the bitterness or astringency which comes from tannin in their juice. The juice of perry pears will ferment to produce alcohol about twenty-four hours after it is expressed. Much more difficult to make than cider, but produces a more delicately flavored drink. Perry is made into a vinegar comparable to cider vinegar. GRIGSON, S., LUCKWILL, SIMMONS 1978.

Barland: Round to turbinate fruit; skin green or yellow, slightly russet. Harvested in late September to early October; ready for milling up to 3 days after harvesting. Makes a high acid, medium to high tannin perry, astringent, fruity and of average to good quality.

Tree large, spreading. An old cultivar, well known in the 17th century. LUCKWILL; U7D{SC}

Barnet: Turbinate to elliptical fruit; skin green or yellowish-green, blushed with orange-red, russet. Harvested in October, easily shaken; ready for milling 1 to 3 weeks after harvesting. Makes a low acid, low tannin perry, pleasant and light, and of average quality. Tree medium to large, shows some tendency to biennial bearing. LUCKWILL; U7D{SC}

Blakeney Red: Fruit pyriform or turbinate; skin yellow with a heavy red blush, sometimes streaked, some russeting. Harvested in late September to early October; ready for milling up to 7 days after harvest. Makes a medium acid, medium tannin perry of pleasant average quality when milled at the correct stage <f maturity. Tree erect, spreading with age; bears regularly and heavily. LUCKWILL, SIMMONS 1978; 081

Brandy: Fruit turbinate; skin green to greenish-yellow, blushed with bright red. Harvested in October; ready for milling up to 4 weeks after harvest. Makes a medium acid, low tannin perry of bland aromatic character, rather dark in color and of average quality. Tree small to medium, spreading; bears heavily but biennially. LUCKWILL, SIMMONS 1978; LI, 081

Butt: (Norton Butt) Turbinate to pyriform fruit; skin greenish-yellow to yellow, slightly russet. Harvested the first half of November; ready for milling 4 to 10 weeks after harvesting. Makes a medium to high acid, medium to high tannin perry, astringent and often fruity, of average to good quality. Tree medium to large, spreading; produces heavily, but often biennially. Widely planted in England. LUCKWILL, SIMMONS 1978; U7D{SC}

Gelbmostler: Medium to fairly large, globular fruit; skin greenish-yellow changing to light yellow, often slightly blushed and speckled with russet; flesh yellowish-white, coarse, juicy, very astringent; ripens in September, quickly becomes overripe. Grown in Austria and northern Switzerland for perry or pear wine. HEDRICK 1921; U7D{SC}

Gin: Broad turbinate to oblate fruit; skin green, usually blushed with orange. Harvested the end of October; ready for milling 3 to 5 weeks after harvest. Makes a medium acid, medium tannin perry of average to good quality. Valuable for its long keeping qualities. Tree medium-sized; bears heavily, but often biennially; highly resistant to scab and canker. LUCKWILL, SIMMONS 1978; U7D{SC}

Hendre Huffcap: Elliptical, often irregular fruit; skin green, yellowish-green or yellow slightly blushed with orange. Harvested the first half of October, easily shaken from the tree; ready for milling up to 2 weeks after harvesting. Makes a low to medium acid, low tannin perry, pleasant and light, and always of good quality. Tree large, upright; bears heavy crops annually, the branches sometimes breaking under the weight of the crops. LUCKWILL; U7D{SC}

Normannische Qderbirne: Very small, turbinate fruit; skin greenish-yellow covered with cinnamon-russet and ashy-gray dots; flesh yellowish-white, rather dry, sweet but with some sprightliness; ripens in September. Excellent for making perry and for distillation. Found growing wild in Normandy and Upper Austria. HEDRICK 1921; U7D{SC}

Red Pear: (Black Horse) Turbinate fruit; skin yellow or greenish-yellow, almost completely blushed with red. Harvested in October; ready for milling up to 3 weeks after harvest. Tree medium-sized, upright; bears heavily but often biennially; widely adapted. Popular for over 400 years and still widely grown in Herfordshire and Worcestershire, the two principal perry growing counties of England. LUCKWILL; U7D{SC}

Taynton Squash: Oblate or turbinate fruit; skin greenish-yellow, sometimes slightly blushed. Harvested the second half of September; ready for milling up to 2 days after harvesting. Makes a medium acid, medium tannin perry of average quality. Tree medium to large,

upright; bears heavily but usually biennially. A very old cultivar. LUCKWILL; U7D{SC}

Thorn: Pyriform, sometimes turbinate fruit; skin yellow, russet. Harvested the second half of September; ready for milling up to 1 week after harvesting. Makes a medium acid, low tannin perry of average to very good quality. Tree small, upright; bears heavily. A very old cultivar, once widely planted for dessert and culinary purposes, for which it is now considered too astringent. LUCKWILL; U7D{SC}

Yellow Huffcap: Fruit elliptical; skin green, yellow or yellowish-black, somewhat russet. Harvested the first half of October; ready for milling up to 1 week after harvesting. Makes a medium to high acid, low tannin perry, fruity, well flavored and consistently of good to excellent quality. Tree large, spreading; bears heavily, but often biennially. Widely planted cultivar of high repute. LUCKWILL, SIMMONS 1978; U7D{SC}

#### CODES FOR SPECIAL TYPES

1. Red-Fleshed
2. Low-Chill

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### PECAN {GR}

#### CARYAILLINOENSIS

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##### EASTERN PECANS

Adapted to the humid southeastern states from Louisiana to Florida. Less susceptible to scab and various foliage diseases than are cultivars of western origin. They also generally grow well in the western pecan growing area. JAYNES.

Caddo: Nut small, football-shaped, with points projecting from base and apex; 60 to 70 nuts per pound; shell dark; kernel 58% of nut, attractive, quality good, flavor excellent; adapted to mechanical shelling; matures in midseason. Tree precocious; very productive; protandrous type, needing other cultivars for good pollination. BROOKS 1972; K76, N33

Candy: Medium-sized nut, about 65 per pound; kernel averages 50% of weight of nut; matures early in the season, in September. Tree attractive; a consistently heavy bearer, comes into production after 6 or 7 years; highly resistant to scab; protandrous type, needing other cultivars for good pollination. H4, K76, L90, L90{SC}, M83

Cape Fear: Nut resembles Stuart in size and shape but is superior in cracking quality; kernel does not break when shell is cracked; averages 52 to 62 nuts per pound; kernel percentage high, quality excellent including a light color. Tree very vigorous; precocious and heavy bearing; protandrous. Good pollinator for Wichita. BROOKS 1972; A85M, F93, I41P, I53M, K76, L33, L90, L90{SC}, M69M, M83

Choctaw: Nut size similar to that of Success, but of more symmetrical shape; averages 45 per pound; shell unusually thin, being similar to Schley; kernel averages 60% or more of nut, releases well from shell, color bright, oil content high, flavor rich; cracks out very well; matures in midseason. Fine for marketing in shell. Tree vigorous, precocious and heavy bearing; protogynous. BROOKS 1972; A85M, A88M, B93M, C54, D37, G88, K76, L90, L90{SC}, M83, N20, N33

Desirable: Nut larger than Stuart, averaging 45 to 50 per pound; kernel percentage about 52%; kernel meaty, quality very good; matures in midseason. Tree blooms early; highly resistant to scab; comes into bearing early; a very prolific and consistent bearer; protandrous. Popular, standard cultivar in the Southeast. BROOKS 1972; A85M, A85M{DF}, F93, G72, I41P, I53M, K76, K28, L56M{DF}, L90, M69M, M83, N33

Elliot: Nut small, base rounded, apex pointed; 55 to 70 nuts per pound; kernel plump, smooth, straw-colored, of excellent flavor and quality; shell medium thick, very good for cracking purposes; matures in midseason. Tree highly resistant to scab; a shy but consistent bearer; comes into bearing late; protogynous. Introduced about 1925. BROOKS 1972; A85M, F93, H4,153M, K76, L90, L90{SC}, M83

Forkert: Large nut, about 45 to 50 per pound; kernel averages 60% of nut; matures in late October. Tree precocious, productive; protogynous, sheds pollen after pistillate flowers are receptive. Recommended for new orchard plantings and coastal plantings. An older cultivar which is becoming more popular due to its scab resistance. A85M, K76, L90, L90{SC}

Gloria Grande: Very large nut, about 35 to 45 per pound; kernel averages 48% of nut, richer in flavor than Stewart; matures late, in October and November; resembles Stuart. Tree productive, comes into bearing after 8 or 9 years; resistant to scab; protogynous, a good pollinator for Stuart. Good home garden cultivar. Originated in Orangeburg, South Carolina. BROOKS 1972; F93,153M, K76

GraKing: Nut large, about 35 per pound, resembles Mahan; attractive; kernel separates easily from shell, averages about 55% of nut; matures early. Tree productive; resistant to scab; protogynous. Originated in Arlington, Texas by O.S. Gr<sup>A</sup>. Introduced in 1959. BROOKS 1972; N33

Jackson: Very large nut, about 35 per pound; kernel well-filled, averaging 52% of nut; quality high; matures late, in October and November. Tree an early but shy bearer; highly tolerant to scab; protogynous, sheds pollen after pistillate flowers are receptive. A good cultivar for home gardens. A85M, K76, L90, L90{SC}

Kiowa: Medium to large nut; shape and appearance similar to Desirable; averages 40 to 50 nuts per pound; shell medium soft; kernel 55 to 60% of nut, quality very good; matures late. Tree very precocious and prolific; protogynous. Good for high density plantings. Pollinate with Cherokee. JAYNES; B93M, G88, K76, L90, L90{SC}, M83, N33, Q93

Mahan: Very large, long nut; 35 to 50 nuts per pound; shell thin; tends toward poor filling on older trees; kernel averages 50 to 57% of nut, flavor rich; resembles Schley but about 60% larger; matures late. Tree vigorous and prolific; early bearing; protogynous; susceptible to scab. Introduced in 1927. BROOKS 1972; A88M, C54, D76, E97, G72, G88, K28, K76, L47, L90, M69M, M83, N20

Melrose: Large, oblong nuts, about 54 per pound; smooth, light to medium brown shells; kernel weight 55% of nut; plump, relatively dark kernels; ripens with Stuart. Narrow, upright tree, suited to high density plantings; very vigorous; protogynous. Highly resistant to scab. Originated in Hanna, Louisiana. SPARKS; A85M, H4, K76, L90, L90{SC}, M83

Mohawk: Nut large, similar to Mahan, averages 35 per pound; shell thin, very attractive; kernel may exceed 60% of weight of entire nut, separates easily from shell; quality high; matures early. Tree vigorous; prolific and moderately precocious; susceptible to scab; protogynous. BROOKS 1972, JAYNES; A88M, C54, E97, G49, G88,140,183M, J21M{DF}, K76, LI, L90, L90{SC}, M83, N20, N33, etc.

Moreland: Nut large, averaging 45 per pound; shell very thin; kernel high in oil content, very rich in flavor, fills out well; quality high; has good keeping qualities; similar to Stuart in size and shape. Tree upright; disease resistant; considered one of the few self-pollinating cultivars. Rated one of the top six cultivars for north and central Florida by the University of Florida. G17

Oconee: Large, oblong nuts, about 48 per pound; kernel weight 54% of nut; smooth, thin, medium-brown shell with brownish-black markings; cracking qualities exceptionally good; very attractive kernel with good flavor. Disease resistant tree; protandrous. Forkert

is recommended as a pollinizer. SPARKS; I53M, K76, L90, L90{SC}, N33

Pawnee: Nut large, 45 to 55 per pound; kernel 55 to 62% of nut, of excellent quality; matures very early, as early as September 15 at Brownwood. Tree precocious; vigorous and heavy yielding; protandrous, pollen shedding pattern similar to Cheyenne. Recommended for areas of the traditional pecan belt with shorter growing seasons. Originated in Brownwood, Texas. Introduced in 1984. A85M, A88M, C54, D37, F93, G88, 140, K76, L90, L90{SC}, M83, N20, N33

Podsednik: Extremely large nut, as little as 22 to a pound; kernel well filled, of good color; matures with Mahan. Tree has strong structure and large leaves; appears to be scab resistant; sheds pollen slightly ahead of pistil receptivity. Recommended for trial plantings. N33

Schley: Medium-sized nut, averages 50 to 65 per pound; shell very thin, fills well; attractive golden-brown kernel, firm-textured, of very fine flavor, rich and oily, cracks well; matures in midseason. Tree vigorous; slow to come into bearing; a shy bearer in many areas; susceptible to scab; protogynous. Long a standard of quality, commanding premium prices. Seedling of Stuart. JAYNES; I41P, K66M{DF}, K76, L56M{DF}, M83

Shoshoni: Medium to large nut, averages 40 to 60 per pound; kernel 52 to 58% of nut; matures in midseason. Suitable for commercial shelling. Tree very vigorous, upright growing; highly precocious and prolific; resistant to scab; protogynous, sheds pollen after pistillate flowers are receptive. Suited to high density plantings. G88, L90, L90{SC}, M83, Q93

Stuart: Nut medium-sized, averages 40 to 55 per pound; kernel 44 to 50 percent of nut, quality good; matures in midseason. Tree slow to come into bearing, but continues to yield acceptable crops for up to 45 years; moderately productive; susceptible to diseases; protogynous. Widely adapted to climate and soils. One of the standard cultivars in the Southeast. JAYNES; A82, A85M, A85M{DF}, B52, D76, F93, G72, H49, I53M, J47M{DF}, K28, L33, L90, M69M

Success: Large attractive nut, averages 40 to 55 per pound; shell soft, filling often erratic and poor; kernel 49 to 54% of nut, smooth, plump, creamy, of excellent flavor; matures in midseason, almost 10 days later than Stuart. Tree vigorous; precocious and prolific; susceptible to diseases; protandrous; partially self-fruitful. An old stand-by. C54, G88,141P, L90, L90{SC}, M83, Q93

Sumner: Medium to large nut with excellent kernel quality, 55-60 nuts per pound; matures in midseason, October 25 to November 12 in Zones 8 and 9. Tree precocious; relatively consistent and heavy yielding; disease resistant; protogynous. Good for high density plantings and home orchards. A85M, F93, H4,153M, K76, L90, L90{SC}, M83

#### FAR NORTHERN PECANS

Recent discoveries of native pecan groves near the Green Island-Dubuque, Iowa area have shown that pecans can ripen in areas much farther north than previously known. Selections from these trees and from other far northern pecan areas are being tested as far north as Ontario, Canada.

Canton: A thin-shelled pecan that deserves trial in the commercial zones of Missouri and Kansas. It is proving to be a good producer of early maturing nuts. Medium to large nuts, about 90 per pound; kernel weight 46% of nut. Ripens 2 days before Colby. Originated in Canton, Missouri. I25M{SC}

Carlson #3: Selected by R.D. Campbell for trial in Canada because of its early maturity. Nut size and quality are similar to others selected in the New Boston, Illinois area. Ripens about 16 days after Colby. Grafts flower in their third or fourth year. E91M, E91M{PL}

Devore: Nut small, averages 115 to 120 per pound; kernel 40% of nut; white kernels, exceptionally well-flavored, reminiscent of shagbark hickory; poor cracking quality. Tree a consistent producer; early maturing in central Iowa; should be tried farther north. Also selected by the USDA for breeding in Brownwood, Texas. I25M{SC}, 140

Fisher: Nut medium-sized, cracks well; flavor good. Tree produces well at original location and in the Scranton, Pennsylvania area; protandrous. Originated in New Memphis, Illinois by Jacob Fisher. Introduced in the 1930's. 140

Fritz: Medium-sized nut; matures early. Tree a strong grower; produces well but comes into bearing very late; protogynous, may be very useful as a late pollen source. At one time considered the most northern native selection, along with Witte. Originated in New Boston, Illinois by Kenneth Fritz. JAYNES; E62{SC}, 140

Gibson: Medium-sized nut with good cracking qualities; flavor very good; fills well in the far northern pecan growing region. Tree precocious, two year grafts often bear nuts; a consistent and heavy producer; protandrous. Originated in New Boston, Illinois. B99{PL}, E62{DF}, E62{SC}, I25M{SC}, 140,186{SC}

Lucas: Nut small to medium, averages 100 to 120 nuts per pound; kernel oily, of fine flavor; cracks and fills well in the far northern pecan growing areas. Tree precocious; hardy; heavy yielding; protogynous. Originated in Ohio in 1965. B99{PL}, E91M, E91M{PL}, I25M{SC}, 140

Mullahy: The largest pecan of Iowa origin yet found; cracks out in perfect halves and is of excellent quality. Tree shows some evidence of hickory hybridization; starts bearing early; flowers early, with the native hickory. Handy to at least -30° F. Early reports indicate ripening in New York, Michigan and Ontario. I25M{SC}, I60{PL}

Witte: Nut somewhat larger than Indiana, 60 to 70 nuts per pound; blocky, of good shape; kernel 44 to 50% of nut; matures early. One of the best cultivars from this latitude, at one time considered the most northern pecan area, until the more recent discoveries. Tree starts bearing very late; protandrous. Originated in Burlington, Iowa by John H. Witte. Introduced about 1925. BROOKS 1972; I25M{SC}

#### NORTHERN PECANS

These mature their nuts in a shorter growing season than eastern or western cultivars. Their earlier maturity exposes nuts to greater damage from squirrels, birds, and insects in more southern latitudes than that of Tennessee. The traditional northern pecan growing area includes Oklahoma, Kansas, Missouri, Iowa, Illinois, Indiana, Kentucky and Tennessee.

Busseron: An old time cultivar that is still popular. Nuts large for a northern type, about 74 per pound, twice as long as wide; kernel weight 48% of nut; high quality kernel. Productive tree; protandrous. Originated in a forest near Oaktown, Indiana in the early 1900's. 140

Colby: Medium-sized, long oval nut, 55 to 65 per pound; shell thickness medium; kernel averages 45 to 50% of nut, cracks out poorly, flavor good; matures in a 160 day growing season. Tree vigorous and productive; resistant to leaf fungi; retains its foliage late in the fall; protogynous; a heavy pollen producer. Originated in Fayette County, Illinois. B99{PL}, D37, D76, E97, I25M{SC}, 140,153M, K76, L33

Giles: Nut fairly large, 55 to 65 per pound; shell thin, cracking quality fair; kernel averages 48 to 50% of nut, quality very good; matures late. Tree precocious; regularly productive near the latitude of origin, not as reliable northward; protogynous. Used as a rootstock in some areas. Originated in Chetopa, Kansas. Introduced in 1930. BROOKS 1972, JAYNES; 140

Greenriver: Medium to large nut, 50 to 70 per pound; shell thin; kernel 53 to 54% of nut, plump, quality very good; matures late. Tree large, a prolific and regular bearer; protogynous. Susceptible to

frost in central Illinois and occasionally in Kentucky. Later than other northern cultivars but produces good quality nuts where the season is long enough. Originated in Henderson County, Kentucky. A88M, 140, N20

Hirschi: Nut large, averaging about 56 per pound; cracking percentage 50 to 55%; shell thin, fills well; kernel of high quality. Tree considered to be self-fertile, but will normally produce larger crops when planted with Peruche and Giles. Recommended for all parts of Zone 6 except the extreme northern areas. Original tree discovered at Rich Hill, Missouri about 1940. I25M{SC}, 140

Hodge: Nut large, one of the finest flavored of all pecans; kernel tender, probably not adapted to commercial cracking. Tree not productive at Urbana, Illinois. Useful only as a late protogynous pollen source, and for breeding purposes. One of the first northern pecans to attract attention. Originated in York, Illinois. Discovered about 1890. BROOKS 1972; I25M{SC}, 140

Indiana: Small to medium-sized nut, averages about 77 per pound; kernel 47% of nut; quality very good; cracks out poorly; matures in midseason. Tree a very consistent producer; apparently self-fertile; produces pollen at the proper time to pollinate Major and Peruche. Originated in a forest near Oaktown, Indiana in the early 1900's. 140

James: Small to medium-sized, oblong nuts, 75 to 85 per pound; kernel weight 53% of nut; smooth shells; good cracking qualities. Selected for its dark glossy-green, unusually large foliage coupled with abundant production of nuts. Considered suitable for ornamental purposes. Originated in Brunswick, Missouri. BROOKS 1997; I25M{SC}, I53M

Kentucky: Nut small to medium, averages about 70 to 80 per pound; kernel weight 47 % of nut; quality good; matures midseason to late. Tree productive; apparently self-fertile; bud break 2 days after Colly. Originated east of Owensboro, Kentucky in the early 1900's. 140

Major: Small to medium-sized, roundish nut, 60 to 80 per pound; shell thin; kernel 42 to 50% of nut, plump and sweet; matures in midseason. Unacceptable for commercial cracking. Tree bears well; protandrous. Pistillate flowers develop over a long period and require pollen from late pollen producers such as Colty, Posey and Greenriver to set a full crop. The standard non-commercial northern cultivar. BROOKS 1972, JAYNES; A88M, I25M{SC}, 140, I53M, 174, K76, N20

Norton: Nuts relatively large for a northern cultivar, about 74 per pound; shell thick; kernel percentage only 40%; kernel color fair. Ripens early, about 6 days before Colty. Vigorous, very open tree; slow to begin bearing; protogynous. Originated near Clarksville, Missouri. Introduced in 1912. SPARKS; I25M{SC}

Patrick: Small, irregular nut, averages 115 per pound; shell thin, an excellent sheller, yielding about 60% kernel; kernel elongated, light-colored, plump, smooth; flavor good; ripens about midseason. Tree produces well; bears biennially; apparently resistant to pecan scab. Originated in Rogers County, Oklahoma. BROOKS 1972; U7A{SC}

Peruche: Nut small to medium, 60 to 80 per pound; papershell; kernel 55 to 63% of nut, flavor and quality excellent; matures in midseason. Tree vigorous; precocious and prolific; protandrous; bears a heavy crop annually. Thin shell makes it vulnerable to predators in some areas. Originated in St. Charles, Missouri. Introduced in 1955. BROOKS 1972, JAYNES; D37, D76, I25M{SC}, 140,174, N20

Posey: Medium-sized nut, about 72 per pound; cracking quality very good; kernel of high quality, flavor very good; matures medium-early. Tree sturdy, symmetrical; protogynous; a good pollen producer. Needs high fertility and adequate cross-pollination to bear well. Originated in Indiana. I25M{SC}, 140



Starking Hardy Giant: Large nut, up to 1 1/2 inches in diameter; shell thin; kernel halves oblong with a short point, plump, golden-yellow, flavor distinct, quality good; matures early, the last week of September. Tree medium-sized, vigorous; moderately productive, bears better crops if pollinated with Colby; haidy. Originated in Brunswick, Missouri by George James. BROOKS 1972; I25M{SC}, 174, L33

#### WESTERN PECANS

Cultivars that are suited to the central and western part of Texas and other areas of the Southwest and West where the climate is relatively dry. They are usually very susceptible to scab and various foliage diseases that attack the pecan. Generally not recommended for planting in the eastern pecan growing areas. JAYNES.

Apache: Large, blocky nut, 40 to 60 per pound; shell thin, cracking quality good; kernel smooth, bright, deteriorates slowly in storage, averages 60% of nut; quality high; matures in midseason. Tree vigorous and productive; subject to scab under humid conditions; protogynous. Good seedling rootstock. BROOKS 1972, JAYNES; N33

Burkett: Nut medium to large, round and wide; shell thin; kernel plump, up to 55% of nut, has an excellent, rich flavor; matures in midseason. Tree a regular and heavy producer; protogynous. Does well on high ground in East Texas. Choctaw recommended as a pollinator. Very popular in western areas. Originated in Clyde, Texas. C54, L90, L90{SC}, M83, N33

Cherokee: Medium-sized nut, 50 to 60 per pound; semi-soft shell, cracks well; kernels 55 to 60% of nut, of *high* quality, color slightly too dark; matures early. Tree vigorous; extremely precocious and productive; protandrous. Well suited for temporary tree or high density plantings. C54

Cheyenne: Medium-sized nut, 55 to 60 per pound; shell attractive; kernel 57 to 61% of nut, loose in shell, brightly colored; flavor excellent; matures in midseason. Well adapted to mechanical shelling. Good for high density plantings. Tree very precocious and productive; protandrous, therefore needing a protogynous type for good pollination. BROOKS 1972; A85M, C54, F93, G88, I83M, K76, L90, M83, N33

Maramec: Nut large, 40 to 50 per pound; oblong, blocky; shell thin; kernel averages 58 to 59% of nut, of high quality; matures in midseason. Tree large, spreading; vigorous and very productive; hardy; tolerant to pecan scab; has superior foliage until fall. Originated in Maramec, Oklahoma. BROOKS 1972; M83, N33

Navaho: Large, oblong nuts, about 62 per pound; kernel weight 61% of nut; kernel golden to light brown. Ripens in mid October. Vigorous tree, very precocious and prolific; protandrous. Susceptible to scab and vein spot. Originated in Brownwood, Texas. Introduced in 1994. C54, L90, L90{SC}, N33

Prilop of Lavaca: (Steffek, Kallus) Texas State Champion native pecan selection. Medium-sized, oblong nuts, about 78 per pound; shell smooth, with few markings; kernels weight 57%; attractive, golden-colored kernels. Protandrous tree; resistant to scab. Widely planted. Originated near the Lavaca River south of Hallettsville, Lavaca County, Texas. BROOKS 1997; N33

Select: Large, roundish to obovate nuts, about 46 per pound; shell very thin, fills well; flavor very good. Vigorous, hardy tree, adapted to a wide range of climates; precocious and productive. Originated in Riverside, California. Introduced in 1943. Grown for the premium quality gift trade in Mississippi. BROOKS 1997; C54, K66M{DF}

Shawnee: Medium-sized, slightly elongated nut, about 50 per pound; shell thin, light brown with relatively few dark stripes; kernel averages 60% of nut, smooth, bright in color, flavor excellent, cracks out well; keeping quality very good. Suitable for both in-shell and shelling trade. Tree vigorous; precocious and very productive;

protogynous. Originated in Brownwood, Texas. BROOKS 1972; L90, L90{SC}, M83, N33

Sioux: Nut small, 60 to 80 per pound; shell thin, cracks well; kernel averages 60% of nut, smooth; quality, flavor and appearance excellent, color bright; oil content high, does not deteriorate rapidly in storage; matures in midseason. Tree vigorous; moderately precocious, productive; protogynous. Does well in the Southeast with a good fungicide spray program. BROOKS 1972; L90, L90{SC}, M83, N33

Tejas: Small to medium-sized nut, averages 50 to 75 nuts per pound; has superior shelling qualities; kernel 50 to 56% of nut; matures in midseason. Tree extremely vigorous; moderately precocious, very prolific; protogynous; holds its green foliage late in the season. A88M, G88, LI, L90, L90{SC}, M83, N20

Western: (Western Schley) Medium-sized nut, 45 to 65 to the pound; shell thin; kernel 54 to 59% of nut, of high quality, flavor rich; matures midseason to late. Tree vigorous; precocious and very prolific; protandrous; tolerant of zinc deficiency. The standard shelling cultivar in the western irrigated pecan areas. JAYNES; A88M, B93M, C54, D23M, G88, I83M, I99M, L47, L90, L90{SC}, M83, N20, N33, Q93

Wichita: Nut medium-sized, averaging about 60 per pound; unusually attractive because of neat, purplish-black stripes and splotches on a clear brown shell; kernel 60% of nut, well-filled, of excellent quality; matures about with Western. Tree moderately upright, vigorous; early and heavy bearing; protogynous. BROOKS 1972; B93M, C54, G88, I83M, I99T{DF}, L47, L90, L90{SC}, M83, N33, Q93

#### PEPINO DULCE {GR}

##### SOLANUM MURICATUM

Cascade Gold: Heart-shaped fruit; golden skin, striped with purple. Much sweeter than other cultivars, without the characteristic musky aftertaste. The green immature fruit, having its own unique flavor when eaten raw or baked, is marketed as *pegreenos*. Well adapted to the climate of the Pacific Northwest. Developed over a 12 year period by Ismael Gomeroff. A62, A62{PR}, A62{PD}

Ecuadorian Gold: A market cultivar in South America that produces good crops of pear-like fruits over a long growing season. The fruit has an attractive color, is well-marked, and holds well on the plant. Self-fertile, but should be thinned for better fruit size. N7J

El Camino: Medium to large, egg-shaped fruit with regular purple stripes. Sometimes produces off-flavored fruits identifiable by their brownish-green color. One of two leading commercial cultivars in New Zealand. Released there in 1982 by the Department of Scientific and Industrial Research, from material collected in Chile. I83M

Golden Splendor: A heavy bearing variety that rates somewhat poorly for flavor and aftertaste. Produces a high percentage of large fruit. Oblong, yellow fruit striped with purple. Slightly upright growth habit. Popular in Australia and New Zealand. D57, I83M

Miski Prolific: Fruit creamy white with a faint salmon glow, lightly striped with purple; flesh deep salmon; flavor rich, sweet and aromatic, with no bitter aftertaste; seeds few or none; matures early. Strong growing plant; bears well without cross pollination. Originated in San Jose, California by Nancy Garrison, as a seedling of the New Zealand cultivar Miski. 174, L90J

Rio Bamba: Medium-sized fruit, strongly striped with purple; flavor excellent. Vining growth habit; makes an excellent climber or a hanging basket plant. Dark-green leaves with reddish-purple veins; purple stems; flowers darker than normal, making an excellent

display. Originated in Vista, California by Patrick J. Worley. Named after the city in Ecuador where the original plant was collected. D57, G20,183M

Temptation: Medium-sized, oblong fruit; yellow when ripe, faintly striped with purple; good, sweet flavor; quality high. Slightly upright bush with small, pointed leaves; productive. Introduced by the Nurserymen's Association of Western Australia. D57, 174, 183M, L90J

Toma: Medium-sized, oval fruit; 4 inches long, 3 inches in diameter; apex pointed, shoulder well-rounded; skin smooth, cream-colored when ripe, prominently striped with dark purple; pulp firm, light-cream in color, very juicy; flavor sweet and refreshing, with no hint of soapiness; seeds usually present; keeping quality excellent. An important export cultivar in Chile; introduced into New Zealand in 1979, released there in 1983. D57,174,183M, Q49M

Vista: Medium-sized fruits have good flavor and aroma. Upright, fairly compact plant of great vigor; self-fertile and heavy yielding; bright green, 3 inch long leaves. Originated in Vista, California by Patrick J. Worley. A cross of Rio Bamba and a seedling from South America. G20, N7J

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## PEPPER {S>

CAPSICUM ANNUUM  
CAPSICUM FRUTESCENS

CAPSICUM CHINENSE

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## SWEET PEPPERS

### BELLSHAPED

#### *Hybrid*

Chocolate Beauty:<sup>5</sup> 75-85 days. Medium-large^ blocky, very smooth, 3 to 4-lobed fruit; thick-walled; green, ripening to an attractive chocolate brown. Very sweet and nutritious, highest in Vitamin C when fully ripe. Resistant to tobacco mosaic virus. Highly recommended for home gardens and specialty markets. B6, B73M, B73M{PL}, C53, D65, D65{PL}, E97, F37T{PL}, G71, G82,191, J20, J97M, K50, L89, M1P, M49, etc.

Chocolate Bell:<sup>5</sup> 75 days. Large, blocky, deep bell-shaped fruit; 4 1/2 inches long; about twice the size of Sweet Chocolate; turns tan, to dark brown, to red when mature. Ripens 10 days later than Sweet Chocolate. Very rare seed imported from Holland. B75, B75{PL}, C20M, D26G, K71, L42, N52

Dutch Chocolate:<sup>5</sup> (Brupa) 73 days. Very large fruited heirloom from The Netherlands. Retains taste and shelf life of a green bell pepper long after its thick outer walls have turned an attractive brown. Eventually turns a bright red when ripe. Prized by the gourmet trade for its novelty. H49,177, K23{PL}

Golden Bell:<sup>1</sup> 70 days. Medium-large, blocky, 3 to 4-lobed fruit; light green, turning bright gold at maturity; thick-walled, very sweet. Vigorous, upright plant, 21 inches tall; provides good cover. Adapted mainly for home garden use. Rated first for productivity in a test conducted by Organic Gardening magazine. A16, D11M, mi,E91G, F13, F70, H33M, H54, H61,150G, J20, L89, M1P, M46, N16, etc.

Golden Summer:<sup>1</sup> 70 days. Large, blocky, 3 to 4-lobed fruit; pale lime-green, ripening to a rich golden yellow; thick-walled, juicy, sweet. Rated highest for overall flavor in a test conducted by Organic Gardening magazine. Does not ripen yellow in short season areas. Upright plant, 24 to 28 inches tall; resistant to tobacco mosaic virus. Good fruit set; wide adaptability. B75, C53, D76, E97, E97{PL}, F63, G13M, G79, H33M, 139,191, J4, MO, M1P

Ivory:<sup>2</sup> 65-70 days. Medium-sized, blocky, 3 and 4 lobed fruits; 3 1/2 inches by 3 1/4 inches; waxy, medium thick-walled; rich creamy-white, turning lavender, and ripening to a bright red; mild, sweet flavor. Very tolerant to sunburn. High yielding, compact plant; multiple virus resistant. Ideal for specialty markets. C20M, D26D, E91G, F63, G13M, G82, H61,150G, 191, J84, K10, K50, K57{PL}, K73, L89, M1P, M46, N52, etc.

Lilac:<sup>6</sup> 65-70 days. Medium-sized, blocky fruits; 3 and 4 lobed; 4 1/2 inches by 3 1/2 inches; ivory, turning an unusual lilac-lavender, and ripening to a bright crimson; crisp and flavorful. Remains in the lavender stage for a long time. Vigorous plant with good cover, multiple disease resistant. Recommended for specialty markets. C85M, D26D, D56M, E91G, G13M, H61, 150G, 191, J4, K10, K50, K73, M0, M1P, M46, M65, N52, etc.

Luteus:<sup>1</sup> 68 days. Large, blocky, mostly 4-lobed fruit; thick-walled; uniform in size; very delicate, mild flavor; resistant to cracking. Can be harvested green or after maturing to a golden-yellow. Quick growing, with a notably high yield. Resistant to tobacco mosaic virus, Very popular in Europe. N81, N84, S55, S61M, S75M

Mandarin:<sup>4</sup> 75 days. High quality, European style orange pepper. Large, elongated, 4-lobed fruits, 5 to 6 inches long; firm, medium-thick walls; green, turning an attractive pumpkin-orange when ripe; sweet, distinctive flavor. Resistant to tobacco mosaic virus and stip. Recommended for home gardens and specialty markets. C92, D26D, D56M, D76, E97,150G, K10, M1P, M65, TIM

Orobelle:<sup>1</sup> 72 days. Medium large, thick-walled, 3 to 4-lobed fruit, 4 1/2 inches long; dark green, ripening to yellow-gold; very sweet. High quality, either green or yellow. Strong, vigorous plant, provides excellent fruit coverage; resistant to tobacco mosaic and potato Y virus; high yielding. AI, B6, C85M, D26D, D68, F63, G6, G71, G82, G93M, I18M{PL}, 139, J84, K23{PL}, K50, M0, M1P, etc.

Purple Belle:<sup>6</sup> 68 days. Blocky, 4-lobed fruit, 4 1/2 inches square; green, ripening to purple, then blood red at full maturity. Busty, compact plant, keeps the fruit well protected from the sun; resists tobacco mosaic virus, Very popular specialty market item. A21, B8M, C20M, D42M, G68, M0, N52, TIM

Quadrato d'Oro:<sup>1</sup> 63 days. Large, blocky fruit, 3 to 4 inches long; glossy green, ripening to a rich golden-yellow; thick-walled, aromatic, juicy, sweet. Rated highest for sweetness in a test conducted by Organic Gardening magazine. Vigorous plant with good leaf coverage; productive; disease resistant. Developed in Holland for Italian and French market gardeners. J4, K66

Valencia:<sup>4</sup> 68-72 days, Very attractive, high quality orange bell. Medium-large, blocky fruits, mostly 4-lobed; 4 1/2 inches by 4 1/2 inches; glossy green, ripening to an intense orange Very sweet when ripe. Well-branched plant with good coverage, sets continuous crops. Resistant to tobacco mosaic virus and stip. Ideal for specialty markets. C85M, D26D, D68, E91G, G6, G13M, G16, G82, H61, 191, K10, K50, K66, K73, M0, M1P, M46, etc.

Vidi: 65-70 days. Gourmet European type. Large, elongated fruit, mostly 4 lobed; 6 or 7 inches by 3 1/2 inches; thick-walled; glossy dark-green, ripening to an intense bright red; very sweet and succulent. Prized for stuffing, broiling, grilling or as crudites. Vigorous plant, sets well under adverse growing conditions. Multiple virus resistant. AI, C53, C92, D68, E63D, F63, G13M, G82, H61, J4, J20, K10, K49Z, K50, K66, K73, M0, M1P, N16, etc.

#### *Open-Pollinated*

Albino:<sup>2 3</sup> (Albino Bullnose) 80 days. Medium-sized fruit; stays white a long time before finally turning red; medium thick-walled, sweet. A colorful and tasty addition to salads. Dwarf bush; disease resistant; may be grown outdoors in far northern regions or in flower pots. F73D, J4, M1P

Ariane:<sup>4</sup> 70 days. Large, blocky, medium-green fruit ripens to a uniform vibrant-orange, the first true orange in a bell pepper. Heavy and solid, with thick, crunchy flesh. Sweet and flavorful in green or orange stages. Vigorous plants; resistant to tobacco mosaic virus type-O. Developed to honor the House of Orange, the Royal family of Holland. B8M, F73D, I18M{PL}, 139,177, F85G, I18M, MO, M32, N84, Q11M, R32, S61M, S75M

Bull Nose: (Large Bell) 65 days. Medium-sized, blunt-ended fruit; 3 inches long, 2 3/4 inches in diameter; deep green, ripening to scarlet red; thick-walled flesh, mild in flavor except for the ribs which are quite pungent. An old traditional cultivar. Introduced into the United States from India, in 1759. A2, L7M, M95M, Q18, R0

California Wonder: 75 days. Large, blocky, 3 to 4-lobed fruit; smooth and glossy; dark green, ripening to bright crimson; thick-walled, up to 3/8 inch; tender, juicy, sweet, without a trace of pungency. Vigorous, upright plant; provides good cover. The archetypical bell pepper; introduced in 1928. A25, C26{PL}, D11M, E59Z, E97, F70, F92, G71, G79, H21, H33M, L7M, L10, M1P, N16, etc.

Carnosissimo di Cuneo: Large, oval-pointed fruit, mostly 3 to 4-lobed; skin clear bright-yellow, attractive; flesh sweet, very bulky and exceptionally thick-walled. The principal market grower's pepper in the Piedmont region of northern Italy. Named after the market town of Cuneo. Q11M

Chinese Giant: 90 days. Large to very large, blocky fruit, up to 6 inches long and 5 inches across when thinned; distinctly ribbed and lobed; rich green, turning bright cherry-red when ripe; medium thick-walled; mild, sweet, mild flavor. Excellent for stuffing. Compact plant, about 24 inches tall. Popular standard cultivar. Introduced in 1900 by W. Atlee Burpee & Co. B75, D56M, I18M, J4, K71, M1P, M65, O89, R0

Emerald Giant: 74 days. Large, blocky, mostly 4-lobed fruit; 4 1/2 inches long, 3 3/4 inches in diameter; dark green turning red at maturity; thick-walled. Strong, upright plant, 26 to 28 inches tall; productive over a long period; resistant to tobacco mosaic virus. Excellent for fresh market, shipping and home garden use. B75M, E91G, G13M, G79, G93M, H54, H61, J4, J84, K10, K49M

Golden Calwonder: 72 days. Smooth, blocky, mostly 4-lobed fruit; 3 3/4 inches long, 3 1/2 inches in diameter; medium-green, turning golden-yellow at maturity; thick-walled, sweet, mild. Strong, upright plant, 22 to 26 inches tall; sets fruit continuously. Popular for fresh market and home garden use. C26{PL}, E53M, F80, G27M, G79, G93M, H95,164, J4, J97M, K10, K71, M1P, M95M

Golden Summit: 65 days. A family heirloom, developed over a 200 year span of intensive Yugoslavian market gardening. Attractive golden-green fruit, ripening to a bright gold, turning bright deep red at full maturity; 3 or 4 lobes; very thick-walled, crisp, juicy, sweet. Begins to bear early in the season, even if nights are cool. E91G, F24M

Jupiter: 72 days. Very large, extremely blocky, 4-lobed fruit; 4 inches deep, 4 inches wide; green, turning bright red when ripe; thick-walled. Vigorous, high yielding, widely adapted plant; with a dense canopy of leaves that provides protection from sunburn; resistant to tobacco mosaic virus. One of the best open-pollinated cultivars. B6, E91G, F13, F71M, G1M, G16, H54, H61, J4, J14{PL}, K10, K50, K73, MO, M1P, M29, etc.

Kaala: Bell pepper developed for subtropical areas which have limited production due to bacterial wilt. Fruit measures 3 inches in length and 2 1/2 inches in width. Resistance to bacterial wilts is greatly reduced at temperatures above 80° F. Developed at the University of Hawaii. L4, M32M

Kandil: Attractive bell-type pepper originating in Turkey. Blocky, 3 to 4 lobed fruit; 3 inches long, and 2 to 2 1/2 inches in diameter; light green, turning greenish-yellow and finally red when fully ripe;

thin, translucent flesh, sweet and crunchy. Can be picked when either green, yellow or red. Turkish name means lantern, referring to the translucent qualities of the fruit. J73, N84

Keystone Resistant Giant: 75 days. Large; blocky, mostly 4-lobed fruit; 4 1/2 inches long, 3 3/4 inches in diameter; attractive dark green, turning dark red when ripe; thick-walled, sweet and mild. High yielding plant; resistant to tobacco mosaic virus; has heavy foliage that reduces susceptibility to sunscald. C92, E5T, E91G, G79, G82, H95, J4, J84, K27M, L7M

King of the North: 65 days. Very large, blocky, 3 to 4-lobed fruit; 6 inches long, up to 4 inches in diameter; green, turning bright red when mature; medium thick-walled, crisp, sweet and mild. Large, somewhat spreading plant; resistant to tobacco mosaic virus. Performs well in short summer areas. C26{PL}, D26D, D68, D76, D76{PL}, E97, E97{PL}, J4, M1P

Midway: 70 days. Improved Staddon's Select type. Large, blocky, 3 to 4-lobed fruit; 4 1/2 inches deep, 4 1/2 inches wide; bright green, turning red when mature; thick-walled, very sweet, mild in flavor. Tolerant to tobacco mosaic virus. Recommended for northern areas and greenhouse production. Popular early main season cultivar. A16, B73M, C44, D27, E53M, F63, G79, J4, L42, M1P, Q11M

Mini Bell:<sup>7</sup> 55 Days. Miniature bell-type fruit, about 1 1/2 inches in diameter; ripens from waxy-green to red. Sweet fruits are perfect for pickling whole, stuffing for canapes, and livening up relish trays. Bushy, 18 inch tall plants bear dozens of fruits. C26{PL}, G13M, E5T, F73D, J4

Purple Beauty:<sup>6</sup> 70 days. Medium-sized, 4-lobed fruit, 4 inches square; dark purple; thick-walled. Compact, high yielding plant; provides good fruit protection. Sets well not only in the crown but also as limb set. Should be picked early to avoid tendency to display some green when over-mature. Developed from the hybrid Purple Bell. C53, C92, E53M, E75{PL}, E97, F13, F37T{PL}, F63, G13M, G27M, G82,139,191, J4, J97M, M0, M1P, M32, etc.

Quadrato d'Asti Giallo:<sup>1</sup> (Asti Square Yellow) Gourmet yellow-ripening Italian pepper. Large, blocky 3 to 4-lobed fruit; ripens to a bright golden-yellow; thick-walled, crisp, juicy, sweet with a hint of spiciness. Excellent for roasting, frying, salads, stuffing or pickling. Vigorous, high-yielding plant; does best in warmer climates. G53M, K46T, J4, Q11M, S17

Staddon's Select: 70 days. Large, blocky, 3 to 4-lobed fruit, somewhat uneven in shape; glossy green, turning red when ripe; medium thick, crisp and sweet. Tall, bushy plant; high yielding even under hot, dry conditions; resistant to tobacco mosaic virus. Does well in northern areas. Sets fruit reliably under cool night conditions. D68, E91G, F44, G82, J4, J25M, J25M{PL}, K49M, K50, M49

Sweet Chocolate:<sup>5</sup> 65 days. Medium-small, tapered, blunt-nosed fruit; dark glossy green, ripening to a rich chocolate brown; medium-thick walls, sweet and flavorful. The flesh below the skin is an attractive brick red, cooked or raw. Prolific plant; tolerant of cool nights. Developed by E.M. Meader at the University of New Hampshire. C20M, F44, F73D, G6, J4, J9M, K20M, K49M, K57{PL}, L4, L7M, L91M, O89, R47

World Beater: (Ruby Giant) 73 days. Very large, blocky, long-tapered fruit; 6 inches long, 4 1/2 inches in diameter; rich green, turning to cherry red at maturity; moderately thick-walled, sweet and mild. Keeps in prime condition for a long time. Ideal for stuffing. Very productive; yields as many as 32 fruits per plant. C92, J4, K490, L7M, L94

Yolo Wonder: 75 days. Blocky, 3 to 4-lobed fruit, similar to California Wonder but somewhat longer; attractive green, ripening to red; thick-walled, firm. Bushy plant; gives good protection from sunscald and hail; tolerant of adverse weather conditions; highly

resistant to tobacco mosaic virus. A21, B49, E5T, G27M, G57M, G68, G71, H49, H61, 184, J4, M1P, R32

**PIMENTOS** Thick-walled, usually heart-shaped or flattened fruits used for salads, stuffing, roasting, pickling or canning. Also dried and ground into *Spanish paprika powder (pimenton)*, used in the famous *romesco* sauces of Catalonia. Some forms are known as *squash peppers* or *cheese peppers*. Many of the sweetest peppers belong to this class. E14T{DF}, G47J{DF}, I94M{PD}. GRAY, P. [Cul]

Choco:<sup>5</sup> 75 days. Medium-sized, tomato-shaped fruit; glossy dark green, ripening to chocolate brown; thick-walled, very mild and sweet. Good for stuffing and salads. Haidy, productive plant; 2 to 3 feet tall. Does well in northern areas. D42M, E5T, J4, J84, TIM

Figaro: 68 days. Flattened, globe-shaped, thick-walled fruits with scalloped edges, 3 to 4 inches in diameter; smooth skin, crimson red when ripe; crisp, juicy flesh, rich flavor. Excellent for eating fresh in salads or as crudites. Strong, vigorous plants. Italian heirloom from the Yakima Valley of Washington. J97M, K66

Gambo: 90 days. Flattened globe-shaped, mostly 4-lobed fruit; 2 1/2 inches deep, 4 inches in diameter; glos<sup>^</sup>, rich deep-red when ripe; crisp flesh, very juicy and sweet. Excellent for stuffing and pickling. Should be harvested when fully red-ripe. Vigorous, medium-tall plant. L7M, M1P, T27M

Nora: (Nyora) Small, ruby-red, medium mild peppers. The authentic peppers used in the classic *Romesco* sauces of the Tarragona province in Catalonia, Spain. Usually dried and mixed with pulverized almonds and hazel nuts, and tomatoes. *Romesco* sauce is traditionally employed for flavoring fish soups and stews, *calgots*, salt cod, salad dressings, and a festive endive salad called *xato*. ANDREWS, C. 1988 [Re], DOMINE, DOMINGO, NORMAN; L13P{DF}

Pimento: (Red Pimento) 75 days. Medium-sized, uniform, heart-shaped fruit; 3 1/2 inches deep, 2 1/2 inches wide at the top; dark green, ripening to deep bright-red; thick-walled, juicy, very sweet; small seed cavity. Widely used for stuffing, pickling and canning. Vigorous, productive plant. A2, C44, D42M, E53M, H49, 139, I63T, J4, J25M, J25M{PL}, K49M, M81T

Pimento L: 80 days. Large, heart-shaped fruit; 4 1/2 inches long, 3 1/2 inches in diameter; dark green, turning bright red at maturity; very thick-walled, sweet and mild. Widely used for canning. Vigorous, upright plant; height 18 to 24 inches; provides good cover; resists tobacco mosaic virus. C20M, C92, DIT, G27M, G57M, G93M, H33M, H61, H95, J4, J84, K10, MO, M1P, N16, etc.

Pimento Perfection: 75 days. Very smooth, heart-shaped fruit; 3 inches long, 2 1/2 inches in diameter; green, ripening to bright crimson red; flesh unusually thick, very sweet and juicy. Should be harvested when uniformly red. Excellent for stuffing and canning. Upright plant, to 30 inches tall; resistant to tobacco mosaic virus. Z50G, /59M, J4, L7M, M95M, N52

Pimento Select: 72 days. Smooth, heart-shaped fruit; 3 1/2 inches long, 2 1/2 inches in diameter; deep green, ripening to brilliant red; thick-walled, very sweet and mild. Excellent for canning, freezing and pickling. Upright plant; height 33 inches; makes a concentrated set. D76, F80, G82, N84

Red Heart: 80 days. Large, thin-walled, thick heart-shaped fruits with a rich, concentrated flavor. Fruits are tender to sun and drought. Tall plants. Voted the best tasting sweet pepper among 25 cultivars grown by Peace Seeds in 1987 and 1988 and tested by the American Tomato Institute. A2, K23, K23{PL}, K49T, N84

Red Ruffled: 85 days. Small to medium-sized, uniquely-shaped, fluted fruits, maturing to a very dark red color. Thick walled. One of the very best sweet peppers for eating out of hand. Also good for roasting when green. Yields 8 to 10 fruits per plant. Grows 2 feet tall. Produces early and abundantly. A2, K23{PL}, K49T, L3J, L55J, N84

Sheepnose Pimento: 70 days. Flattened, cheese-shaped fruits, 4 inches in diameter and 3 inches deep; red when ripe; very meaty. Good for fresh use or canning. Grows 22 inches tall and 16 inches wide. Rather sparse foliage. Cold tolerant. Favorite of the Seed Savers Exchange. Given to them by the Family of Nick Rini, of Ohio. E5T, F24D, K47, M0

Sunnybrook: (Sweet Cheese, Burpee's Sunnybrook) 72 days. Flattened globe, tomato-shaped fruit; 2 inches deep, 3 inches in diameter; deep green, ripening to scarlet red; thick, sweet, juicy very mild flesh; small seed cavity. Excellent for stuffing and baking. Tall, upright very productive plant. DI 1M, F70, J4, M1P

Super Red Pimento: 70 days. Squash or flat-shaped type. An earlier, larger version of the standard pimento Very large fruit, 5 3/4 inches wide, 3 1/4 inches deep; green, ripening to red; extra thick flesh, sweet and mild. Resistant to tobacco mosaic virus. E75{PL}, 177, J4, L42, M0

Tangerine: 80 days. Unique, orange-colored pimento Variesly shaped, thick-walled fruits, somewhat reminiscent of tangerines when ripening. Sweet, juicy and delicious. Excellent for eating out of hand. Vigorous and productive plant; early maturing. C26{PL}, F73D, I99M, K23{PL}\ K49T, N84

Yellow Cheese: 73 days. Large, squash-shaped fruit, averages 25% larger than Sunnybrook pimento; green, ripening to yellow, then to orange-yellow at full maturity; thick-walled, sweet and mild. Contrasts well with red or green cheese types in baskets or relish. F73D, 177, J4, K49M, L42, N52

## OTHERS

### Hybrid

Gypsy: 65 days. Wedge-shaped, slightly curved fruit, 3 to 4 inches long; yellow, ripening to orange-red; medium thin walls, crisp and tender, sweet at full maturity; of excellent flavor and quality. Vigorous, spreading plant; height 12 to 20 inches; widely adapted; tolerant of tobacco mosaic virus. All America Selections winner in 1981. B6, B73M, B75{PL}, C44, C85M, D11M, F70, G16, G57M, G71, G82, H61, M0, M1P, M49, etc.

Long Green Buddha: 70 days. Long, rather conical fruit; pungent with the seeds intact, has a strong green pepper taste when the seeds are removed. Valuable for its economical size and interesting shape. Compact, bushy plant; height 2 feet; produces 12 to 20 fruit over a long period. J20, S70

### Open-Pollinated

Aconcagua: 70 days. Large Cubanella type that can weigh up to 12 ounces. Long, tapered fruit; 2 1/2 to 3 inches wide, 10 to 11 inches in length; medium thick-walled, juicy, medium-sweet. Best harvested when light green. Tall, vigorous plant; sets well early and late. Named after Mt. Aconcagua in Argentina. B75, B75{PL}, D56M, E5T, F63, F71M, J4, K10, K46T, K47, K49M, K49T, K71, M0, M1P, M65, etc.

Centinel: Narrow fruits; 5 inches long, 1/2 to 3/4 inch across. Similar in shape to Corbaci but even sweeter. Good for eating fresh, pickling, or stir-frying. In tests conducted by the University of California Extension service, Corbaci rated second in production of 28 tested, yielding 758 fruits from only 10 plants. J4, J73, N84

Chervena Chujski: 85 days. Tapered fruits, 6 inches long and 1 1/2 to 2 inches wide at the shoulder; green, turning brown, then bright red when ripe; extremely sweet and flavorful, almost candy-like. Healthy plants. Heirloom from Bulgaria. One of the most popular sweet peppers ever offered by the Seed Savers Exchange. K47

Corbaci: (Sari Tatli Sivri) Attractive ornamental pepper shaped like a Turkish scimitar. Fruit 11 inches long, 3/4 inch across; bright red when ripe; very sweet. Suitable for eating fresh, cooking whole, or pickling in a large jar. In yield tests conducted by the University

of California Extension service, Corbaci produced 650 fruits from only 7 plants. C26{PL}, F73D, J4, J4D, J73, K23{PL}, N84

Corno di Toro Giallo: (Yellow Bull's Horn) 68 days. Fruit about 8 inches long, 1 1/2 inches in diameter at the shoulder; tapered to a curved point, resembling the horn of a bull; ripens to a deep golden-yellow. Has a spicy flavor, neither hot nor very sweet. A traditional favorite in Italy. B8, B8M, C53, I18M{PL}, 177, J4, K10, K23, K23{PL}, K49T, K66, MO, M1P, Q11M, Q34, etc.

Corno di Toro Rosso: (Red Bull's Horn) 68 days. Long, tapered fruit, 8 to 10 inches long; color deep vivid red when ripe; similar to Corno di Toio Yellow but narrower and not as curved. Excellent eaten fresh or roasted, peeled, and then marinated. Vigorous, branching plant, bears heavily. A7{PD}, B8M, B49, B75, B75{PL}, C53, H49, I99M, J4, K23, K23{PL}, K49T, K66, K71, M1P, Q11M, Q34, etc.

Cubanelle: (Cuban) 65 days. Very popular frying pepper. Fruit long, tapering to a blunt end, 2 to 3-lobed; 2 1/2 inches in diameter, 5 to 6 inches in length; yellow-green, turning red-orange when ripe; medium thick-walled, waxy, of spicy flavor. Medium-tall, heavy yielding plant; sets fruit continuously. Introduced in 1958, probably from Italy. ANDREWS, J. [Re]; A21, B1M, B75M, C44, E13G{PR}, E91G, F71M, F80, G71, H61, J4, J73, K23{PL}, MO, M1P, N16, etc.

Feherozon:<sup>2</sup> Short, conical fruit, 3 1/2 to 4 1/2 inches long; borne in clusters; thin-walled; skin smooth, wax-yellow ("white"); flesh sweet. Popular for *letcho*, stuffed paprika, different kinds of pickles and deep-frozen paprika. Used for mid-season and late spring forcing and in outdoor growing for the early market. Resistant to tobacco mosaic virus. Originated in Hungary. SOMOS; J73

Fushimi Long Green: Long, thin fruit; 5 to 6 inches in length, only 1/2 inch wide; glossy, bright-green skin, wrinkled at maturity; thin-walled; sweet mild flavor. Can be sliced in cross-section for tiny rings. Tall, vigorous plant; very prolific. An old traditional Japanese cultivar. C20M, C26{PL}, D55, G33, F73D, J4, N84, S63M

Giant Szegedi: 70 days. Hungarian long, tapered yellow bell type. Extra large, top-shaped pendant fruit; 3 1/2 inches wide, 6 inches deep; changes color very uniformly, from pale green-yellow to butter-yellow, to orange-red at full maturity; very thick and sweet flesh. Tolerant to verticillium wilt. C26{PL}, J4, K49M, K49T, K57{PL}, L42

Golden Greek: 65 days. Famous pepperoncini type pepper from Greece widely used in the well-known appetizer known as a *Greek Salad*. Small fruit with an inverted tip, shorter than Italian strains; thin-walled; green, turning yellow; mildly hot. Excellent color and flavor when processed. Usually picked at the yellow ripe state for pickling in vinegar. Grown commercially to a limited extent in Louisiana and other Southern states. ANDREWS, J. [Re]; I64M{PD}, J4, J66M{PD}, K10

Italian Sweet: (Long John) 65 days. Thin-skinned fruit; 6 to 7 inches long, 2 inches wide at the shoulder, tapering to a blunt point; dark green, turning red at maturity; medium-thick flesh, has a sweet mild flavor when fully ripe. Excellent for frying. Widely adapted throughout the Northeast. C92, E24, F71M, G93M, J4, J9M, K49T

Lipstick: 53 days. Heavy, cone-shaped fruit; about 5 inches long, tapering to a blunt point; attractive dark-green, ripening to a glossy rich red; thick-walled, juicy, flavorful. Good for salads, cooking and roasting. Dependably early, heavy yields, even in cool summer areas. G6, J4, M32, PIG, R47

Lombardo: Long, thin fruit, slightly wrinkled at the stem end, tapered to a point; approximately 4 to 4 1/2 inches in length; pale green in color; sweet flesh. Excellent for preserving in olive oil or brine. Very productive plant, grows 2 to 2 1/2 feet tall. Widely used in Italy for fresh market and by the commercial canning industry. Q11M

Nardello: (Jimmy Nardello) 75 days. Heirloom Italian frying pepper. Slender, tapered fruit; 1 inch wide, 7 to 8 inches long; green, turning red when ripe; thin-walled, extremely sweet. Excellent for frying or eating raw. Medium-tall, heavy yielding plant; disease resistant. A2, B49, C26{PL}, F24D, F73D, I99M, K23{PL}, K49T, 089

Papri Mild: 78 days. Long, slender fruit; 5 to 7 inches in length, 1 1/2 inches in diameter; deep green, ripening to bright dark red; thick-walled, high in flavor but mild in pungency. Can be dried in the sun or a dehydrator, and powdered for kitchen use. Also excellent fresh or roasted. Selected for its quick drying abilities and extremely dark color at maturity. J73, K49Z, MO, N84

Paradicsomalaku Zold Szentesi: Small to medium-sized, flattened globe-shaped fruit, 2 inches in diameter; 3-4 ribbed; weight 2 1/2 to 3 1/2 ounces; medium thick-walled; dark green turning red when ripe. Sweet, pleasant flavor. Always picked at full maturity for the home fresh market and for processing. Processed into different kinds of purees, pastes, marinades, dehydrated produce and juice. SOMOS; C26{PL}

Pepperoncini: 70 days. Tapered, usually wrinkled fruit; 2 1/2 to 3 1/2 inches long, 1 1/2 inches in diameter; green, turning red when ripe; thin-walled, sweet. Excellent for pickling green — harvest when 2 to 3 inches long. Large, upright plant; height 26 to 36 inches. ANDREWS, J. [Re], DREMANN, S. 1986 [Re]; A2, A7M{PD}, A21, B8M, C26{PL}, D56M, F71M, 139, J4, J76{PL}, K49M, L89, M0, M1P, M46, etc.

Red Cherry: (Cherry Sweet) Round, slightly tapered fruit; 1 inch deep, 1 1/2 inches in diameter; dark green, turning red at maturity; medium thin walls. Popular for pickling at either green or mature red stage. Medium-sized, bushy plant; height 18 to 20 inches; sets fruit continuously. B75M, C26{PL}, E53M, F71M, G71, G82, H33M, H61, 139, J4, L7M, M0

Red Marconi: (Marconi Rosso) Traditional long red, very sweet peppers from Italy. Tri-lobed fruit, slightly curved towards the lower end; 10 to 12 inches long, 2 1/2 inches across at the shoulder. Very mild at all stages of ripeness. Excellent for salads and frying, both green and when mature. Dwarf, upright plants, very productive. A2, B8M, B73M, C53, C92, G57M, H49, J4, K10, M0, M1P, M32, Q11M, Q34, RUM, S55, etc.

Shishito: (Lion Pepper) Small, irregularly curved and wrinkled fruit; 2 1/2 to 3 inches long, about 1 inch across; thin, pale green skin; crisp and mild flavored. Suitable for tempura and chicken shish kebab. Vigorous, productive, semi-upright plant with short internodes; widely adapted; early and heat resistant. For home gardens and fresh market. ISUJI; C20M, C26{PL}, D55, F73D, J4, N84, Q28, S70

Sigaretta di Bergamo: Long, narrow fruit, slightly wrinkled at the stem end, tapered to a point; approximately 4 to 4 1/2 inches in length; very thin-walled; sweet flesh. Will turn red when ripe, but usually picked green. One of the best cultivars for pickling in vinegar. B8, C26{PL}, Q11M, S17

Slim Pim: Slim green fruit, about 4 inches long, turns red when mature. Best eaten when very young and tender. May be cooked whole in Chinese dishes or stews. Vigorous plants produce early and abundantly. Of Japanese origin. C20M, N84, R32, S55

Super Shepherd: 68 days. Very popular Italian Sweet type. Tapered, irregularly curved fruit; 7 1/2 inches long, 2 1/2 inches wide at the shoulder; dark red; unusually thick flesh, sweet and juicy, has a distinct flavor. Perfect length and flesh thickness for processing or frying. A2, B8, J4, L7M, L42

Sweet Banana: (Hungarian Yellow Sweet Wax) 70 days. Long, cylindrical fruit, tapering to a point; 1 1/2 inches in diameter, 6 inches long; waxy yellow, turning red when ripe; medium thick-walled, sweet and mild. Compact, sturdy plant; height 18 to 22 inches; produces an abundance of fruit over a long period. All-

purpose cultivar for shipping, processing and fresh market. All America Selections winner in 1941. ANDREWS, J. [Re]; A16, B63M{PD}, B78, C44, F32D{PL}, F71M, F82, G71, G79, H61, I64,, L7M, M1P, N16

Sweet Pickle:<sup>3</sup> 65 days. Dwarf plant, 12 to 15 inches tall; produces dense clusters of two inch oval fruits - yellow, orange, red and purple, all on the plant at the same time. Ideal as an ornamental bedding plant. Thick-walled fruit, sweet and flavorful, especially in the orange and red stages. Excellent pickled. F37T{PL}, 191, J4, K49M

### HOT PEPPERS

#### MEXICAN/SOUTHWESTERN

Anaheim: Long, tapered, pointed fruit; 7 to 8 inches long, 1 to 1 1/2 inches wide; light green, turning crimson red when ripe; medium thick-walled, mild to moderately hot. Very popular for stuffing when red-ripe. Vigorous, upright plant; height 28 to 30 inches. Smoked dried green pods are called *Chile Pasado*. Widely grown in California and the Southwest. Originated near Anaheim, California in 1903. ANDREWS, J. [Pre, Re], CUSUMANO [Cul, Re], SCHNEIDER 1986 [Cul, Re]; C89{PR}, D3M{PR}, E13G{PD}, F13, F37T{PL}, F71M, F80, G71M, I63T{DF}, J73, K66, K71, L89, M1P, N16, N40{PR}, N40{PD}, etc.

Ancho: (Poblano, Mulato) Large, conical fruit; up to 5 1/4 inches long, 3 3/4 inches wide; deep dark-green, turning red at full maturity and reddish-brown when dry; mildly pungent to hot. Widely used for *chilis relleños*. Plant grows 2 to 3 feet tall; requires a warm climate. Known as Poblano when fresh. Probably the most popular chili in Mexico. ANDREWS, J. [Pre, Re], CUSUMANO [Cul, Re], SCHNEIDER 1986 [Cul, Re]; A21, B75, C94M{DF}, E13G{PR}, F71M, I63T, I63T{DF}, J4, J20, J25M{PL}, J73, J76{PL}, K23, K23{PL}, L17{DF}, M81T, etc.

Cascabel: Mexican cherry type. Small, oblate fruit; 3/4 inch long, 1 inch in diameter; dark green, turning deep red at maturity and reddish-brown when dry; medium-thin walls; moderately pungent, spicy flavor. Very popular for drying. Medium-large plant, to 3 feet tall. Spanish name means "jingle" or "sleigh bells", referring to the rattle the pods make when dried. ANDREWS, J. [Re], CUSUMANO [Cul, Re], DREMANN, S. 1986 [Re], LATORRE 1977a [Re]; A7{DF}, A21, A49D{DF}, D42M, E13G{DF}, G47F{DF}, H73{DF}, I63T, I63T{DF}, J4, J25M, J25M{PL}, J76{PL}, L17{PD}, MO, N40{DF}, etc.

Cascabella: (Cascabelle) 75 days. Small, heart-shaped fruit; 1 1/2 inches long, 3/4 inch in diameter; light yellow, turning deep orange-red at maturity; medium-thick walls, mildly pungent flavor. Widely used when in the yellow state by commercial packers for hot pickled chilis. Medium-large plant, to 3 feet tall. Developed by the Clarence Brown Seed Co. of Fresno, California. ANDREWS, J.; C20M, C69D{PL}, D42M, D74B, F73D, G57M, 139, J4, K49Z, K66, MO, M1P

Chilcostle: (Chilcoxtle) {DF} Gourmet chile from Oaxaca, Mexico. Highly prized by knowledgeable chile chefs. Thin-walled; turns orange-red when ripe. Excellent, medium hot, slightly sweet, citrus-like flavor. Used in the classic red and yellow Oaxacan mole sauces. Also very good in salsas and soups. Both large and small dried forms are available. QUINTANA 1994 [Re], ZASLAVSKY; E13G, 116, 163 T

Chilhuacle Negro: {DF} Large, bell-shaped fruit; dries to a nearly black, mahogany color. Moderately pungent, extremely rich, intense flavor. Used for making the famous Oaxacan black mole sauces. Known as *siete caldos* in parts of Mexico, as one pod is enough to make seven bowls of soup. Becoming very popular with gourmet chefs. ANDREWS J., DEWITT 1996, ZASLAVSKY; C26{PL}, C34G, E13G, F73D{S}, 116,163T

Chimayo: 95 days. Legendary chili, developed by the Hispanic residents of Chimayo, New Mexico. Long, slightly curved, blunt-

ended fruit; 5 to 6 inches in length; mild when green, quite hot when red. Used for making the *ristras* found all over the Southwest. Plant grows 24 to 30 inches tall. DREMANN, S. 1989; A7{DF}, C26{PL}, C69D{PL}, D42M, 116,116{DF}, I63T, I63T{DF}, J4, J25M, J25M{PL}, J73, K17J{DF}, N84

Coban: Small, conical fruit, 3/4 inch long and 1/2 inch wide; red when ripe; quite hot but flavorful. Traditionally preserved by being smoke dried like the *Chipotle* chile. Planted in spring in the low hot desert. In temperate areas, sow in spring when the soil has warmed up some. Very popular in Guatemala, where it is sold in local markets. MARKS; C26{PL}, C69D{PL}

Costeno: Elongated, cylindrical fruits with narrow shoulders; similar to Guajillo and Miasol. Very attractive, glossy, deep orange-red when ripe. Mildly hot, spicy flavor, excellent in salsas and mole sauces. Grown mostly in the states of Guerrero^ Veracruz and Oaxaca. Both red and yellow dried forms are available. Occasionally found in Mexican and Latin American markets. ANDREWS, J.; C69D{PL}, C95, E13G{DF}, I16{DF}, I63T{DF}, K23, K23{PL}

De Arbol: (Tree Chile) 75 days. Tapered, pointed fruit; 2 1/2 inches long, 3/8 inch wide; light green, turning bright red when ripe; very thin-walled, very hot, although the hotness does not seem to irritate the stomach. Upright plant; 3 to 4 feet tall, 18 inches across; very productive; perennial in warm climates. Often used for infusing fancy bottles of oil and vinegar. ANDREWS, J. [Re], DREMANN, S. 1986 [Re]; A7{DF}, C94M{DF}, D42M, 116,163T, I63T{DF}, J4, J25M, J25M{PL}, J76{PL}, J73, K17J{PD}, K49M, L17{DF}, MO, M1P, M81T, N40{DF}, etc.

De Comida: Glossy red fruit, 4 to 6 inches long; rather hot. Traditionally used in making *mole*, a popular pre-Columbian sauce made from chilis, unsweetened chocolate, onions, tomatoes, cinnamon, etc. Fruit dries well for storage. From the state of Oaxaca, Mexico. F80, N84

Dr. Greenleaf Tabasco: (*C. frutescens*) 120 days. A virus resistant tabasco pepper developed at the University of Auburn. Produces a heavy crop of very pungent red pods; excellent for hot pepper sauce. Especially adapted to the South. Also an excellent ornamental. D42M, J4

Espanola Improved: 70 days. A special short-season chili which will turn red and become hot even in cool, northern climates. Long, tapered, medium-sized fruit; dark-green, turning red when ripe; thin-walled; extremely hot; resembles Sandia. Can be used for fresh green chile or dry red products. Developed from a cross of Sandia and an Espanola Valley native type chili. Released in 1983 by the New Mexico State Agricultural Experiment Station. C26{PL}, C69D{PL}, D42M, F71M, I63T, J4, J25M, J25M{PL}, K5M, K66, M0, Q34

Guajillo: 58 days. Large, tapered fruit; 4 1/2 to 5 1/2 inches long, 1 to 1 1/4 inches in diameter; green, turning translucent red when ripe; thin-walled, quite hot. Good for drying. Grows 3 feet tall, 1 1/2 feet wide. Very popular in parts of Mexico, where it is nicknamed *Chili Travieso* or "naughty chili" due to its fierce bite. ANDREWS, J. [Re], DREMANN, S. 1986 [Re]; A7{DF}, D42M, E14T{DF}, G47F{DF}, H73{DF}, I16{DF}, I63T, J4, J25M, J25M{PL}, J73, K18M{DF}, L34{DF}, M0, N40{DF}, Q34, etc.

Giiero: Conical fruit, 3 to 4 inches long and 1 to 1 1/4 inches wide, tapering to a point; yellow, turning orange, then red when completely mature; sweet flesh, moderately hot seed walls. Known as *largo* or *carricillo* when pickled. Classic yellow hot pepper of Mexico used for pale yellow, regional sauces. Generally considered a group name for small, yellow peppers. ZASLAVSKY; C34G{PD}

Habanero: (Orange Habanera) (*C. chinense*) Square to heart-shaped fruit, often wrinkled; 1 1/2 to 2 inches long; light-green, turning orange at maturity. Has an unusual flavor and scent when ripe. Excellent for sauce. Reportedly the hottest pepper in the world.

Available fresh, dried or pickled in specialty markets. Requires a long, hot growing season. Spanish name means "of Havana" or "from Havana". ANDREWS, J. [Re], DREMANN, S. 1986 [Re]; A7{PD}, A21, B73M{PL}, B75{PL}, C34G{PD}, D3M{PR}, E53M, F80,139,163T, I63T{DF}, J4, J25M, J73{PD}, J76{PL}, K66, M81T, R47, etc.

Jalapeno: 75 days. Sausage-shaped fruit, tapering to a blunt end; about 3 inches long, 1 to 1 1/2 inches in diameter; glossy deep-green, turning bright red when ripe; medium-thick walls, very pungent. Very common and popular cultivar; widely used in Mexican and Southwestern cuisine. Dried, smoked red-ripe Jalapeno, called *Chipotle*, has a unique smoky flavor. There are three grades of *Chipotle* peppers, which are graded by size—*Meco*, *Mora* and *Morita*. ANDREWS, J. [Pre, Re], CUSUMANO [Cul, Re], SCHNEIDER 1986 [Cul, Re], ZASLAVSKY; A7{PD}, C44, C94M{DE}, D82, F71M, G71M, H35{PD}, I34J{PD}, I63T{DF}, J73{PD}, K17J{PD}, K18M{DF}, L7M, L16{ED}

Louisiana Hot: 70 days. Elongated, tapered fruit, about 3 or 4 inches long; pale yellowish-green, turning red when mature; very hot. Bears fruit early and prolifically. Heirloom cultivar preserved by the Arledge family of Louisiana. A2, J4, L7M

Mexican Negro: (Pasilla Negro) 55 days. Unusual, sausage-shaped fruit; blunt-ended, 3 to 4-lobed, ridged along the length; dark green, changing to dark reddish-brown or black when ripe; thin-walled, with small bumps on the skin; mildly hot. Used for sauces, etc. Also excellent for drying. Grows 3 feet tall, 2 feet across, of fairly easy culture. DREMANN, C; C26{PL}, E13G{DF}, F73D, H1M{DF}, I16,163T, J73, K17J{DF}, K23, K23{PL}, L17{DF}, N40{DF}, N84

Miraso: (New Mexico Chili Improved, Mexican Improved) Fruit 5 inches long, 1 1/4 inches in diameter at the shoulder, tapering to a point; green, turning red at maturity; thick-walled, moderately hot; resembles Guajillo. Good for canning, freezing or drying. Imparts a yellow color to foods that are cooked with it. Borne mostly upright on 27 inch tall plants. Spanish name means "looking at the sun". The original form is a pre-Columbian cultivar. ANDREWS, J., DREMANN, S. 1986 [Re]; B75M, C26{PL}, C69D{PL}, F71M, F73D, H61, 116, I63T, I63T{DF}, J4, J25M, J25M{PL}, K46T, K66, MO, Q34, etc.

New Mexico: Anaheim type, mainly grown along the Rio Grande River, especially around the town of Hatch, New Mexico. Tapered fruit; 4 1/2 to 6 inches long, about 1 1/2 inches in diameter; green, turning red when ripe; mildly hot, but flavorful. Popular for drying and *ristras*. Also used for *chilis rellenos* when green. High yielding plant; 30 inches tall, 15 inches across. DREMANN, C., DREMANN, S. 1989; A7{DF}, E13G{DF}, E14T, K17J{DF}, M32, N40{DF}

NuMex Big Jim: (Big Jim) 80 days. Large to very large fruit; 7 to 9 inches long, 2 inches wide at the shoulder, tapering to a blunt end; medium-green, turning red when ripe; thick-walled, medium hot. Used fresh (roasted and dried), dried and powdered, or canned. High yielding plant; provides good leaf coverage. A21, B75M, D42M, D76, E97, F71M, H61, H95, I63T, J4, J25M, J25M{PL}, K5M, L4, MO, M1P, etc.

Pasilla: Long, slender fruit; 6 to 7 inches in length, 3/4 to 1 inch wide; dark green, turning red, then brownish-black at full maturity; flesh mild, seeds and veins quite hot. Has a distinctive rich, smoky flavor with a hint of chocolate, making it essential for *mole* sauces. Called *Chilaca* when fresh. ANDREWS, J. [Re], LATORRE 1977a [Re]; A7{DF}, A7{PD}, A21, C94M{DF}, E13G{PR}, E14T{DF}, F71M, 116, I63T{DF}, J4, J25M, J25M{PL}, J66M{DF}, K49M, K49T, N40{PR}, etc.

Pasilla de Oaxaca: (Mije) {DF} Legendary Pasilla strain from Oaxaca, Mexico. Highly prized by knowledgeable chile chefs. Long, narrow, tapered fruit; 7 inches in length by 1 inch in diameter; dark green, turning an attractive blackish-brown when ripe. Excellent, distinctive, mildly hot flavor. Most often smoked and used for

making mole sauces and *rellenos*, or pickled in pineapple vinegar. DEWITT 1996, QUINTANA 1994 [Re], ZASLAVSKY; C34G, C69D{PL}, E13G, 116, D42M{S}, I63T, L16

Pico de Gallo: Small, narrow fruit; 3 inches long, tapering to a curved point; very hot. Excellent for salsa. Very prolific, narrow-leaved plant; height about 3 feet; perennial in warm climates or where protected. From Sonora, Mexico. Spanish name means "rooster's beak". C26{PL}, F73D, 116, N84

Puya: (Pulla) Tapered, pointed fruit, resembles Guajillo; 3 to 3 1/2 inches long, 1/2 inch wide; green, turning brownish-red when ripe; thin-walled, very juicy, has a strongly pungent, slightly tart smoky flavor. High yielding plant; 3 feet tall, 2 feet wide. Widely used throughout Mexico, especially in the spicy, nonalcoholic chasers called *sangritas*. DREMANN, C., DREMANN, S. 1986 [Re], HUTSON 1995 [Re], LATORRE 1977a [Re]; A7{DF}, C26{PL}\ C69D{PL}, D29P, D42M, H73{DF}

Red Savina Habanero: (C. chinense) 90-100 days. Recently accepted into the Guinness Book of World Records as the hottest pepper known. Has recorded 350,000 to 577,000 units on the Scoville heat scale. Wrinkled, lantern-shaped fruits; 2 inches by 1 inch; bright red when ripe. Excellent, spicy, fruity flavor. Large plant, about 3 1/2 feet tall; grows best in areas with long, hot summers. Patented. DEWITT 1996; C69D{PL}, D26G, I63T, K17J, K17J{DF}, K57{PL}, K66

Rica Red Habanero: (C. chinense) Elongated, slightly wrinkled fruit; 2 1/2 inches in length and 1 1/2 inches across; green, turning bright red when ripe. Very pungent, but with a sweet, delicious, fruity flavor. Registers about 180,000 on the Scoville scale. Grown commercially to make pepper mash for the hot sauce industry. Developed in Costa Rica by Quetzal Foods from cross-bred red Habaneros. DEWITT 1996; C26{PL}, I63T{DF}, I63T{ED}, K17J{ED}

Sandia: 77 days, Tapered, flat, pointed fruit; 7 to 8 inches long, 1 1/2 to 2 inches wide; dark green, turning bright red at maturity; medium-thick walls, very hot when red-ripe. Can be used green or red, fresh or dried. Mainly roasted when green, peeled and frozen. Also very popular for *ristras*. Upright plant, 28 to 30 inches tall. DREMANN, C., DREMANN, S. 1989; C26{PL}, D1T, D42M, F73D, G57M, H61, 116, I63T, J4, J25M, J25M{PL}, J73, K5M, MO

Santa Fe Grande: 75 days. A large Floral Gem type developed to have smoother fruit without "dimpling". Conical, blunt-ended fruit; 3 1/2 inches long, 1 1/2 inches wide at the shoulder; turns yellow at market stage, ripens to orange-red at full maturity. For fresh market, canning and pickling. Vigorous, upright plant; height 25 inches; resistant to tobacco mosaic virus. SCHNEIDER 1986 [Cul, Re]; A21, A87M, B75M, D42M, F71M, G93M, H61,163T, I63T{DF}\ J4, J25M, J25M{PL}, J73, K5M, M1P, N16, etc.

Santo Domingo Pueblo: Heart-shaped fruit, 3 to 4 inches long, 1 inch in diameter; very hot, but not without a fruity flavor. Used fresh or dried. Similar to Chimayo but pointed. Treasured by the Native Americans of the Santo Domingo Pueblo of New Mexico. Traditionally made into dried *ristras*, then rehydrated or ground. C26{PL}, 116, J4, J73, N84

Serrano: 80 days. Slender, cylindrical fruit; 2 1/4 inches long, 1/2 inch in diameter, tapering to a blunt point; medium dark-green, ripening to bright red; medium-thin walls, extremely pungent. Used for fresh market, pickling and sauce. Vigorous, highly productive plant; height 30 to 36 inches. Very popular in Mexico and the Southwest. ANDREWS, J. [Pre, Re], CUSUMANO [Cul, Re], SCHNEIDER 1986 [Cul, Re]; D42M, F71M, G13M, H61, I63T{DF}, J4, J25M, J25M{PL}, J73, J76{PL}, K23{PL}, K66, M81T, N16

Tabasco: (C. frutescens) Small, slender fruit, about 1 inch long; borne upright; yellow-green, turning scarlet when ripe; extremely hot. Used to make the famous Louisiana hot sauce. First raised by

Edward McIlhenry at Avery Island, Louisiana from seeds brought from the state of Tabasco, Mexico by an American soldier returning from the Mexican War of 1846-48. ANDREWS, J. [Re], DREMANN, S. 1986 [Re], HEISER 1969; A21, B38, D42M, E13G{DF}, 116,163T, 14, J25M, J25M{PL}, J73, J76{PL}, J97M, K49M, K66, K71, MO, M1P, M81T, N40{DF}, etc.

Thbiche: 85 days. Tapered, pointed fruit; 5 inches long, 7/8 inch in diameter; glossy dark green, turning red when mature; smooth, thin-walled, crisp, very hot. Most often used while still green. Good for drying. Grows 2 feet tall, 18 inches wide. From the Zapotec Indians of the state of Oaxaca, Mexico. DREMANN, C., DREMANN, S. 1986 [Re]; D29P, F80, N84

Xcatic: (Xcatik) Long, cylindrical, waxy fruits; 5 to 7 inches in length and 3/4 to 1 inch wide; blunt-nosed, sometimes slightly twisted; pale greenish-yellow, turning orange, then light red when ripe; mildly hot flavor. Unique to the Yucatan, where it is used mostly for salsas. DEWITT 1996, GERLACH [Pe], QUINTANA 1986 [Re]; U37M

## OTHERS

### Hybrid

Mexi Belle: 70 days. Unique hot pepper with a bell-pepper shape. Medium-sized, 3 to 4-lobed fruit; 4 inches square; medium-green, turning red when ripe; medium-thick walls, mildly hot flesh, pungent ribs. Hotness can be controlled by the amount of interior ribs left on during preparation. Compact plant; tolerant to tobacco mosaic virus. A21, C20M, C26{PL}, C44, D42M, D68, F65, G79, J4, MO, M1P, M46, N52

Super Cayenne: 70 days. Attractive, slightly curved pods, 3 to 4 inches long; red when ripe; good fiery flavor. Excellent fresh or dried. Compact, spreading plant, height 2 feet; very prolific, bears 3 to 4 dozen peppers per plant; ornamental in appearance. Does well in containers. All America Selections winner for 1990. B73M, B73M{PL}, C44, D92M, G1M, G71, K10, L79, MO, M95M, N16

Super Chili: 70 days. First hybrid chili pepper. Small, elongated, cylindrical fruit; 2 to 2 1/2 inches long, 1/2 inch wide; pale-green, turning red when ripe; thin-walled, very hot. Harvest at green or mature red stage. Upright, spreading, semi-compact plant; extremely prolific; bears fruit upright; ornamental. All America Selections winner in 1988. B6, B73M{PL}, C44, C92, D11M, F32D{PL}, F70, G6, G79,191, J4, L79, MO, M1P

### Open-Pollinated

African Bird: (African Birdseye) {DF} Long, slender fruit, 2 to 3 inches long about 1/2 inch in diameter; medium green, turning bright red when ripe; excellent, spicy hot flavor; resembles De Arbol. Very thin walls, making it ideal for drying, dries quickly. Tall, upright plant; height 5 feet, 18 inches across; very prolific. Widely grown in eastern Africa for commercial cayenne. A7, C94M, E14T, F86G, GO, I63T{DF}, J58, K17J, K18M, L34, M15M

Aji Panca: (C. chinense) Medium-long, tapered fruits, 5 to 6 inches in length and about 1 inch wide; medium thick-walled; deep purplish-black, turning red when ripe. Excellent, spicy, mildly hot flavor. Can be used fresh in salsas or dried and powdered for use as a condiment. Very popular in Peru. Usually available at South American markets. C26{PL}, J4, K17J{PD}

Almapaprika:<sup>2</sup> Small, round or somewhat flattened fruit; 1 inch tall; weight 1 1/2 to 2 ounces; extraordinarily thick-fleshed; skin smooth, ivory-white turning red when mature; pungent. Fruit cavity small. Processed into pickles. The most widely-grown hot pepper in Hungary. SOMOS; J4, J73, N84

Angkor Sunrise: (C. frutescens) Small, oval fruit, tapering to a point at the blossom end; 1 inch long and 1/2 inch in diameter; borne upright; bright yellow, turning red when ripe; very hot. Grows well in containers. Collected in Cambodia by adventurer and author Richard Sterling. DEWITT 1996; C69D{PL}, I63T

Berberé: 90-100 days. Smooth, tapered fruit; 6 inches long, 3/4 inch in diameter; turns bright red when ripe; fiery hot. Very tall, highly productive plant. From Ethiopia, where *berbere* is a generic term for a curry-like paste made of paprika, chilis, and spices. MESFIN [Re], VON WELANETZ; A7{PD}, C95, H51{PD}, L90K{PD}, N84

Bishop's Crown: Unique, three and four sided pods, resemble the crown a Catholic bishop wears; green, turning orange and then red; medium hot. Late maturing. Very large plant. Highly recommended for its novelty and utility. Originally from Barbados. C69D{PL}, M81T

Bulgarian Carrot: (Shipkas) 65-68 days. Distinctive heirloom from Eastern Europe. Long-conical fruits, about 3 1/2 inches in length; green, ripening to an attractive, fluorescent orange; very pungent, with an intense fruity flavor. Excellent in pickles, salsas, chutneys and marinades. Compact plant, 18 inches tall. Reportedly smuggled out of the Iron Curtain about 20 years ago. C26{PL}, C69D{PL}, I63T, K66, K71, M1P, M46

Congo: (G chinense) Very large fruits, 2 1/2 inches long and 3 inches wide; heavily ribbed and folded; green, turning bright red when ripe; extremely pungent and aromatic. The main pepper of the eastern Caribbean. Very popular in Trinidad and Tobago where it is widely used for sauces. Grows well in containers. Congo means large in the local slang. DEWITT 1993 [Re], DEWITT 1996; C26{PL}, C69D{PL}, I63T

Datil: (C. chinense) Small, slightly undulated fruit, 1 1/2 to 2 inches long and 1/2 inch in diameter; smooth, waxy skin, green turning dark orange when ripe; relatively thin-walled, dries well; extremely hot but with a nice, full flavor, heat units 100,000 to 120,000. Tall, bushy plant, grows to 3 or 4 feet; moderately productive. Popular for relish, jelly and thick, catsup-like pepper sauces. A local favorite in St. Augustine, Florida. Introduced there about 300 years ago by Minorcan settlers. A21, C26{PL}, C69D{PL}, C87, C87{DF}, C87{PD}, F73D, J4, J76{PL}, K17J{PC}, L17{ED}, M81T

Elephant's Trunk: Extremely long, tapered fruit, about 1 inch in diameter, resembles the trunk of an elephant; deep green, changing to dark red; thick-walled, pungent. Eaten when dark-green or red ripe. Good for salads and pickles. Very popular Indian cultivar. J73, N84, Q18, Q45M, R50, S59M

Fatalii: (C. chinense) Small to medium, dagger-shaped fruit, 2 1/2 to 3 inches long and 1 1/2 inches wide; pale-green, turning bright yellow when ripe; thin-walled; extremely pungent. Prolific plant, grows well in containers. Originally from the Central African Republic. DEWITT 1996; C26{PL}, C69D{PL}, J4D, I63T

Fish: Small, conical fruit; white with green stripes, turning orange with brown stripes, and red when ripe. Ornamental plant with variegated white, gray and dark green leaves. Once popular at oyster and crab houses for seasoning various seafoods, especially terrapin dishes. Traditionally dried at the white stage for use in cream sauces. African-American heirloom from the 19th Century. Apparently originated near Baltimore as a sport of Serrano WEAVER 1997; D29P, F73D

Floral Gem: Medium-sized, blunt conical fruit, mostly three-lobed; turns a rich red on maturity. Used commercially in the yellow wax state. The pickled product is marketed by Trappey's of Louisiana as *Torrido chili peppers*. Spreading, vine-like plant, highly susceptible to tobacco mosaic virus. Introduced in 1921. ANDREWS, J.; F71M, J4, J58{ED}, K10

Fresno Grande: 75 days. Improved Fresno type. Small, conical fruit, tapering to a point; 3 inches long, 1 1/2 inches in diameter; medium green, turning bright red at maturity; medium thick-walled, very pungent. Upright plant; height 20 to 24 inches; sets fruit continuously; resists tobacco mosaic virus. Popular fresh market cultivar. Introduced in 1970. DREMANN, S. 1986 [Re], SCHNEIDER 1986 [Cui, Re]; B75M, C20M, C26{PL}, C69D{PL},



E13G{PR}, F71M, G93M, J4, K49T, N40{PR}, N52, S75M

Goat Horn: 70 days. Tapered, cylindrical fruit, often curled and twisted; 5 to 6 inches long, 1/2 to 1 inches wide; deep green, turning cherry red when mature; fiery hot. Good for drying, cooking or pickling. Short plant; height 18 to 20 inches. Very popular in Southeast Asia. D55, J4, K57{PL}, L59, L79G, M1P, N81, N84

Golden Cayenne: Slightly curved, pencil thin, sabre-shaped fruit; 6 inches long; quite smooth with few wrinkles; attractive, golden-yellow color. Very hot, being suitable for East Indian and Thai cuisines. Bushy, upright plant; much more productive than other hot peppers. A21, C69D{PL}, D92M, F73D, G53M, J4, K10, L42, MO

Grandpa's Home: 70 days. Small, brilliant-red, semi-hot peppers. Compact plant; grows to 12 inches in height; produces 50 or more fruit. Originated in Siberia where it is traditionally grown in pots set near a window. Will produce all winter long under low-light conditions. F44

Hot Apple: 70 days. Medium-sized, pale butter yellow, tomato-shaped fruit; 2 1/2 inches across, 1 1/2 inches deep; very thick, mild flesh; quite hot at the center core of seeds. Mostly used for pickling and canning; can also be used fresh from the garden. C69D{PL}, 177, M81T, N52

Hot Portugal: 64 days. Large, smooth fruit, tapered to a point; 6 to 7 inches long, about 1 inch in diameter; green, turning glos<sup>^</sup>, bright scarlet-red when ripe; thick-walled. Fiery hot but with good pepper flavor that survives the heat. Can be used when green, red or dried. Sturdy, high yielding plant. C69D{PL}, D68, D92M, F13, J4, L42, N52

Hungarian Yellow Wax: (Hungarian Long Wax) 70 days. Uniform, slightly tapered fruit; 6 to 7 inches long, 1 1/2 inches in diameter; waxy yellow, turning red at maturity; medium thick-walled, firm, very pungent. Popular for canning and pickling. Strong, upright plant; height 20 to 24 inches; sets fruit continuously. CUSUMANO [Cul, Re], SCHNEIDER 1986 [Cui, Re]; A16, B73M, B75M, C26{PL}, C44, E24, E75{PL}, F32D{PL}, F71M, G6, H61,184, J14{PL}, L7M, M1P, etc.

Italian White Wax: Tapered, pointed fruit; 2 to 3 inches long, 1/2 inch in diameter; pale yellow, turning pale red at maturity; moderately thin walls; snappy, mild flavor when picked young, quite pungent if left to mature. Upright plant; height 34 to 40 inches; productive over a long period. Very popular home garden cultivar for pickling. B63M{PD}, G93M, J4

Large Red Cherry: 75 days. Small, flattened globe-shaped fruit; 1 to 1 1/2 inches in diameter; medium-green, turning dark red when ripe; thick-walled, very hot. Widely used for pickling and canning. Strong, upright plant; height 24 inches; sets fruit continuously over a long harvest period. B75, C44, E91G, G71, H61,139,163T, J4, K10, K50, L42, M0, M1P

Long Red Cayenne: 70 days. Long, cylindrical fruit, tapered to a point; often curved and twisted; 4 to 5 inches long, 1/2 to 1 inch in diameter; deep green, changing to red when mature; very hot. Widely used fresh, dried, canned and pickled. Large, productive plant. DREMANN, S. 1986 [Re]; A25, B75, E91G, J20, J97M, L10, L42, R47

Long Slim Cayenne: 72 days. Long, slender fruit, tapered to a point, often wrinkled; 6 to 7 inches long, 1/2 inch wide; dark green, ripening to bright red; highly pungent. Excellent for drying. Vigorous, high-yielding plant; height 20 to 24 inches. Well known and popular cultivar. C69, C85M, C92, D76, E24, H61, H85M, /59M, /64, K5M, K10, K71, M0, M1P, N16, etc.

Malagueta: (*C. frutescens*) The most popular pepper in Brazil. Made into a sauce or *molho* which is the standard condiment on all Brazilian tables. Small, elongated, pointed fruits resembling Tabasco peppers; 3/4 to 1 inch long, about 1/4 inch wide; green, turning red when ripe; very hot and flavorful. Preserved in oil, vinegar or

*cachaga*, a sugar cane liquor. DEWITT 1996, IDONE [Re]; C26{PL}

Paprika: (Culinary Paprika, Paprika Mild) 85 days. Short, flattened, 4-lobed fruit; 2 inches long, 4 inches wide; thin-walled, very mild and flavorful. Excellent for drying and powdering. Especially popular in Hungarian cooking. Upright plant, 2 1/2 to 3 feet tall. A2, C92, E5T, L7M, M1P

Peter Pepper: Appropriately named, penis-shaped fruit; 3 to 4 inches long, 1 to 1 1/2 inches wide; green, turning red when ripe; thin-walled, very pungent. Excellent for pickling when green; also dries well. Large, prolific plant, 20 to 30 inches tall. A21, C26{PL}, C69D{PL}, D42M, J4, J4D, J25M, J25M{PL}, J76{PL}, K71, M1P, M81T

Piment d'Espelette: {DF} Conical fruit, 3 to 4 inches long, bright red when ripe; medium-hot; thin-walled and seedy. Traditionally roasted and ground into an aromatic reddish-orange powder known as *bipergorria*, and used in classic dishes such as *piperade* and *axoa*. Also popular for making ristra-like garlands called *cordes*. Grown near the village of Espelette in the Basque region of France. Celebrated there at an annual chile festival or *Fete du Piment*, on the last weekend of October. KARP [Re]; H25M{OR}

Pimenta de Cheiro: (*C. chinense*) Most popular Amazonian chile. Small, oval fruits; attractive, bright-yellow, turning red when ripe. Less intensely hot and more fruity than Malagueta. Collected from the wild, where it grows profusely, and sold in local markets. Often made into a sauce or *molho* that flavors soup dishes such as *pato no tucupi* and *tacaca*. IDONE [Re]; C26{PL}

Pimiento de Padron: Very small, slightly wrinkled fruit, 1 inch in diameter and about 1 1/2 inches long; may be sweet or hot depending on the season and individual plants. Only sold in the green stage, and cooked in one way—deep fried in olive oil and served piping hot with sea salt. Popular in tapas bars and restaurants throughout Spain, and at harvest celebrations. A specialty of Herbon, near Padron in Galicia, where it is thought to have been introduced by Franciscan monks. DOMINfi, DOMINGO, SEVILLA 1997a; L13P{DF}

Piquillo: (Little Beak) {PD} Medium-sized, triangular fruits; 2 to 2 1/2 inches in diameter at the top, about 3 inches long; deep, ruby-red when ripe; mildly hot. Unique, rich flavor that develops after having been grilled over beechwood fires. Famous Spanish roasted pimiento, highly valued for tapas. Grown mostly in the northern province of Navarre, those from Lodosa being the best. ANDREWS, C. 1988 [Re], DOMINE; G47J, L13P, N54

Piri-Piri: (Peri-Peri) (*C. chinense*) Small, extremely hot red pepper from Angola, widely used in Portuguese cooking. Often used for *molho de Piri-Piri* (hot red pepper sauce), or minced and preserved in olive oil. Originated in Brazil. Brought by the Portuguese to Angola, where it became an integral part of the local cuisine. ANDERSON, J. [Re], VON WELANETZ; A7{DF}, C26{PL}, K17J{PD}, L13P{PD}

Prik Kee Noo: (Pricky Nu) 75 days. Small, slender fruit, about 1 1/2 inches long; borne upright; intensely hot; distinctive, fragrant flavor. Very good for drying after turning red. May also be used when green, in the same manner as Jalapenos. Dwarf, ornamental plant, 12 to 18 inches tall; highly productive. The most popular pepper in Thailand. LOHA-UNCHIT [Re]; C26{PL}, L16M{DF}

Purple Venezuelan: Very unusual and ornamental pepper with leaves that are dark purple above and green below. Flowers, stems and unripe fruit are also purple. Small, round fruit; 3/8 to 1/2 inch wide; remains purple for some time before changing to green, then bright red when mature; sizzling hot. DREMANN, S. 1986 [Re]; D92M, E5T, J76{PL}, M81T

Red Cherry: (Small Red Cherry) 75 days. Small, nearly round fruit; 1 inch long, 1 1/2 inches deep; dark green, turning dark red when mature; medium thick-walled, quite hot. Excellent for pickling

and canning. Prolific, upright plant; height 18 to 20 inches. E13G{PR}, F71M, G57M, K5M, N52

Red Chili: (Finger Cayenne) (*C. frutescens*) Slender, conical fruit, borne upright; 2 to 2 1/2 inches long, 1/2 inch in diameter; green, ripening to a brilliant scarlet; exceedingly pungent. Good fresh or dried. Spreading plant, 16 to 20 inches high, 2 feet wide. Requires a long, warm season. Introduced prior to 1865. BURR, DREMANN, C, DREMANN, S. 1986 [Re], VILMORIN; C20M, C92, G71, J4, J73, K10, K71, MO, M1P, N52, N84

Rocotillo: (*C. chinense*) Small, squash-shaped fruit, 1 to 1 1/2 inches in diameter; deep carmine-red when ripe; crisp textured; pungent enough to be interesting, but never caustic. Excellent eaten raw; also makes an attractive garnish. Traditionally used as a condiment with beans or carne asada. Grows well in central Texas but does not attain the size it would in its homeland (Peru). ANDREWS, J.; A7{DF}, C26{PL}, C69D{PL}, J4, J25M, J25M{PL}

Romanian: 70 days. Semi-hot type. Blocky fruit, tapers to a blunt end; 4 to 5 inches long, 2 to 2 1/2 inches wide; yellow, turning brilliant red when mature; medium thick-walls, sweet flesh, pungent ribs. Used fresh or for canning. Bears continuously until frost. Traditional, medium-hot blocky type. F63, F71M, G82, J4, K10

Santaka: (Hontaka) 75 days. Very hot red pepper widely used in Japan for traditional dishes and in the spice trade. Slender, tapered fruit; 2 1/2 to 3 inches long, 1/2 to 1 inch wide; green, turning scarlet red when ripe; thin-walled. Small, compact plant; height 15 to 18 inches; sets fruit continuously. Popular in California, where it is called *Chili Japonese*. DREMANN, S. 1986 [Re]; A7{DF}, C26{PL}, D42M, E13G{DF}, HIM{DF}, H73{DF}, I63T, I63T{DF}, J73, K17J{DF}, L16{DF}, M81T, N40{DF}, S70

Scotch Bonnet: (*C. chinense*) 70 days. Small, roughly bell-shaped fruit, medium thin-walled; very attractive, turns red when ripe; extremely hot but with a distinctive spicy flavor and aroma. Short, compact plant. Popular in Jamaica and other parts of the Caribbean for hot pepper sauce. A7{DF}, B60M{PR}, D42M, E5T, F27{PD}, F37T{PL}, H73{PR}, J4, J4D, J73, K10, K17J{DF}, MO, M1P, N40{PR}, etc.

Spur: Small, narrow, slightly curved fruit; 1 to 1 1/2 inches long and 1/2 inch in diameter; green, turning red when ripe, very hot; ripens late. Much used in Oriental cooking. Excellent dried and ground for chili-powder. Grows to 2 feet tall, bears fruit in upright clusters. F80, L59, N84

Suryamukhi: (Surjamukhi, Clustered Suryamukhi) Slender, elongated-conical fruit, borne upright in clusters of 8 to 10; green, turning red when ripe; thick-walled, very hot and flavorful. Produces abundantly for 3 to 4 years; bears throughout the year. One of the best cultivars in India. J4, J73, N84, N91, Q45M, R50, S59M

Taka-No-Tsume: (*C. frutescens*) 68 days. Old-fashioned Japanese pepper, once widely cultivated in Honshu, Shikoku and Kyushu. Small, flame-shaped fruit; 1 1/2 to 2 inches long, 1/2 inch wide; upright growing in dense clusters at the ends of branches; deep dark-green, turning red at maturity; extremely hot. Dried fruits are powdered or added to pickled scallions. TANAKA; C26{PL}, C69D{PL}, F71M, G20M{DF}, J4, L79G

Thai Hot:<sup>3</sup> Thy, cone-shaped fruit, 3/4 to 1 inch long; green, turning red when mature; extremely hot. Dwarf, compact, mound-shaped plant; 8 inches tall, spreading to 18 inches; highly prolific. Ideal ornamental for patio containers or hanging baskets. C92, D42M, D55, D92M, E5T, E13G{PR}, I63T{DF}, J4, J20, J73, J76{PL}, K17J{DF}, K23{PL}, K71, M81T, Q34, etc.

Tiny Samoa: Extremely small fruit, only 1/8 inch thick and 1/2 inch long; green, turning red when ripe; very hot; Attractive plant with rich green foliage; produces hundreds of fruits. Makes an excellent house plant. J4, J76{PL}

Wiri Wiri: (*C. frutescens*) Small, globose fruits, about 1/2 inch across; glos<sup>^</sup>, bright red when ripe; seedy; quite hot but with a pleasing, fruity flavor. Often marinated in rum to form the condiment known as *Barbados pepper wine*. Erect shrub to 3 feet; bears fruit in upright clusters; perennial in the tropics. Very popular in Guyana and the Caribbean. Available fiesh at West Indian markets in the United States OMAWALE, ORTIZ 1973 [Re]; F73D, N84

Yatsubusa: (*C. frutescens*) 80 days. Small, tapered fruit, 3 to 3 1/2 inches long; turns red when mature; thin-walled, fiery hot. Productive plant; height 20 inches. Fruits are more easily harvested than those of Santaka. Once widely cultivated in Shizuoka Prefecture Japan and used in the spice trade, now on the verge of extinction. DREMANN, S. 1986 [Re], TANAKA; C26{PL}, C69D{PL}, C95, D29P, D92M, J4, J73, J76{PL}, N84

Yellow Squash: (*C. chinense*) 95 days. Flattened fruit, slightly scallop-edged, resembles a patty pan squash; 2 to 3 inches wide, 1 to 1 1/2 inches deep; medium green, ripening to a golden-yellow; very hot. Extremely productive plant; height 24 inches; requires a long growing season. A21, F73D, J4, J20, M1P, M81T

#### CODES FOR SPECIAL TYPES

1. Yellow-Ripening
2. White-Skinned
3. Dwarf
4. Orange-Ripening
5. Brown-Skinned
6. Purple-Skinned
7. Baby

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## PERSIMMON {GR}

DIOSPYROS KAKI

DIOSPYROS VIRGINIANA

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#### AMERICAN PERSIMMONS

Small-fruited cultivars of the species *D. virginiana*, which is native to the Eastern United States from the Everglades of Florida, north to southern Connecticut, west to Kansas and south to eastern Texas. Their culture has been extended to southernmost Canada and to the drier western states. All are astringent until fully ripe.

Craggs: Laige, somewhat acorn shaped fruit; skin yellowish, often red-blushed, attractive; flesh translucent, light yellow, texture and flavor excellent; seeds few; ripens in midseason, about Sept. 30 in Caseyville, Illinois. Tree sturdy; leaves glossy. Originated in Harrisburg, Illinois by a Mr. Craggs. Introduced in 1949. BROOKS 1972; 140

Early Golden: Laige fruit, up to 2 inches in diameter; skin orange; flesh orange, mild, dessert quality excellent; ripens mid to late October. Tree will bear fruit if planted alone, but better results are obtained if planted with a pollinator. Probably the most widely planted cultivar in the United States. Selected from the wild in Alton, Illinois about 1880. A91{PL}, B74, B99{PL}, 140, I49P, 160{PL}, I66T, 174

Evelyn: Very large, deep-orange fruit, 1 1/2 to 1 3/4 inches in diameter; sweet and usually seedless. Ripens in mid-September to late October. Sets very heavy crops of fruit. Originated in North Tonawanda, New York by John H. Gordon. B99{PL}, E62{SC}, 140

Florence: Medium-sized fruit of high quality, resembles Early Golden; flavor excellent; seeds small, giving it a very high flesh/seed ratio; ripens early. Tree occasionally bears a modicum of staminate flowers. Has potential as a parent in breeding. Originated as a seedling of Killen. I49P, I66T

Garretson: Fruit slightly smaller and more spherical than Early Golden; flesh a rich clear orange, very tender, highly flavored; ripens during September and early October, about 10 days ahead of Early Golden; moderately seeded, seeds small. Tree very hardy and

productive; nearly identical with Early Golden. Originated in Adams County, Pennsylvania. Introduced about 1921. BROOKS 1972; B74, C34,140,149M, I49P, I66T, 174

Gehron: Fruit medium-sized; skin bright orange-red; flesh sweet, nearly 100% seedless; ripens in late November and can hang on the tree until Christmas or early January. Tree with red-colored leaves; highly ornamental. Recommended for the deep south and Texas. Originated near De Ridder, Louisiana by Clyde Gehron. GRIF-FITH; H4

Golden Supreme: An older cultivar that is becoming more popular. Very large, bright golden-orange fruits with a full sweet flavor. Ripens in mid to late October, about a week after Garretson. May not ripen in far northern regions. Vigorous, spreading tree, bears heavy crops; requires a pollinator. C34,140,I49P, I66T

John Rick: Fruit one of the largest and firmest among September maturing American persimmons; flesh a beautiful red, quality excellent; resembles Florence but larger; the small deeply inset calyx minimizes skin punctures. Tree precocious; requires pollination by a 90 chromosome male cultivar, such as William. Originated in Urbana, Illinois by J.C. McDaniel. Introduced in 1963. BROOKS 1972; A91{PL}, E62{SC}, 140,I49P, I66T, 174, J61M, N24M

Killen: Fruit slightly larger, firmer and better flavored than Early Golden, which it resembles; ripens slightly later than Early Golden. Tree occasionally bears staminate-flowering branchlets; needs a 90 chromosome pollinator for reliable fruiting. A promising parent in breeding. Originated in Felton, Delaware by Joseph Killen. Introduced about 1930. BROOKS 1972; 140

Lena: (Mitchellena) Small to medium-sized, rather flat fruit; skin very tender, orange, attractive; flesh a beautiful red color, soft, of excellent flavor; ripens early and over a long period of time. Culinary qualities very good; frozen pulp maintains its flavor well for a period of one year. Winner of a first prize in the Mitchell, Indiana persimmon festival. 140

Meador: Medium-sized fruit; skin orange; flesh sweet, seedless if not pollinated; ripens in early October. Tree very hardy and productive; self-fertile, early bearing; good for cooler areas. Originated near Rochester, New Hampshire by E. M. Meador. Seedling of Garretson. C34, D37, E62{SC}, F43M, G16, H65, I25M{SC}, 140,146,149M, 174, J61M, N24M

Miller: (Marion) Large, roundish-oblate fruit; skin tough, skin reddish-yellow, translucent; flesh sweet, of good quality, seeds rather numerous. Originated in Jackson County, Missouri, where it ripens in September. BAILEY, L. 1947; 140

Morris Burton: Perhaps the best tasting American persimmon. Small to medium-sized fruit; skin very tender; flesh red, soft when tree-ripe, exceptionally high in sugar; not as early cropping as some. Tree somewhat slow to come into bearing, but then productive. Worth using as a breeding parent. Originated near Mitchell, Indiana by Morris Burton. GRIFFITH; B99{PL}, E62{SC}, F43M, 140

Penland: (Penland's Seedless) Fruit nearly seedless, varying with the abundance of compatible pollen from native male trees. Quality varies with location, but less sugary than many others. Trees have been killed by temperatures of  $-20^{\circ}$  F. Originated near Penland, North Carolina. Introduced about 1937. BROOKS 1972, GRIF-FITH; E62{SC}

Pipher: Medium to large, pale yellow fruit; has a bright apricot-like flavor; quality good; ripens in late October. Relatively few seeds. Originated in Illinois. Grows best from Ohio southward. E62{SC}, F43M, I60{PL}

Ruby: Small to medium-sized, roundish oblate fruit; skin yellowish-red, shading to deep-red, tender; flesh sweet, of very good quality, seeds few. Tree vigorous and heavy bearing; plant with a seedling for best results. Originated in Cartersburg, Indiana, where it ripens during September and for some time later. BAILEY, L. 1947; D37,140

Szukis: Medium-sized, orange fruit; has a bright apricot-like flavor; ripens in late September. Tree haidy, productive; produces male and female flowers, but best grown with a pollinator. E62, E91M, N24M

Tatum: Very heavy bearing Early Golden type with fruit of excellent flavor and texture. Attractive tree, about 40 feet tall. Apparently hardy in Zones 5 through 9. Originated in Kentucky. F43M

Wabash: High quality, fragrant, early persimmon with parthenocarpic tendencies. Fruit rather small; flavor distinctive and aromatic; flesh redder than any in the Early Golden family; seeds small when present. Leaves color red before falling. Originated in Pinkstaff, Illinois; hardy in Urbana, Illinois, where earliest fruits are ripe in mid-August. GRIFFITH; 140

Wayne: One of the few female varieties that bears pollen. Yields both pollen and fruit. No male tree required for pollination. Excellent appearance and flavor. Very good for eating out of hand or freezing. Originated in Wayne, New Jersey by Henry Hartmann. G3M

Yates: Very large, yellow fruit, up to 2 1/8 inches in diameter; fine apricot-like flavor; excellent quality; seedless if grown without a pollinator; ripens very early, in mid-August in southern Indiana. Tree a prolific bearer. Winner of the first prize at the Mitchell, Indiana persimmon festival in 1983. E62, F43M, I25M{SC}, 140

#### ORIENTAL PERSIMMONS

Large-fruited persimmons whose culture is generally limited to subtropical and warm-temperate regions. A few cultivars are dependably hardy as far north as Pennsylvania. There are two types: astringent and non-astringent, the latter being preferred for eating out of hand. One group of cultivars bears fruit with light-colored flesh when seedless, but after pollination and seed formation, the flesh is dark-colored. (D. kaki)

ASTRINGENT Fruit of astringent types must be fully ripe before eating or they will pucker the mouth. The existence of astringency is closely related to some cultural techniques, especially seed formation. Adapted to cooler areas than non-astringent types. In hot regions they show good coloring and high sweetness but poor texture, and deep black spots develop.

Eureka: Medium to large, oblate fruit, puckered at the calyx; skin bright orange-red; flesh astringent until fully ripe, of good quality; sometimes seedless; ripens late, or in November in Florida; hangs on tree until soft and ripe. Tree small, vigorous; drought and frost resistant; precocious and heavy bearing. One of the most satisfactory cultivars for Florida and Texas. MCEACHERN, MORTON 1987a; D77M, H4,14IP, I53M, 174, L90, M83, N33

Gailey: Fruit small, roundish to conical with a rounded apex; skin dull-red, pebbled; flesh dark, firm, juicy, of fair flavor. Tree small to medium; bears many male flowers regularly and is an excellent cultivar to plant for cross-pollination; has very attractive autumn foliage and ornamental value. MORION 1987a, POPENOE, W. 1920; G17, H4, J59, 097

Great Wall: (Atoma) Small to medium-sized fruit, 2 to 2 1/2 inches in diameter; flat, four-sided; skin orange, with fine black stripes extending around the calyx; flesh yellow, dry, very sweet, astringent; ripens in mid-autumn. Tree relatively slow growing, upright; heavy, but biennial bearing; very cold-hardy; recommended for colder regions; also does well in Florida. MORTON 1987a, SHANKS; C25, D37, G17,174

Guiombo: Very large, conical fruit, weighing up to 16 ounces; skin thin; flavor and quality excellent. Tree very productive and precocious; one of the best cultivars for Florida, but is a biennial bearer when young. Perhaps the same as Korean. MORTON 1987a; C25, G17, H4,174, J59

Hachiya: Large, oblong-conical fruit, up to 4 inches long; skin glossy, deep orange-red; flesh dark-yellow with occasional black

streaks; astringent until fully ripe and soft, then fairly sweet and rich. Seedless or with a few seeds. Ripens midseason to late. Much used in Japan for drying. Tree vigorous, upright-spreading; prolific in California, a scanty bearer in the southeastern United States. MORTON 1987a; A88M, C25, G17, *G49*, H4,149M, I83M, LI, L47, N20, N40{DF}, N40{PR}

Hiratanenashi: Fruit medium-large, oblate, somewhat four-sided; skin bright-orange, thick; flesh astringent, sweet, quality high when fully ripe; seedless; keeps only a short time after curing. Mostly used for drying. Tree medium-large, spreading; has a high annual bearing tendency. An old and popular cultivar in Japan. MORTON 1987a; C25, C30M, D37, G17, H4,174, Q93

Honan Red: Small, roundish oblate fruit, weight 2 to 4 ounces; thin skin; skin and flesh ripen to a distinct bright orange-red; very sweet and rich. Excellent for fresh eating or drying. Ripens mid-season to late, the fruit hanging well on the tree. Tall, upright, moderately vigorous tree; bears good crops. D57, G17,174

Kyungsun-Ban-Si: Fruit medium in size, oblate; 2 1/2 to 3 inches in diameter; flesh orange, sweet and juicy, of high quality; color ripe in early October; keeps well. Vigorous, upright tree with showy dark-green leaves. Has a very low tendency to parthenocarp, producing more fruit when planted with a pollinator, such as Yamagaki. SHANKS; D37

Okada: Local Hawaiian selection. Fruits reliably in low elevation areas like Waimanalo and Mililani. Regularly bears seedless or nearly seedless fruits. Must be fully ripe before being eaten or the fruit will be astringent. Developed for the large Oriental market in Hawaii. E8M

Saijo: Small, elongated fruit; skin dull-yellow when mature; flavor sweet, excellent, ranked among the best by gourmets; seedless; stores well. Mature fruits are attractive when dried, especially if they are treated with sulfur dioxide before dehydration to prevent browning. Tree medium in height; bears consistently; cold hardy to -10° F. Japanese name translates as "the very best one". C25, C54, D37, G17, H4, H65,149M, 174, J59, J61M, N53M

Sharon: An Israeli selection specially bred to be palatable in a conventional state of ripeness, not mushy soft like other varieties. When kept for several days it softens slightly and can be eaten like regular astringent persimmons. Small fruits with sweet flesh; seedless and coreless. Very good in salads, either fruit or savory. In season from November to January. Named after the Sharon Valley, between Haifa and Tel Aviv, where it is cultivated. BISSELL, DAVIDSON 1991, GRIGSON, S. [Re], VIARD; E13G{PR}

Sheng: Fruit medium to large, 3 to 4 inches in diameter; ribbed, puckered at the calyx; skin yellow-orange; flesh astringent, of high quality; ripens in October, loses astringency uniformly; dries well. Tree open, wide spreading, medium in vigor; irregularly branched; bears annually and more productively when planted with a pollinator, such as Yamagaki. SHANKS; C25, D37, G17,174, N53M

Smith's Best:<sup>1</sup> (Giboshi) Small to medium-sized fruit, 2 1/2 inches in diameter; flesh of seedless fruit yellow, astringent, seeded fruit will be dark-fleshed or "chocolate" colored when soft ripe, without astringency even when hard; color ripe in early October, or 2 weeks earlier than Tecumseh. Compact, densely branched, small tree; heavy bearing. Found at J. Russell Smith's farm in Round Hill, Virginia. SHANKS; D37

Tamopan: Large, somewhat four-sided fruit, broad-oblate; indented around the middle or closer to the base; 3 to 5 inches wide; skin thick, orange-red; flesh light orange, usually astringent until fully ripe, then sweet and rich; of medium quality; seedless or nearly so. Ripens late in Florida; midseason in California. In some parts of China and Japan said to be non-astringent. MORTON 1987a, POPENOE, W. 1920; A63, C54, H4,168,174, J59, L90, M83, N20

Tanenashi: Medium-sized, round-conical fruit, 3 1/3 inches long and 3 3/8 inches wide; skin light-yellow or orange, turning orange-

red, thick; flesh yellow, astringent until soft, then sweet; seedless; ripens early. Tree vigorous, rounded, prolific. Leading cultivar in the southeastern United States. In California, tends to bear in alternate years. MORTON 1987a, POPENOE, W. 1920; A85M, C25, C54, D77M, F93, G17, H4,153M, 168,174, L33, L90, M83

Yamato Hyakume:<sup>1</sup> Fruit large, elongated, conical; skin orange-red, attractive, streaked black at fruit top; flesh has little tannin when seed content is low, turns chocolate brown with pollination; tends to growth-ring cracking; ripens the end of October; suitable for drying. Tree upright; medium in vigor; bears heavily. MORTON 1987a; G17, J59

Yatsumizo: Small, orange-yellow fruit; very sweet and flavorful; usually seedless; astringent until cured; quality excellent. Produces large quantities of fruit. An important variety in Japan where it is grown commercially. Often used there for drying. MORTON 1987a; H4

NON-ASTRINGENT Fruit of most non-astringent types may be eaten when they are firm-ripe, much like apples. However, many develop a richer flavor if they are allowed to soften somewhat. Adapted to warmer regions than astringent cultivars. In cool areas, this type does not fully mature, they show low sweetness and are poorly colored.

Chocolate:<sup>1</sup> Small to medium-sized, oblong-conical fruit; skin reddish-orange; flesh brown-streaked when cross-pollinated, must be fully soft-ripe before eating; ripens late October to early November. Tree large; vigorous; produces many male blossoms. Recommended as a pollinator for pollination variant cultivars such as Hyakume and Zenji Maru, which require seed formation for the flesh to turn brown. A63, A88M, C54, D57, H4,168, LI, N20

Fuyu: (Fuyugaki) Medium-large, oblate fruit, faintly four-sided; 2 inches long, 2 3/4 inches wide; skin deep-orange; flesh light-orange, sweet, mild, non-astringent, even when unripe; seeds few or none. Keeps well; also an excellent packer and shipper. Tree vigorous, spreading, productive. Most popular non-astringent cultivar in Japan and the United States. MORTON 1987a; C25, D34M{PR}, F93, F97M{DF}, G17, *G49*, H4, I83M, L47, L90, L97G{DF}, N40{DF}, N40{PR}

Hana Fuyu: (Giant Fuyu) Large, roundish-oblate fruit; skin reddish-orange, attractive, when fully ripe has one of the deepest red colors of any persimmon; flesh quality good, sweeter than Fuyu, non-astringent even when not ripe; usually seedless; ripens in late October. Tree somewhat dwarf; bears regularly but sets a light crop in some seasons; prone to premature shedding of fruit. BROOKS 1972, MORTON 1987a; A63, A88M, C25, C54, D37, G17, *G49*, H4, H53M, 168,174,183M, J59, N20

Hanagoshō: Fruit large, flat, four-sided; skin orange; flesh of good texture; flavor and quality excellent; ripens mid to late November; slow in losing astringency in some areas. Tree vigorous, upright; not high yielding; deficient in male flowers. MORTON 1987a; G17, J59

Hyakume:<sup>1</sup> Fruit large, up to 3 inches long; roundish oblong to roundish oblate; skin buff-yellow to light-orange, marked with rings and veins near the apex; flesh dark cinnamon when seeded, juicy, of firm texture, non-melting; flavor spicy, very good. Non-astringent even while the fruit is still hard. Ripens in midseason; stores and ships well. MORTON 1987a; H4,168

Ichikikei Jiro: Medium-large, flat fruit; skin orange; flesh non-astringent even when not ripe, flavor very good; ripens in early midseason. Tree not vigorous, dwarf in habit, height 10 to 15 feet; recommended where space is limited; tolerant to anthracnose. To ensure good fruit production, plant with a suitable pollinator such as Gailey. MORTON 1987a; C25, D37, G17, H4,174, J59, J61M, L33, Q93

Izu: Medium-sized fruit, around 180 grams; skin burnt-orange, has virtually no brown lumps; flesh soft, with a good amount of syrup,

of fine texture; flavor very good; ripens early, from the end of September to mid-October, almost a month earlier than others; keeps well for an early cultivar. Tree somewhat dwarf; bears only female flowers; sets good crops. A63, A88M, B74, C25, C54, F93, G17, G49, I49M, I68, I74, I83M, J59, J61M, LI, N20, N33, Q93, etc.

Jiro: Fruit large, to 250 grams; resembles Fuyu, but more truncated and squarish in cross-section; skin orange-red; flavor and quality excellent; ripens late October and early November, ships well. Tree slightly upright; self-pollinating; tolerant to anthracnose. Second most popular non-astringent cultivar in Japan. A88M, B74, C25, C54, D37, E87, F93, H4, I49M, I66T, I68, I74, J59, J61M, LI, L47, etc.

Maekawajiro: Medium-sized, rounded fruit, smoother and less indented than Jiro; rich orange in color; sweet and of good quality; ripens in mid-season, or about with Ichikikei Jiro. Tree slightly upright; must be planted with a suitable pollinator to ensure good fruit yield. Bud mutation of Jiro. I74, 097

Maru:<sup>1</sup> Small to medium-sized fruit, rounded at the apex; skin brilliant orange-red, attractive; flesh dark cinnamon, juicy, sweet and rich; quality excellent. Stores and ships especially well. Pollination variant type, after pollination the flesh is dark colored and seeded. Tree vigorous and productive. Generally considered a group name. MORTON 1987a; A88M, D57, I68, N20

Matsumoto Wase Fuyu: Fruit of medium size, to 180 grams; skin glossy, orange; texture and quality very good; ripens mid to late October, 2 weeks earlier than Riyu. Tree vigorous, spreading; produces heavy crops if planted with a suitable pollinator. Bud mutation of Fuyu. C25, E56{DF}, H4, I74, J59, 097

Nishimura Wase: Medium to large, round to oblate, slightly squarish fruit; sweet, juicy, chocolate-colored flesh; ripens very early, about 1 month before Fuyu. Needs another variety for cross pollination. Requires about 100 hours of chilling. Discovered in 1960 by Yazo Nishimura. BROOKS 1997; A63, A88M, I68, N20

Shogatsu: Medium-sized, flattened fruit; flesh non-astringent, sweet, of fair quality; ripens mid to late November. Tree medium-sized, rounded, spreading; moderately productive; bears an abundance of male flowers, making it a good pollinator. G17

Suruga: Large fruit, weight about 250 grams; skin orange-red; flesh dense, very sweet, sugar content 17.5%, juice moderately thick, quality excellent; non-astringent; seeds few; ripens in November, keeps well. Tree almost free from biennial bearing; recommended for warmer climates. One of the most promising new cultivars, produced by a cross of Hanagoshō x Okugoshō. C25, G17, H4, J59, Q93

Triumph: Medium-sized, flattened, orange-red fruit; firm flesh, very sweet and flavorful; quality high; ripens late in the season. Pulp is brown and sweet in pollinated fruit, but yellow and astringent when fruit is produced parthenocarpically. Very productive tree. An important cultivar in Israel. E8M, H4, I74, N53M

#### CODES FOR SPECIAL TYPES

##### 1. Dark-Fleshed

## PLUM {GR}

#### PRUNUS SPP.

##### AMERICAN PLUMS

Included here are hardy, native American plums and their hybrids, which are generally crosses with the Japanese plum (*P. salicina*). The natives are the hardiest, some tolerating temperatures of -50° F.

#### GREEN/YELLOW-SKINNED

Dandy: (*P. nigra*) Medium-sized fruit, about 1 1/4 inches long; skin yellow, blushed with red; quality very good; ripens early. For eating fresh or for culinary use. Tree a prolific bearer. Originated in Valley River, Manitoba, Canada by W.J. Boughen, Boughen Nurseries. Introduced in 1923. BROOKS 1972; B47

Guthrie: (*P. angustifolia*) Large fruit, about 1 inch in diameter; skin yellow, blushed with red; delicious flavor; ripens early to mid May. Very productive tree; does not form colonies. Appears to be virtually disease and pest resistant. Originated in northern Florida. H14M

South Dakota: (*P. americana*) Medium-sized, oval fruit; skin yellow, blushed with bright medium red; flesh yellow, tender, meaty, very sweet; quality very good; freestone; ripens in September. Good for eating fresh or processing. Tree productive; very hardy; self-sterile; an excellent pollinizer for American-Japanese hybrid cultivars. Also an excellent parent for breeding hardy, freestone plums. ANDERSEN, BROOKS 1972; A91, A91{SC}, C27T{SC}, F91T{SC}, I49G{SC}, J89M

#### RED/PIURPLE SKINNED

Acme: (*P. nigra* x) Medium-sized, spherical fruit, up to 2 inches long under non-irrigated field conditions; skin dark red; flesh yellow, dessert quality excellent; ripens in early September. Tree hardy. Originated in Saskatoon, Saskatchewan, Canada by CF. Patterson. Introduced in 1960 for home gardens. BROOKS 1972; B47, C58

Assiniboine: (*P. nigra*) Medium-sized, round fruit; skin yellow with a bright red blush and light bloom, thin, astringent; flesh yellow, soft, very juicy, moderately sweet; quality good; ripens in mid-August. Tree upright, vigorous, productive. Widely used in breeding for winter hardiness. Named in 1908. ANDERSEN; A91, C58, F91T{SC}, I61M{SC}, J89M, N24M

Bounty: (*P. nigra*) Medium to large, dark red fruit; flesh orange-yellow, tender, juicy, sweet; quality fair for dessert, good for canning; ripens in late August. Tree upright, spreading; very hardy; productive; suitable for northern conditions. Originated in Morden, Manitoba, Canada. Introduced in 1939. BROOKS 1972; B47, C58

Elite: (*P. nigra* x) Large, spherical fruit; skin dark red; flesh yellow, juicy, of very good quality; ripens late, in early September; resembles Acme and Prairie. Tree vase-shaped, low spreading, hardy. Originated in Saskatoon, Saskatchewan, Canada. Introduced in 1960 for home gardens. BROOKS 1972; B47

Grenville: (*P. nigra* x) Large fruit, 2 inches long; skin red mottled with yellow; flesh golden yellow, dessert quality excellent; ripens in late August; resembles Burbank. Tree very hardy. Originated in Ottawa, Ontario, Canada. Introduced in 1941. BROOKS 1972; A65, B47, C58, H85, K64

Miner: (*P. hortulana*) Medium to small, round-oblong fruit; skin dull red with a bluish bloom and many yellow dots, thick; flesh yellow, quality fair to good; stone medium large, clinging. One of the oldest native plums known. Originated in Knox County, Tennessee by William Dodd, an officer under General Jackson. WAUGH; U7G{SC}

Monitor: (*P. americana* x) Medium to large, roundish ovate fruit; skin thick, dull bronze-red, with very conspicuous russet dots, bloom light; flesh yellow, tender, very juicy, firm, sweet, quality good; clingstone; cracks in rainy weather; ripens in late midseason. Tree vigorous, upright, spreading; very hardy; productive. BROOKS 1972; F91T{SC}, I49G, I49G{SC}

Patterson's Pride: (*P. nigra* x) Large fruit, up to 1 3/4 inches in diameter under non-irrigated conditions; skin deep red; flesh orange-yellow, quality excellent for dessert and processing; keeps well in ordinary storage; ripens in mid-September. Tree low-growing;

yields well; hardy. Originated in Saskatoon, Saskatchewan by CF. Patterson. BROOKS 1972; C58

**Pembina:** (*P. nigra* x) Large, round-ovate fruit, tapered to a point; skin red, thick, with a heavy bluish bloom; flesh light yellow, juicy, sweetish; quality good for dessert, only fair for canning; ripens in late August. Originated in Brookings, South Dakota by N.E. Hansen. Introduced in 1923. BROOKS 1972; A65, A74, B4, B47, C27T{SC}, C58, D65, D69, G54, H42, H85, I49G, I49G{SC}, K64, L79, L70, etc.

**Prairie:** (*P. nigra* x) Large fruit, up to 2 inches long and 1 3/4 inches in diameter under non-irrigated orchard conditions; skin dark red; flesh yellow, dessert quality good; somewhat freestone; ripens in early September; resembles Acme. Tree medium-sized, moderately spreading; hardy. Originated in Saskatoon, Saskatchewan, Canada by GF. Patterson. BROOKS 1972; A65, B47, C58, G54, K64, L79

**Salsberry:**<sup>3</sup> Small to medium-sized fruit, 1 1/4 to 1 1/2 inches in diameter; skin maroon to dull reddish; flesh dark maroon, sweet and juicy, excellent for dessert, also makes superior jam; ripens very early, mid-May to mid-June. Tree a genetic dwarf, mature height only 6 to 8 feet; apparently self-fertile, setting heavy crops annually. Very low chilling requirement. Originated in Vista, California on the property of Mrs. Pearl Salsberry. THOMSON 1983; T49M{SC}

**Supreme:** (*P. nigra* x) Large fruit, up to 2 inches long under non-irrigated field conditions; skin blushed; flesh yellow, dessert quality excellent; ripens in late August. Tree medium upright, slightly spreading; moderately vigorous; free of winter injury at Saskatoon. Originated in Saskatoon, Saskatchewan, Canada by CF. Patterson. Introduced in 1960 for home gardens. BROOKS 1972; M35M

**Surprise:** (*P. americana* x) Medium to large, roundish-oval fruit; skin bright red with medium bloom, moderately tough, slightly acid; flesh pale yellow, smooth, firm, melting, moderately juicy; flavor rich; quality good; stone oval, clinging. Tree vigorous, productive. Originated in Sleepy Eye, Minnesota by Martin Penning. Named in 1882. ANDERSEN, WAUGH; F91T{SC}, I49G{SC}

**Wayland:** (*P. hortulana*) Medium to large, spherical fruit; skin bright cherry red, with numerous white dots and a thin white bloom, thick and firm; flesh firm, meaty, yellow, quality good; stone semi-clinging. Tree vigorous and productive. Originated in a plum thicket in the garden of Professor H.B. Wayland, Cadiz, Kentucky. First propagated in 1876. WAUGH; U7G{SC}

**Weaver:** (*P. americana*) Large, oval fruit with unequal halves; skin thick, orange heavily overlaid with red, bloom bluish; flesh firm, yellow, moderately juicy, quality good; stone large, half-free; season medium late. Tree a strong, upright grower; moderately productive. Found wild near Palo, Iowa by a Mr. Weaver. Introduced in 1875. ANDERSEN, WAUGH; F91T{SC}

**Whitaker:** (*P. munsoniana*) Medium to large, roundish fruit; skin thin but firm, yellow-orange with a bluish bloom; flesh yellow, moderately firm, slightly stringy, juicy, flavor sweet and good; stone small, clinging; ripens early. Tree moderately vigorous, upright, hardy, moderately productive. Originated under cultivation with J.T. Whitaker of Texas, prior to 1900. ANDERSEN WAUGH; F91T{SC}

#### EUROPEAN PLUMS

Generally smaller than Japanese plums. They also have more solid flesh, are best when completely ripe, and have a greater range of flavors. They are suitable for dessert or cooking or for both. Most have a high chilling requirement, are late blooming and quite hardy. European plums pollinate only other European plums. Mostly *P. domestica*.

#### COMMON

##### *Green/Yellow-Skinned*

**Alabaster:** Very attractive, nearly round fruit; skin clear pale-yellow, entirely covered with a heavy white bloom; flesh firm, meaty but melting, juicy, very sweet and flavorful, quality excellent; ripens in mid-August, 1 to 2 weeks before Pearl. Tree a regular and heavy cropper. Originated by Southmeadow Fruit Gardens, Lakeside, Michigan. Received the highest rating in a four year taste-panel testing. L12

**Coe's Golden Drop:** Fruit medium to large; oval, with a prominent neck at the stem end; skin straw-yellow; flesh golden yellow, firm, very juicy, very sweet, flavor apricot-like; stone free; ripens very late. Has been described as the Cox's Orange Pippin or Doyenne du Comice of the plum world. First raised by Jervaise Coe, at Bury St. Edmund's, Suffolk, England about 1809. HEDRICK 1911, SIMMONS 1978; J61M, M22, 081, Q30{SC}, R77

**Golden Nectar:** Fruit very large; skin golden-amber, thin, tender; flesh amber, flavor excellent; stone very small; ripens evenly; matures in late July, has good keeping qualities. Good fresh or dried. Tree self-fertile. Promising, relatively new cultivar. A63, A88M, C54, H4, N20

**Pearl:** Medium-sized, roundish-oval fruit, with unequal halves; skin golden-yellow, speckled with red dots; flesh deep yellow, juicy, firm but tender, very sweet, aromatic, with a pleasant, mild flavor; quality very good to best; clingstone. Tree vigorous, hardy, unproductive. Originated in Santa Rosa, California by Luther Burbank in 1898. HEDRICK 1911; J93, J93{SC}, LI, L12

**Pershire Egg:**<sup>1</sup> (Pershoie Yellow Egg) English cooking plum, excellent for jam and canning. Medium-sized, golden-yellow fruit; firm, mealy yellow flesh; clingstone; ripens in late August. Generally picked when still firm and green. Compact, self-fertile tree, very prolific. Grown commercially in Vale of Evesham. Introduced about 1827. SIMMONS 1978; 081, Q30{SC}, R77

**Saint Catherine:** (Torlo d'Ovo) Small, teardrop-shaped fruit; golden-yellow with a thin bloom; flesh light golden-yellow, juicy, sweet, tender; flavor mild and pleasant; dessert quality good, excellent for drying. Large, vigorous tree, hardy and productive. Famous in France for producing the *pruneaux de Tours* or *pruneaux fleuris*, so named because of their whitish bloom caused by sugar crystallization. Of ancient and unknown origin. First mentioned in 1699. DAVIDSON 1991, HEDRICK 1911; T49M{SC}

**Warwickshire Drooper:** Medium to large, oval fruit; skin pale yellow, spotted and speckled with brownish-red, bloom light; flesh yellowish, firm, flavor fair to good. Good for preserving, the canned product having excellent appearance and a bright clear-golden color. Tree large, vigorous; very hardy; self-compatible. SIMMONS 1978; 081, Q30{SC}, R77

**Yellow Egg:** Medium to large, long-oval fruit; skin golden-yellow, covered with thick bloom; flesh golden-yellow, rather juicy, firm, moderately sweet, quality good; stone semi-free or free; ripens late, season short. Very good for canning. Tree large, vigorous; very productive; hardy. Introduced prior to 1676. HEDRICK 1911; E84, F91T{SC}, H65, H89M, H89M{Wf}, I61M{SC}

##### *Red/Purple-Skinned*

**Belle de Louvain:**<sup>1</sup> Cooking plum. Large to very large, long-oval fruit; skin dull purplish-red, covered with delicate bloom; flesh yellow, soft, not very juicy, becoming dark and richly flavored when stewed; stone partially free; ripens in midseason. Makes a fairly good jam. Tree vigorous; partially self-fertile; a biennial bearer. Originated at Louvain, Belgium about 1840. HEDRICK 1911, SIMMONS 1978; 081, P59M, Q30{SC}, R77, R83

**Czar:**<sup>1</sup> Popular English cooking plum. Medium-sized, roundish oval fruit; skin reddish purple, almost black when ripe; flesh yellowish-green, tender, rather mealy but cooks well and produces

a rich red juice, flavor pleasantly acid; ripens very early. First fruited in 1874 and named for the Czar of Russia who visited England during the same year. HEDRICK 1911, SIMMONS 1978; 081, Q30{SC}, R83

De Montfort: Small to medium, roundish-oval fruit; skin dark-purple, with russet dots; flesh green, juicy, sweet, rich; quality good; freestone; ripens during a 3 week period in July. Tree vigorous, spreading; productive; very haidy. Originated in Montfortin, France prior to 1846. HEDRICK 1911; F91T{SC}, J93{SC}

Early Laxton: Small to medium-sized fruit; skin pinkish-orange, washed and dotted with rose and violet; flesh golden, juicy, sweet, flavor good; freestone; ripens in mid-July; bruises easily. Good for dessert; excellent for cooking and canning. Tree small; partially self-fertile; highly productive; tends to shed its fruit before properly ripe. Originated in England in 1916. SIMMONS 1978; A91, A91{SC}, H90M{SC}, J61M, L12, 081, Q30{SC}

Early Orleans:<sup>1</sup> (Monsieur Hatif) Cooking plum. Medium-sized, roundish-oval fruit; skin dark reddish-purple, covered with thick bloom; flesh lemon-yellow, juicy, coarse, firm, sweet, mild but pleasant, with deep red juice when cooked; quality very good; stone free; ripens early, season short. Tree small, vigorous, upright-spreading; hardy; productive. An old French cultivar that has been known for about three centuries. HEDRICK 1911, SIMMONS 1978; Q30{SC}

Empress: Large to very large, oval fruit; skin purplish-blue; flesh yellow, firm but tender, fine-textured, sweet, quality good; ripens late, about 1 week before President; similar to President. Good for shipping. Tree strong, vigorous, upright; productive; blooms late. B83, C30M, F53, F91T{SC}, M11M{PR}, M22

Kirke's Blue: (Kirke's) Large, round fruit; dark purplish-red, with heavy blue bloom; flesh greenish-yellow, juicy, flavor very good; stone large, free; season mid-September. Tree dwarfish but spreading, making a bush-like tree with many fruiting spurs Very suitable for small gardens; self-incompatible, pollinated by Czar. Originated in Great Britain. Introduced about 1830. SIMMONS 1978; F88G, J61M, L1, M22, 081, Q30{SC}

Mount Royal: Medium-sized, roundish fruit; skin dark purple; flesh greenish-yellow, juicy, firm, sweet; quality good; clingstone; ripens in midseason. Tree moderately vigorous; very hardy; self-fruitful, a heavy annual producer. Originated in Outremont, Quebec, Canada by W.W. Dunlop. Introduced prior to 1903. HEDRICK 1911; A39, A74, A74{DW}, B15M{DW}, C27T{SC}, D65, E97, F53, F88G, G16{DW}, I49G, I49G{SC}, L27M, L70, M11M{PR}, etc.

Opal: Medium-sized, oval fruit; skin yellow, almost completely covered with purplish-black flush; flesh pale gold, partly transparent, fairly firm, flavor good; stone almost free; ripens in mid-August. Tree moderately vigorous; self-fertile; a regular bearer. Originated in Alnarp, Sweden. Introduced in 1948. SIMMONS 1978; A91, F88G, I49G, I49G{SC}, L12, 081, Q30{SC}

Peach: Medium-large, roundish fruit; skin dark purplish-red, covered with thin bloom; flesh golden-yellow, moderately juicy, firm, subacid, mild; quality good; stone free; ripens early. Excellent for canning. Tree large, very vigorous, spreading; hardy; moderately productive. HEDRICK 1911; A91{SC}, C34, F88G, H89M, H89M{DW}, I61M{SC}, M22

Pond's Seedling:<sup>1</sup> (Pond) Cooking plum. Medium to large, roundish-oval fruit; skin rose-crimson, with slight bluish bloom; flesh golden-yellow, rather dry, fibrous, firm, mild, flavor fair but good when stewed; freestone; ripens late, season short. Tree vigorous, upright-spreading; partially self-compatible. Originated in England prior to 1831. HEDRICK 1911, SIMMONS 1978; 081, Q30{SC}

President: Large, oval fruit; skin deep purple, almost black, covered with heavy bloom; flesh yellow, dry, with a rich, sweet

flavor, good when stewed; freestone; ripens late. Tree very upright, compact; productive; requires a pollinator. Raised by Thomas Rivers of Sawbridgeworth, England. First fruited in 1894. HEDRICK 1911, SIMMONS 1978; A5, A39, B53, B83, B93M, C27T{SC}, C41M, E4, F88G, I23M{PD}, M39M, 081

Purple Pershore:<sup>1</sup> Cooking plum. Medium-sized, oval fruit; skin purple, with a very heavy bloom; flesh yellow, firm, dry, flavor poor but cooks well; stone clinging; ripens in late August. Very suitable for jam and canning. Tree vigorous, upright; self-compatible; cropping heavy but irregular. SIMMONS 1978; 081, Q30{SC}, R83

Sannois: Medium to large, roundish-oblate fruit; skin reddish-purple; flesh dark coppery-yellow, juicy, rather coarse, very fibrous, tough, firm, very sweet and flavorful; quality very good; clingstone; ripens very late. Tree small, vigorous, upright-spreading. Originated in Sannois, France prior to 1901. HEDRICK 1911; J93{SC}, L12

Seneca: Large, attractive fruit; skin reddish-blue, resists cracking; flesh yellow, very firm, sweet; freestone; ripens in midseason. Good for eating fresh or canning. Tree upright, moderately vigorous; requires a pollinizer; bears regularly. Introduced in 1972 by the New York State Agricultural Experiment Station. A5, A88M{OR}, B74, C34, D28J, H90M{SC}, I49M, J61M, J93{SC}, K36, N20

Victoria: Large, oval fruit; skin pale red, mottled with bright red on the side exposed to the sun; flesh greenish-yellow, firm, fairly sweet, juicy, flavor fair; stone large, free; ripens in midseason. Usually considered the best of all canned plums for it is then tender and juicy, with an attractive pinkish-red color and an almond flavor. Makes a jam of good color and quality. Very popular in Great Britain. DAVIES [Re], HEDRICK 1911, SIMMONS 1978; F88G, H15T{PD}, J61M, J93, J93{SC}, M22, 081, Q30{SC}, R77, R83

Yakima: Very large, somewhat oblong fruit; skin bright mahogany red over yellow with heavy bloom, attractive; flesh clear golden-yellow, tender, sweet, moderately juicy, very firm; quality very good; freestone; ripens in late August. Tree vigorous, upright; a very shy bearer unless pollinated with other European plums. Originated in Bingen, Washington. Introduced about 1925. ANDERSEN, BROOKS 1972; B83, C27T{SC}, F88G, F91T{SC}, I49G, I49G{SC}, I61M{SC}

**BULLACES** Similar to damsons, but whereas the damsons are oval and purple in color the bullaces are generally round and may be white as well as black. They are useful as late cooking plums. The fruit is usually left on the tree until late fall, until frost has softened its acidity. 081. (R insititia)

Black:<sup>1</sup> Cooking plum. Small, oval fruit, necked at the stem end; skin purplish-black, covered with a thick bloom; flesh greenish-yellow, juicy, firm, sour or agreeably tart late in the season; stone small, clinging; ripens late. To be at its best for cooking it should be left on the tree until touched by the first frosts. Tree upright or slightly spreading; extremely productive. One of the oldest cultivated plums. HEDRICK 1911, SIMMONS 1978; Q30{SC}

Langley:<sup>1</sup> Cooking plum, resembles a damson more than the Bullace. Medium-sized, nearly oval fruit; skin blue-black, covered with a slight bloom; flesh greenish, firm, acid, sweet; ripens in October and November. Tree vigorous, upright; self-compatible; prolific. Farleigh damson x Early Orleans. First raised about 1902. SIMMONS 1978; Q30{SC}, R77

Shepherd's:<sup>1</sup> Fruit small, good-sized for a bullace; roundish-oval; skin greenish-yellow; flesh firm, juicy, tart; ripens in late October. Useful as a late cooking plum. Tree moderately vigorous, upright; prolific. Of unknown origin. SIMMONS 1978; Q30{SC}

White: (Gold) Small, roundish fruit; skin deep amber yellow, with thick white bloom; flesh deep golden yellow, firm, juicy, coarse, fibrous, sour to slightly sweet; stone clinging; ripens late. Tree upright-spreading, moderately vigorous; productiva Very old

cultivar of unknown origin. HEDRICK 1911, SIMMONS 1978; Q30{SC}

**DAMSONS** Similar to bullaces but generally more oval in shape, with less bloom, ripening at least six weeks sooner and with an entirely different richer and sweeter flavor. They are too astringent to be eaten raw, but are excellent for cooking and preserving. (P. insititia)

**Bradley's King:** Large, roundish fruit; skin dark purplish-red, with light bloom which gives it a bluish appearance; flesh greenish-yellow, rather dry, somewhat sweet, lacks the true damson tartness; stone free; ripens mid to late September. Tree vigorous, upright; very hardy; productive. One of the largest damsons. Originated in Nottinghamshire, England. SIMMONS 1978; Q30{SC}

**Briceland:** Fruit small; skin dark bluish-purple with a heavy bloom; flesh yellow, spicy, somewhat astringent; pleasant to eat when fully ripe, best used for canning. Makes an excellent rich purple jam when cooked with its skin. Tree semi-dwarfish, upright; well-adapted to conditions near Briceland, California where it was discovered. E84

**Damson:** (Blue Damson) Small, oval fruit; skin bluish-black, with a heavy bloom; flesh firm, greenish-yellow, juicy, tart; freestone; ripens in midseason. Excellent for jam and jelly. Tree upright-spreading; productive. Brought to Italy from Damascus at least a century before the Christian era, hence the name. HEDRICK 1911; A82, B73M{DW}, E68M{PD}, F61M, I9M, I41P, J83, LI, L33, L47, M69M

**Farleigh:**<sup>1</sup> (Crittenden) Small, roundish-oval fruit; skin purplish-black, covered with a very thick bloom; flesh greenish-yellow, firm but tender, sour, sprightly, very rich when cooked but not as rich as Shropshire; stone clinging; ripens early for a damson. Tree exceptionally prolific, with fruit borne in clusters. HEDRICK 1911, SIMMONS 1978; M22, 081, Q30{SC}

**Krikon:** Small, oval fruit; skin blue with a heavy bloom, moderately tough; flesh yellow, rather dry, very crisp, clingstone; quality fair for dessert, very good cooked; ripens in late August. Tree vigorous, upright-spreading; hardy; productive; susceptible to leaf spot. Originated in Sweden. ANDERSEN; F88G, F91T{SC}

**Merryweather:** Large, round-oval fruit; skin thick, blue-black, covered with light bloom; flesh greenish-yellow, firm, juicy, has a fair damson-like flavor; quality good; stone medium-sized, clinging. Excellent for preserving. Tree vigorous, spreading; self-compatible; prolific. Originated in Nottinghamshire, England about 1909. HEDRICK 1911, SIMMONS 1978; 081, Q30{SC}, R77

**Shropshire:**<sup>1</sup> (Prune Damson) Fruit fairly large for a damson, oval to oblong; skin blue-black, with a dense bloom; flesh golden-yellow, juicy, firm, sugary, astringent, dessert quality good when fully ripe or after a frost, flavor very rich when cooked; stone clinging; ripens late, season long. Excellent for cooking, preserving, bottling and canning. Tree large, vigorous, productive. Originated in England, sometime in the 17th century. HEDRICK 1911, SIMMONS 1978; F53, F88G, F91T{SC}, G79M{DW}, M22, 081, Q30{SC}, R77

**GAGES** There is less certainty of the origin of this type than of any other kind of plum and it may well be a distinct species. In Great Britain the gage is considered to possess the best flavor of all plums and has often been crossed with other cultivars. The hybrids usually have the color and flavor of the gage but most are larger, i.e. Cambridge Gage, Laxton Gage. *Elvas plums* are candied and semi-dried Green Gage plums produced near the medieval Portuguese towns of Elvas and Estremoz. GRIGSON, S., SIMMONS 1978.

**Cambridge Gage:** Small to medium-sized, round fruit; skin greenish-yellow; flesh greenish-yellow, firm, juicy, with a true gage flavor; ripens in late August. Excellent for dessert, cooking, preserving and canning. Tree vigorous; requires a pollinator; incompatible with Green Gage; not a heavy producer, but consistent. Seedling of

Green Gage. SIMMONS 1978; F91T{SC}, J93{SC}, L12, 081, Q30{SC}, R77, R83

**Count Althann's Gage:** Large, flattened globe-shaped fruit; skin dark purplish-red, with numerous golden-yellow dots, and a thick bluish bloom; flesh light golden-yellow, firm but tender, sweet, mild, pleasant; quality excellent; stone semi-clinging; ripens in midseason. Tree upright-spreading; productive; requires a pollinator. Originated in Hungary prior to 1869. HEDRICK 1911, SIMMONS 1978; J93{SC}, LI, L12, 081, P59M, Q30{SC}, R77, R83

**Denniston's Superb:** Medium-large, round-oval fruit; skin greenish-yellow, blushed with red; flesh yellowish-green, transparent, firm, fairly juicy, with a rich, vinous flavor; quality very good; stone practically free. Tree vigorous, upright-spreading; a reliable and heavy bearer. Originated in Alba, New York by Isaac Denniston, about 1835. HEDRICK 1911, SIMMONS 1978; 081, Q30{SC}, R77

**Early Transparent Gage:** Small to medium, roundish fruit; skin pale apricot yellow with white bloom and crimson dots, so thin that it shows the stone; flesh golden yellow, transparent, juicy, very sweet; flavor rich, distinctive when properly ripe; stone small, free. Subject to splitting. A connoisseur's fruit of the highest quality, usually considered the best early gage. SIMMONS 1978; 081, Q30{SC}, R77

**General Hand:** Fruit large, one of the largest of the gages; roundish-truncate; skin yellow, covered with thin bloom; flesh golden-yellow, juicy, somewhat fibrous, firm, sweet, with a pleasant, mild flavor; quality very good; stone semi-free or free; ripens in midseason. Tree large, vigorous, spreading; hardy; productive. First fruited in 1790 on the place of General Hand, near Lancaster, Pennsylvania. HEDRICK 1911; L12

**Golden Transparent Gage:** Large, oblong fruit; skin golden yellow, dotted with red, transparent, showing the stone; flesh transparent, firm, juicy, very sweet, rich, with true high gage flavor; quality excellent; ripens late. Tree small, self-compatible, productive. Originated in England by Thomas Rivers, about 1894. HEDRICK 1911, SIMMONS 1978; J61M, J93{SC}, LI, L12, R77, R83

**Green Gage:** (Reine Claude) Small to medium, roundish-oval fruit; skin yellowish green, covered with light bloom; flesh greenish-yellow, very juicy, firm but tender, sweet, mild, flavor rich and aromatic; stone partially clinging; ripens in midseason. Tree moderately vigorous; hardy; productive. The standard in quality for plums since 1699. HEDRICK 1911, SIMMONS 1978; A91{SC}, E9{PD}, E84, G79M{DW}, H15T{PD}, H65, I83M, L27M, L27M{PL}, L47, M11M{PR}, M39M

**Imperial Gage:** Small, round-oval fruit; skin dull greenish-yellow, covered with thick bloom; flesh golden-yellow, juicy, firm but tender, very sweet, mild; quality very good; stone nearly free; ripens in mid-September. Tree large, vigorous, upright-spreading; hardy; very productive. Originated in Flushing, Long Island, New York from seed planted in 1790. HEDRICK 1911; L12

**Jefferson:** Medium-sized, roundish-oval fruit; skin greenish-yellow, covered with a thin white bloom; flesh deep yellow, juicy, firm but tender, sweet, mild, pleasant, quality very good; stone semi-free; ripens in midseason. Tree medium to large, vigorous, spreading; productive; hardy. Originated in Alba, New York about 1825. HEDRICK 1911; C54, L12, 081, Q30{SC}, R77, R83

**Laxton's Gage:** Medium-sized, round fruit, larger than Green Gage; skin clear yellow; flesh greenish-yellow, fairly soft, juicy, has an excellent gage-like flavor; quality good for dessert, not suitable for canning; ripens the end of August. Tree vigorous, upright to spreading; self-compatible; productive. Originated in England. Introduced in 1919. SIMMONS 1978; 081



Reine Claude d'Oullins: (Oullins Golden Gage) Medium-sized, roundish-oval fruit, with unequal halves; skin light yellow, covered with a light bloom; flesh greenish-yellow, somewhat dry, firm, sweet, not high in flavor; quality good; stone semi-free; ripens early, season short. Tree large, vigorous, spreading; hardy; productive. Originated in France prior to 1866. HEDRICK 1911; C76M, L12, 081, P68M, Q30{SC}, R77, R83

Reine Claude de Bavay: Medium to large, round to oblong fruit; skin pale green yellow with numerous white dots; flesh deep yellow, juicy, with a rich gage-like flavor; ripens the end of September, will hang on the tree for several weeks. Tree moderately vigorous, compact, very suitable for small gardens. Introduced about 1843 by Major Esperen, one of Napoleon's cavalry officers. SIMMONS 1978; LI, Q30{SC}, R77, R83

Reine Claude Violette: (Purple Gage) Small to medium-sized, roundish fruit; skin light purple covered with golden dots, bloom slight; flesh greenish, transparent, firm for a gage, sweet and rich, juicy, excellent for dessert; stone small, free; ripens late August to early September. Tree upright, vigorous, fairly productive. SIMMONS 1978; LI, Q30{SC}

**MIRABELLES** Little known in this country but highly esteemed in France for the unique apricot-like preserve that can be made from them. They are also used commercially for the manufacture of a spirit. The flavor of most is greatly improved by cooking. SIMMONS 1978; E9{PD}, K32M{PD}

Mirabelle: Small, roundish-oval fruit, slightly necked; skin light golden-yellow, overspread with thick bloom; flesh light yellow, not very juicy, firm but tender, sweet, mild but pleasant; quality very good; stone free; ripens in midseason. Tree small, round and open-topped, handy. One of the favorite plums in France where it is in great demand for canning, preserves, compotes, tarts and prunes. HEDRICK 1911; G79M{DW}, H90M{SC}, J61M, M22, N24M

Mirabelle de Metz: Small, round fruit; skin pale golden-yellow with many red dots, covered with a slight bloom; flesh yellow, transparent, soft, sweet, flavor excellent; stone small, free; ripens in August. Suitable for dessert; also makes delicious conserves. Tree small, round-headed; productive Very old French cultivar. SIMMONS 1978; U7G{SC}, Y83{SC}

Mirabelle de Nancy: (Drap d'Or) Small, roundish-oval fruit; skin golden-yellow, covered with a thin bloom; flesh light golden-yellow, moderately juicy, coarse, firm but tender, sweet, mild; quality excellent; stone free; ripens in midseason. Tree small, upright-spreading; hardy; productive. A very old French cultivar of uncertain origin. A red-fruited type is available. HEDRICK 1911, SIMMONS 1978; F88G, 081, P59M, P68M, Q30{SC}

Mirabelle d'Octobre: (Late Mirabelle) Small, roundish-oval fruit; skin greenish-yellow, often with a light blush on the side exposed to the sun, covered with thin bloom; flesh yellow, very juicy, aromatic, sweet; quality good; stone semi-free; ripens late. Tree moderately large and vigorous, very handy, productive. HEDRICK 1911; Y83{SC}

Mirabelle Herrenhausen: (Mirabelle Double de Herrenhausen) Small to medium-sized fruit; skin yellow, mottled with red; flesh yellow, sweet, quality good; ripens late, following Mirabelle de Nancy. Tree vigorous, very productive. Originated in Germany prior to 1881. HEDRICK 1911; F91T{SC}

**PRUNES** Plums that have a high content of sugars and solids, which enables them to be dried without fermenting at the pit. The best cultivars have a small, smooth pit and a rich flavor that survives drying. As fresh fruit they are generally sweeter than other plums.

Bluebell: Fruit large, more so than Stanley; oval; skin blue; flesh firm, yellow, flavor good, sweet; freestone; ripens in mid-September, shortly after Stanley, which it resembles. Tree vigorous, upright, holds fruit through a long harvest period. Originated in Mountain Grove, Missouri. BROOKS 1972; M11M{PR}

Bluefre: Large, oval fruit; skin blue; flesh greenish-yellow, firm, thick, sweet, flavor good; freestone; ripens in late August, about 1 week after Stanley; resembles President. Retains its color well when processed. Tree vigorous; precocious, very productive; extremely hardy; holds fruit in good condition for about 30 days after normal harvest time. BROOKS 1972; A5, B83, F53, F88G, F91T{SC}, I61M{SC}, K36, M11M{PR}

Brooks: (Brooks Italian, Lafayette) Large, oval fruit, averages 50% larger than Italian; skin blue; flesh greenish-yellow, very firm, slightly tart, moderately juicy, sweeter than Italian; keeps and ships well; fair canning quality, good drying quality; ripens 1 week earlier than Italian. Tree bears annually. BROOKS 1972; D28J, E87, H89M, H89M{DW}, I49M, N20

Earliblue: Stanley x President. Medium to large, oval fruit; thin, purplish-blue fruit; sweet greenish-yellow flesh, firm, crisp, juicy, fine-textured; quality very good. Ripens early, in mid-July. Suitable for fresh use, canning, drying and juice. Upright, very hardy tree, self-fertile. Less productive than Stanley. BROOKS 1997; F91T{SC}, L33, M11M{PR}

Early Italian: (Richards Early Italian) Large fruit, slightly larger than Italian; skin purplish-black; flesh yellow, firm, sweeter than Italian; ripens 10 to 14 weeks before Italian, which it resembles; ships well. Tree less vigorous and weaker than Italian. An excellent commercial cultivar. BROOKS 1972; A91, A91{SC}, B74, B83, C41M, E87, F88G, I68, M39M, N20

French Improved: Medium-sized, oval fruit; skin red to dark-purple, tender; flesh fine-textured, tender, very sweet and rich; ripens August to September. Suitable for dessert, drying, or canning. Tree self-fertile. The leading prune in California. A88M, B71M, B93M{DW}, C54, E4, I68, I99M, L47, N20

Giant Prune: (Burbank's Giant Prune) Large, long oval fruit; skin purplish-red with numerous russet dots; flesh light golden-yellow, coarse, firm, rather sweet, mild, flavor fairly good when cooked; stone clinging; ripens in midseason. Tree moderately vigorous; precocious; bears heavily and annually. Originated in Santa Rosa, California by Luther Burbank. Introduced in 1893. HEDRICK 1911, SIMMONS 1978; 081, Q30{SC}, R83

Imperial Epineuse: (Imperial) Fruit large, slightly obovate; skin purplish red, darker on the side exposed to the sun; flesh greenish-yellow, tender, sweet, rich, of agreeable flavor; quality excellent; stone clinging; ripens late. Tree large, vigorous, spreading, fairly productive. Originated as a chance seedling in the great prune growing district of France, about 1870. HEDRICK 1911; G79M, H90M{SC}, J61M, K88T, LI, L12, Q30{SC}

Italian: (Fellenberg) Fruit medium to large, long-oval; skin purplish-black, covered with very thick bloom; flesh yellow, very firm, dry, sweet, aromatic when fully ripe; stone partially free; quality very good to best; ripens late, season short. Excellent for preserving and drying. Tree vigorous, spreading; precocious; a regular and heavy bearer. One of the most widely grown of all plums. HEDRICK 1911, SIMMONS 1978; B83, D81M{PO}, E84, F53, G79M{DW}, H65, H89M, H90, LI, M11M{PR}, M39M

Middelburg: Large, oval fruit; skin light to deep purplish-red, covered with thick bloom; flesh light yellow, rather juicy, sprightly when first mature, becoming sweetish, strongly aromatic, pleasant flavored; quality very good; stone semi-free; ripens very late. Tree vigorous, medium-sized; hardy; productive. Originated in Middleburg, New York, sometime prior to 1886. HEDRICK 1911; J93{SC}, L12

Moyer: (Moyer Perfecto) Fruit large, averaging 1 1/2 inches in diameter, ovate; skin thick, blue, bloom heavy and whitish; flesh yellow, firm, juicy, somewhat coarse, quality good, semi-clingstone; ripens about 7 to 10 days after Italian. Excellent for drying. Tree vigorous, self-fruitful. Originated in Roseburg, Oregon by

C.E. Moyer. Introduced about 1927. BROOKS 1972; *B71M*, *E4*, *E84*, *K73M*, *M63M*{DF}

Prune d'Agén: (French, French Petit) Medium small, long oval fruit; skin violet-purple, covered with thin bloom; flesh greenish-yellow, tender, sweet, aromatic; quality very good to best; stone semi-free; ripens late. Excellent for dessert and drying. Tree medium-sized, upright-spreading; hardy; very productive. Of ancient origin; brought to France from Turkey or Persia by Benedictine monks on their return from the Crusades. HEDRICK 1911; *B93M*, *C94M*{PD}, *E84*, *H89M/Xm*, *I19M*{DF}, *I50D*{DF}, *K73M*, *K88T*, *L12*, *L97G*{DF}, *M63M*{DF}

Quetsche:<sup>1</sup> Famous European cooking plum. Flavorless when eaten fresh, but develops a rich flavor after being stewed. Grown in Austria and eastern Europe for prunes, and in Germany for canning. Also used for *Quetsche* brandy. Occasionally available in cans or jars at gourmet specialty stores. Generally considered a class of plums rather than a cultivar. RAY, C.; *E9*{PD}

Silver Prune: Large, oval fruit; skin light yellow; flesh yellowish, firm, juicy, sweet and rich. Dries to a beautiful golden color. Seedling of Coe's Golden Drop, which it resembles, but is much more productive. Originated in Oregon by W.H. Prettyman. WICKSON; *D7*{DF}

Stanley: Medium to large, oval fruit; skin deep purplish-blue; flesh greenish-yellow, juicy, firm but tender, sweet; stone free; ripens late. Tree large, vigorous, spreading; self-fertile, precocious, bears heavily and annually. Most popular prune cultivar in the United States. Originated in Geneva, New York by Richard Wellington. Introduced in 1926. BROOKS 1972; *B73M*, *B73M*{DW}, *B83*, *D81M*{PO}, *G16*, *G23*, *G23*{DW}, *J61M*, *J83*, *K28*, *M11M*{PR}, *M39M*, *N33*

Sugar: Small, oval fruit; skin dark reddish-purple, covered with thick bloom, very tender; flesh golden-yellow, juicy, tender, sweet, mild; quality very good; stone free; ripens early. Excellent fresh; good for drying and canning. Tree moderately vigorous, spreading; hardy; self-fertile, productive. Originated in Santa Rosa, California by Luther Burbank. Introduced in 1899. HEDRICK 1911; *A88M*, *B93M*, *F91T*{SC}, *I68*, *K88T*, *N20*

Valor:<sup>3</sup> Medium-large fruit; skin dark purple, speckled, attractive; flesh greenish-gold, firm, semi-freestone; quality excellent; ripens with Italian or just ahead of it. Recommended as a fresh fruit cultivar. Tree vigorous and productive; foliage dark. Low chilling requirement. Originated in Vineland Station, Ontario, Canada. *C76M*, *F88G*, *J61M*, *M11M*{PR}, *P59M*

Weatherspoon: Large fruit; skin moderately thick, tough; flesh firm, sweet, aromatic; ripens a week ahead of Italian which it resembles; has good shipping qualities. Tree somewhat thorny; not hardy; blooms heavily but production is not high; requires pollination by other Italian type cultivars. BROOKS 1972; *F91T*{SC}

#### JAPANESE PLUMS

With few exceptions, the fruit is larger than that of European plums. It is also juicier, with a pleasant blend of acid and sugar. Most Japanese plums are used for fresh fruit only. They can be kept longer than European plums and are better shippers. They bloom early and are thus susceptible to spring frosts. Some do well in mild-winter climates. Japanese plums cross-pollinate readily and also pollinate American plums. Mostly *P. salicina*.

#### GREEN/YELLOW-SKINNEP

Byron Gold: Large, round fruit, 2 inches or more in diameter; skin bright yellow; flesh golden yellow, aromatic, crisp, sweet, quality excellent; ripens late June to early July, keeps very well. Tree vigorous, precocious, productive. Resistant to the bacterial and fungal diseases common to the southeastern United States. *C76M*, *E99M*, *F91T*{SC}, *G17*

Early Golden: Medium-sized, round fruit; skin golden, blushed with red; flesh golden, firm, smooth, quality good; stone small, free;

ripens 10 to 14 days before Shiro. Tree vigorous; productive; self-unfruitful, sets well with pollen from myrobalan; blooms very early; tends to bear biennially. Widely planted in Ontario, Canada. BROOKS 1972; *F53*, *F88G*, *I61M*{SC}, *J61M*, *M11M*{PR}

Ember: Medium to large, oblong fruit; skin yellow, blushed with red, bloom medium; flesh yellow, firm, fine-grained, tender, juicy, sweet; quality high for dessert or culinary purposes; stone clinging; ripens in early September; keeps well for 2 to 3 weeks after ripening. Tree low, spreading; vigorous; hardy. Originated in Excelsior, Minnesota. BROOKS 1972; *F91T*{SC}, *H44*

Great Yellow:<sup>3</sup> Large, roundish fruit; skin thin, clear yellow; flesh clear yellow, fine-textured, with a mild subacid flavor; ripens early. Tree moderately vigorous, hardy. Relatively low chilling requirement. Originated in Sebastopol, California by Luther Burbank. Introduced in 1931 by Stark Brothers Nuisery. BROOKS 1972, RUCK; *T49M*{SC}

Green Egg: A sour plum, craved by some people who appreciate acid fruits sprinkled with a little salt. Enthusiasts frequently prefer this plum to the older cultivar, Green Gage. The spicy flavor is refreshing to those who like to cleanse the palate after a heavy meal. Adapted to Southeastern growing conditions. *I53M*

Homesteader: (Profanoff) Medium-sized fruit, 1 1/4 inches in diameter; skin yellow-green, overlaid with orange, thin; flesh freestone, of excellent quality; ripens early; resembles Green Gage. Tree hardy, productive; pollinates with Pitsin #5. Originated in the former Soviet Union. *C58*

Howard Miracle: Medium to large fruit; skin yellow, heavily blushed with red at maturity, thin, tough; flesh yellow, firm, juicy; flavor distinctive, somewhat suggestive of pineapple; freestone; ripens midseason to late; ships well. Tree very vigorous; requires cross-pollination, Wickson and Santa Rosa recommended. Originated in Montebello, California. BROOKS 1972; *A63*, *C54*, *G49*, *H4*, *I68*, *LI*, *N20*

Inca: Oval, handsomely shaped fruit; skin golden-yellow tinged with crimson, bloom lavender; flesh pale orange, juicy, firm, sweet and flavorful; ripens in midseason. Originated in Santa Rosa, California by Luther Burbank. Introduced in 1919. Highly rated by members of the California Rare Fruit Growers. *D57*{OR}

Ivanovka: Roundish fruit, 1 1/2 inches in diameter; skin greenish-yellow, mostly covered with dull bluish-red, overlaid with medium bloom; flesh greenish-yellow to pink, somewhat starchy, very juicy, sweet, sprightly; quality very good for dessert and canning; clingstone; season late August. Tree vigorous, upright-spreading; hardy; productive. Originated in Manchuria. ANDERSEN, BROOKS 1972; *B47*

Kelsey: Large, heart-shaped fruit; skin yellow, tinged and splashed with red, with attractive bloom; flesh yellow, juicy, firm and meaty, rich, pleasant, aromatic; quality good to very good; stone clinging unless well ripened; ripens very late; keeps and ships unusually well. Tree vigorous, upright; productive; an early and regular bearer; tender to cold. Introduced into the United States from Japan in 1870. HEDRICK 1911; *A9*, *B71M*, *C54*, *E4*, *I83M*, *K88T*, *N20*

La Crescent: (Ciescent, Golden Minnesota) (*P. americana* x) Small, oval fruit; skin thin, tender, easily removed, yellow, sometimes faintly blushed; flesh yellow, juicy, very tender, melting, sweet, aromatic, suggestive of apricots, dessert quality good; stone small, free; ripens early. Tree large, extremely vigorous; moderately productive; hardy. BROOKS 1972; *A74*, *C27T*{SC}, *C58*, *D69*, *I49G*{SC}, *L27M*, *L70*

Pitsin #5: Medium to small, round fruit; skin yellow, covered with a moderately heavy bloom; flesh yellow, smooth, very juicy and aromatic, flavor excellent; freestone; ripens early; resembles Pitsin #9. Tree vigorous; hardy. Originated in Manchuria. Introduced into Canada in 1939. BROOKS 1972; *B47*, *C58*, *M35M*

Ptitsin #9: Medium-sized, nearly round fruit; skin green, becoming greenish-yellow when mature; flesh light greenish, firm, meaty, freestone; flavor very sweet, mild, pleasant, somewhat reminiscent of Green Gage; ripens in mid-August. Tree small, rounded, spreading; hardy; productive; adapted to prairie conditions. BROOKS 1972; M35M

Shiro: Medium-sized, roundish fruit; skin yellow, covered with thin bloom; flesh light yellow, semi-transparent, very juicy, somewhat melting, sweet, mild, lacks character in flavor; quality good; stone clinging; ripens very early. Tree large, vigorous, upright-spreading; tender to cold; productive. Originated by Luther Burbank, introduced about 1897. HEDRICK 1911; A5, B53, B83, F53, H65, I83M, J16, J93, L33, M11M{PR}, M39M

Wickson: Large to very large, heart-shaped fruit; skin yellow, blushed with dark red; flesh amber-yellow, juicy, coarse, somewhat fibrous, firm, sweet, pleasant but not high in flavor; quality good; stone clinging; ripens in midseason; keeps and ships well. Tree vigorous, upright; tender to cold; an uncertain bearer. Originated by Luther Burbank. First described in 1892. HEDRICK 1911; A9, A88M, B71M, B93M, C54, D81{PO}, D81M{PO}, E4, I68, I83M, LI, L90, N20, N33

#### RED/PURPLE-SKINNED

Abundance: Small to medium-sized, roundish-ovate fruit; skin dark red, covered with thin bloom; flesh yellow, very juicy, tender and melting, sweet, pleasantly aromatic; quality good; stone clinging; ripens early, season short. Tree large, vigorous, very productive. Imported from Japan by Luther Burbank. Introduced in 1888. HEDRICK 1911; F88G, F91T{SC}, G79M{DW}, I61M{SC}, M69M

Alderman: Large, conical fruit; skin orange-red with little or no bloom; sweet, juicy bright golden-yellow flesh; quality excellent; clingstone. Ripens in late August, about 1 week later than Superior or Toka. Vigorous, hardy tree; self-fruitful. Very precocious, often bearing the first year after planting. BROOKS 1997; <sup>^474</sup>, C27T{SC}, H44, I49G, I49G{SC}, J93, J93{SC}, L27M, L70

Beauty: Medium to large, heart-shaped fruit; skin bright red; flesh amber, tinged with red, flavor good fresh or cooked; ripens early; keeps well. Tree vigorous; productive; partially self-fruitful. Relatively low chilling requirement. Originated in Santa Rosa, California by Luther Burbank. Introduced in 1911. RUCK; A88M, B74, C54, I49M, I68, I83M, J61M, K88T, N20

Bruce: (Bruce's Early) (*P. angustifolia* x) Fruit medium to large, about 1 1/2 inches in diameter; skin wine-red; flesh deep red, soft, sweet, quality fair; matures very early, being its primary outstanding fruit characteristic. Used primarily for jelly. Tree bears heavily, often produces the first year; requires a pollinator, usually Methley. Originated in Donley County, Texas by A.L. Bruce. Introduced about 1921. BROOKS 1972, MCEACHERN; A82, A85M, C54, E45, E99M, F61M, G17, H63M, H63M{TM}, I41P, I53M, L90, M83, N33

Burbank: Medium to large, roundish-conic fruit; skin dark red, covered with thick bloom; flesh deep yellow, juicy, tender, firm, sweet, aromatic; quality good; stone clinging; ripens early, season long. Tree large, vigorous; very productive; unusually hardy for a Japanese cultivar. Raised from a seed sent to Luther Burbank by a Japanese agent in 1883. HEDRICK 1911; A82, E99M, F53, F88G, G72, G79M{DW}, H90, I9M, K28, M69M, M83

Burgundy: Small, round fruit, about 1 1/2 inches in diameter; skin and flesh an attractive dark maroon; flavor mild, sweet and pleasant. Ripens in July and August. Suitable for fresh eating, canning or preserves. Upright, very productive tree; self-fertile. Requires 400 hours of chilling. Recommended for home gardens. A63, A88M, C54, I83M, L47, N20

Catherine Bunnell: Large, deep-red to purple fruit; ripens around July 4th. Developed by Luther Burbank. Of little commercial value

because of defects such as cracked stones within the fruit, but of such exceptional dessert quality that trees were given to Burbank's close friends—including Catherine Bunnell of Berkeley—as enduring gifts. Recently resurrected by the California Rare Fruit Growers. MARIANI 1994; T49M{SC}

Duarte:<sup>2</sup> Medium to large, heart-shaped fruit; skin deep-red with silver markings; flesh blood red, firm, juicy, flavor good, tart when cooked; quality very good; ripens in midseason; keeps well. Good fresh or canned. Tree vigorous; cold hardy; self-fruitful; a good pollinator for other cultivars, especially Santa Rosa. Originated by Luther Burbank. Introduced in 1900. F91T{SC}, M39M

Eldorado: Large, oblong fruit; skin dark red; flesh amber, somewhat dry, clingstone; ripens early, stores well. Good for canning. Tree very upright; requires a pollinator; pollinated by Beauty, Laroda and Wickson. Originated in Sebastopol, California by Luther Burbank. Introduced in 1904. B93M, E4, F91T{SC}, K88T, N20

Elephant Heart:<sup>2</sup> High quality "blood" plum (blood red flesh and red juice). Medium to large, heart-shaped fruit; skin thick, dark brownish-purple; flesh blood red, sweet and rich, extremely juicy, juice red; flavor and quality excellent; freestone; ripens late. Tree vigorous; hardy; prolific; self-unfruitful. Originated in Sebastopol, California by Luther Burbank. Introduced in 1929 by Stark Brothers Nurseries. BROOKS 1972; A88M, C30M, C54, E87, E99M, F53, G49, I68, J93{SC}, LI, L12, L47, M39M, N20

Explorer: (*P. angustifolia* x) Medium to large fruit; skin bright purplish-black, covered by a heavy, waxy bloom; flesh deep amber, juicy, sweet, flavor very good, quality high; ripens during the first 10 days in Byron. Tree moderately vigorous, upright-spreading; requires a pollinator; disease resistant. Adapted to all areas of the Southeast. Originated in Byron, Georgia. Introduced in 1981. C30M, E99M, F61M, F91T{SC}

Formosa: (Wickson Challenge) Large, oval fruit; skin yellow with a pale bloom until nearly ripe, turning to a clear rich red; flesh pale yellow, unusually firm, sweet and rich, with a slight apricot-like flavor, nearly freestone; ripens in mid-August. Tree vigorous; very productive; susceptible to bacterial leaf spot. Originated by Luther Burbank. Introduced in 1907. SIMMONS 1978, WICKSON; A5, F88G, F91T{SC}

Friar: Large, oblate fruit; skin black when fully mature, resists cracking; flesh amber, firm, softens slowly after harvest, quality good; stone small, free; ripens in midseason, several days later than Nubiana. Tree upright; very vigorous and productive; requires a pollinator. BROOKS 1972; A9, A88M, B53, B71M, B83, B93M, D81{PO}, D81M{PO}, E4, F88G, H49, M39M, N20

Frontier: Large, round-ovate fruit; skin blue-black, more attractive than other red-fleshed cultivars; flesh red, not as dark as Mariposa, firm, freestone, flavor good, similar to Mariposa; ripens 10 to 14 days after Santa Rosa; softens slowly after picking. Tree vigorous; productive; requires a pollinizer, Santa Rosa and Redheart being effective. BROOKS 1972; C75M

Gaviota: Very large, oval fruit; skin dark red over yellow ground color; flesh yellow, aromatic, juicy, firm, sweet, with a sparkling rich flavor; quality very good; stone extremely small; ripens in midseason. Tree vigorous, productive, blooms late. Originated by Luther Burbank, about 1900. HEDRICK 1911; T49M{SC}, U7G{SC}

Hanska: Medium-sized, roundish-oblate fruit; skin bright red with a heavy blue bloom; flesh firm, yellow, aromatic, of good quality; stone very small, semi-free. Develops a strong apricot flavor when cooked. Tree very vigorous, three-year old trees attaining a height of 12 feet; hardy. Originated in Brookings, South Dakota by N.E. Hansen. Introduced in 1908. Hanska is the Sioux word for "tall". HANSEN, HEDRICK 1911; F91T{SC}, J93{SC}

Kaga: Small, crimson fruit; flesh amber, sweet and aromatic with an intense fruity flavor; clingstone; ripens in late August. Compact,

very hardy tree. Fbllinate with Waneta, Pipestone, Shiro, etc. Sibling of Hanska. Originated in Brookings, South Dakota by N.E. Hansen. Introduced in 1909. Kaga is Sioux Indian for "pitch a tent". TAYLOR; A91, A91{SC}, C27T{SC}, C58, D76, E97, F91T{SC}, I49G{SC}, I61M{SC}

Kahinta: Medium to large, roundish to slightly oval, very heavy fruit; skin dark red, thin, free of acerbitity; flesh yellow, firm, sweet, of excellent quality, freestone. Originated in Brookings, South Dakota by N.E. Hansen. Introduced in 1912. Kahinta is the Sioux Indian name for "sweep". HANSEN; C27T{SC}, F91T{SC}, I49G, I49G{SC}

Laroda: Large, nearly round fruit; skin deep reddish-purple; flesh light amber, light red near the skin, firm, sweet, mildly aromatic, quality good; ripens in midseason; ships very well. Tree vigorous, upright; produces numerous medium-sized spurs and buds; self-unfruitful, being pollinated by Santa Rosa. BROOKS 1972; A88M, B71M, K88T, N20

Late Santa Rosa:<sup>3</sup> Bud mutation of Santa Rosa. Medium to large, reddish-purple fruit; amber flesh, streaked with red near the pit; rich subacid flavor when fully ripe. Ripens about 1 month later than Santa Rosa. Productive, self-fruitful tree. Requires about 500 hours of chilling. Introduced in 1931. A63, A88M, C54, I68, I83M, K88T, L47, N20

Mariposa:<sup>2</sup> (Improved Satsuma) Large, round to heart-shaped fruit; skin maroon, thick, sweet; flesh blood red, firm, tender, juicy, sweet, freestone; sweeter than Satsuma which it resembles; ripens in midseason, holds on the tree 2 to 3 weeks after ripening. Tree medium to large, vigorous, upright. Originated in Pasadena, California. BROOKS 1972; A9, A63, A88M, C30M, C54, G17, G49, I68, I83M, K88T, LI, L47, N20

Methley:<sup>3</sup> Small to medium, round fruit; skin purple, blushed with red; flesh red, soft, very juicy, sweet, flavor distinct; quality good; ripens early. Tree vigorous, upright; hardy; self-fruitful; productive; a good pollinizer, especially for Shiro. Low chilling requirement, 200 to 250 hours or less. Originated in South Africa. A5, A82, A85M, B53, B74, C75M, F53, F88G, F93, G72, I9M, I83M, J61M, K28, M11M{PR}, M69M, N33, etc.

Morris: Medium to large fruit; skin reddish to purplish-black; flesh reddish-purple through to the seed, firm, crisp, flavor good; ripens early, about a week later than Methley. Tree may require a pollinator; slightly resistant to brown rot; very susceptible to black knot. Requires 800 hours of chilling. Originated at Texas A & M University by Dr. J. Benton Storey. MCEACHERN; A39, C75M, E45, E99M, F61M, F93, I53M, L90, M83, N33

Nubiana: Large, flattened fruit; skin deep reddish-blue; flesh light amber, very firm, meaty, moderately sweet, quality fair, turns red when cooked; ripens very slowly, in midseason, after Laroda and before President; ships well; resembles Eldorado. Tree very vigorous, medium upright; highly productive; self-fruitful. BROOKS 1972; A88M, B71M, B93M, C54, F91T{SC}, K88T, N20

Ozark Premier: Fruit extremely large, round to slightly heart-shaped; skin bright red, tough; flesh yellow, firm, fine-grained, juice tart, flavor good; stone small, clinging; ripens midseason to late, with Burbank, which it resembles. Good fresh or canned. Tree vigorous; hardy; productive; self-unfruitful; fairly resistant to bacterial spot. BROOKS 1972; A5, A39, A85M, B53, C75M, D37, F61M, F88G, F93, G65M, L33, L90, M69M, M83, N33, etc.

Pipestone: Large fruit; skin deep red with a golden blush, thin, tough but peeling easily; flesh golden-yellow, somewhat stringy, sweet, juicy, quality excellent; ripens early. For home gardens and commercial use. Tree vigorous; very cold hardy; reliably productive; requires cross pollination. BROOKS 1972; A74, A91, A91{SC}, B4, B15M, D69, F53, F88G, G4, G16, H44, I49G{SC}, L27M, L70, M35M, etc.

Queen Ann: Large, somewhat heart-shaped fruit; deep mahogany skin; flesh light amber, streaked with red, firm and sweet; texture and quality very good; semi-freestone. Ripens late, in mid-August. Tree only moderately vigorous; self-unfruitful. Pollinate with Santa Rosa, Wickson, etc. Requires 500 hours of chilling. B71M, F91T{SC}, N20

Red Ace: (Burbank Red Ace) Medium-sized, round-oval fruit; skin crimson to dull red, bloom pale blue; flesh light-crimson, sweet, delicious, quality excellent; semi-freestone to freestone; resembles Elephant Heart. Tree spreading, very productive, hardy; ripens in mid-August. Originated in Sebastopol, California by Luther Burbank. Introduced in 1929 by Stark Brothers Nurseries. BROOKS 1972; C27T{SC}, F91T{SC}, L33

Red June: Medium-sized, roundish fruit; skin garnet red, covered with thin bloom; flesh light yellow, fibrous, somewhat sweet, peculiarly aromatic; quality good; stone clinging; ripens early. Tree large, vigorous, upright-spreading; hardy; productive. Introduced in 1893 by Stark Brothers Nurseries. HEDRICK 1911; A82, E45, I41P, M25M

Redheart:<sup>2</sup> Fruit medium to large; slightly oval to heart-shaped; skin medium to darkish-red, covered with moderately heavy bloom; flesh blood red, sweet, mild, aroma pronounced, firm-melting, meaty, nearly crisp, fine-grained, not as juicy as Elephant Heart; quality excellent; stone nearly free; ripens early. Tree upright-spreading, very vigorous and productive; self-unfruitful. BROOKS 1972; B53, C27T{SC}, C30M, C45M, D37, F53, F88G, I61M{SC}, L33, L33{DW}, M11M{PR}, N20

Robusto: (P. angustifolia x) Medium to large fruit; skin solid bright-red; flesh red, juicy, sweet, quality good; stone clinging; ripens approximately 1 week later than Bruce. Tree extremely vigorous and productive; precocious; requires a pollinator; disease resistant. Adapted to most areas of the Southeast. Originated in Byron, Georgia. Introduced in 1982. E99M, F61M, F91T{SC}, G17

Roysum: Medium-large, oblong fruit; skin reddish-blue, adherent; flesh light yellow, firm, slightly acid, juicy, of high quality, freestone; ripens evenly, very late, 2 months after Late Santa Rosa, in early October; keeps very well; resembles Late Santa Rosa. Tree vigorous, spreading, self-fruitful. Originated in Tulare, California. BROOKS 1972; A9, E4, J93{SC}

San Jose Blood:<sup>2</sup> Very flavorful "blood" plum resembling Elephant Heart. Recommended by members of the California Rare Fruit Growers. Discovered at U.C. Deciduous Field Station, San Jose, California. T49M{SC}

Santa Rosa: Large, roundish fruit; skin dark purplish-crimson with russet dots, covered with thin bloom; flesh reddish near the skin, shading to amber near the center, firm, juicy, slightly tart; quality good; ripens early; keeps and ships well. Tree large, vigorous, upright; hardy; productive; widely adapted. Originated in Santa Rosa, California by Luther Burbank. Introduced in 1907. HEDRICK 1911; A88M, B83, D34M{PR}, D81M{PO}, E4, F74M{PD}, G23, G23{DW}, G49, H3{P}3, I68{ES}, I83M, J83, J83{DW}, K28, LI, M39M, etc.

Satsuma:<sup>2</sup> Small to medium, roundish fruit; skin dark red, covered with thin bloom; flesh blood red, juicy, tender, firm, sweet, flavor very good; stone semi-clinging; ripens in midseason. Tree vigorous, upright-spreading; hardy; productive. Originated by Luther Burbank. Introduced in 1889. HEDRICK 1911; A63, A88M, B74, C54, E4, G49, G87M{£D}, I53M, I68, I83M, LI, M39M, N33

Sierra: Medium-sized, roundish fruit; skin dark purplish-crimson, dotted with russet; flesh yellow, firm, juicy, sweet; semi-freestone; has good eating and keeping qualities; ripens late June to late July. Tree vigorous, fairly self-fruitful at place of origin. Originated in Ontario, California by Herbert C. Swim, Armstrong Nurseries. BROOKS 1972; D57{OR}

Simka: Large, oblong to cone-shaped fruit; skin dark purplish-red; flesh yellowish-white, very firm, sweet; freestone at fall maturity; ripens in midseason; keeps well on the tree; resembles Nubiana. Tree medium-sized, vigorous; bears heavily and annually; partially self-thinning. Originated in Fowler, California. BROOKS 1972; A9, B71M, B83, F53, M39M

Six Weeks: (Early Six Weeks) Fruit large, oblong; skin yellow, tinged with red, bright cherry-red when over-ripe; quality average; ripens early. Tree vigorous, upright, rapid in growth. Splits badly on both fruit and tree trunk. Named and introduced by J.S. Kerr of Texas, about 1901. HEDRICK 1911; E99M, F61M

Superior: Large, heart-shaped fruit; skin dark-red with russet dots, covered with heavy attractive bloom; flesh yellow, firm, juicy, flavor sprightly, slightly acid near skin, dessert quality superior; clingstone; ripens in late midseason. Tree vigorous, precocious, prolific. BROOKS 1972; A74, A91{SC}, C76M, D76, D76{DW}, E97, E97{DW}, H44, H65, H89M, H90{DW}, I49G, J93{SC}

Tecumseh: Medium-sized, round-ovate fruit; skin bright red, covered with bluish bloom; flesh yellow, firm, juicy, subacid; quality good; stone clinging; ripens in mid-August. Tree vigorous; very hardy; reliably productive. Originated in Brookings, South Dakota by N.E. Hansen. Introduced about 1923. BROOKS 1972; A65, B47, C27T{SC}, C58, F88G, H85, I49G, I49G{SC}

Toka: (*P. americana* x) Medium to large fruit, tapered to a point; skin orange-red, with a blue bloom; flesh greenish-yellow, very firm, aromatic, with a sweet, rich flavor. Tree moderately vigorous, spreading; very hardy; an excellent pollinator for Japanese and Japanese hybrid plums. Introduced in 1911 by the South Dakota Agricultural Experiment Station. A74, B4, B15M, D65, F88G, G4, G16, H44, I49G, J93, J93{SC}, L27M, L70, N24M

Underwood: Large, heart-shaped fruit; skin dull red, satin like, astringent; flesh golden-yellow, juicy, melting, tender, slightly stringy, sweet, quality good; stone small, semi-clinging; ripens early, extends over a long season. Tree vigorous; bears regularly and heavily; very hardy; requires a pollinator. BROOKS 1972; A74, A91, A91{SC}, B4, D65, D69, G4, L27M, L70

Wade: Large, oblate fruit, 1 3/4 inches in diameter; skin deep red; flesh yellow streaked with red, very juicy, tender, sweet; ripens late May to mid-June. Vigorous, upright tree; precocious; requires a pollinator. Relatively low chilling requirement. C75M, E99M, F91T{SC}, G8, G17, J93{SC}

Waneta: Fruit large to very large; skin reddish-purple; flesh deep yellow, firm but tender, juicy, sweet; quality good; clingstone; ripens in midseason. Good fresh or for processing. Tree extremely hardy; bears heavily and annually. Originated in Brookings, South Dakota by N.E. Hansen. Introduced in 1913. A74, A91, A91{SC}, C27T{SC}, D65, D69, E97, G4, I49G, I61M{SC}, J93, J93{SC}, L27M

Weeping Santa Rosa:<sup>3</sup> Large, slightly oblate fruit; skin purplish-red with numerous, small yellow dots, covered with blue-gray bloom; flesh pale golden-yellow, juicy, firm, flavor mild, quality good; semi-freestone; ripens in midseason. Tree ornamental, with long slender limbs which bow downward toward the ground; very vigorous and productive. Low chilling requirement, 150 hours or less. BROOKS 1972; A88M, C54, G17, H89M, I49M, I68, I83M, J61M, Li, mo

#### CODES FOR SPECIAL TYPES

1. Cooking
2. Blood
3. Low-Chill

## POMEGRANATE {GR}

### PUNICA GRANATUM

Ambrosia: Large to very large, roundish fruit, 32 to 40 ounces in weight; rind golden colored, heavily blushed with rose; juicy, bright carmine pulp with a very good tart-sweet flavor. Suitable for eating out of hand. Medium-sized bush, produces good crops of fruit. Produces sweet fruit even along cool, humid, coastal areas of California. Originated in Camarillo, California by S.J. Chater. C22M, LI, N20

Balegal: Large, roundish fruit, 3 inches in diameter; somewhat laiger than Fleshman; skin pale pink, lighter in color than Fleshman; flesh slightly darker than Fleshman, very sweet. Originated in San Diego, California. Selected by Paul H. Thomson. D57, G17

Daru: (Dalim, Daran) Small, globular fruit, 2 to 3 inches in diameter; rind yellowish-green, tinged with red; aril deep red to pinkish-white, high in acid. Traditionally sun dried to form the expensive spice *anardana*, used as a souring agent in chutney and a large number of other preparations. Bush spreading, very hardy, will grow even on very poor and shallow soils. Native to the western Himalayas. DEVI, PARMAR, C.; U7G{S}

Elf: Small to medium-sized fruit; yellow-green skin; sweet, rich, light-pink juice with very good flavor. Dwarf, heavy bearing plant. Ideal for container culture or where space is limited. From the University of California, Davis pomegranate collection. H4

Eversweet: (Armchat) Medium to large, round fruit, 3 1/2 inches long and 3 1/4 inches in diameter; thick pink skin, blushed with red; bright scarlet pulp, very sweet and flavorful, even when fruit is small, green and immature; hollow seeds. Excellent for eating out of hand; also good for syrup, wine and jelly. Average size bush, 8-10 feet tall; produces 2 to 3 moderate crops from mid-August through mid-November in southern California. Originated in Camarillo, California by S.J. Chater. C22M, H4, I74, N20

Fleshman: Large, roundish fruit, about 3 inches in diameter; pink outside and in; very sweet in flavor; seeds relatively soft; quality very good. Originated in Fallbrook, California. Selected by Paul H. Thomson, co-founder of the California Rare Fruit Growers. D57, G17, I74

Ganesh: Soft-seeded Indian cultivar. Prolific yielder of medium-sized fruits. Sweet, pinkish flesh with a very agreeable flavor. Has been recommended for commercial production in Maharashtra state. Evergreen in tropical and subtropical climates. R0

Granada: Bud mutation of Wonderful. Fruit resembles Wonderful, but displays a red crown while in the green stage, darker red in color and less tart, ripens one month earlier than Wonderful; flowers also deeper red. Tree identical to Wonderful. Originated in Lindsay, California. Introduced in 1966. BROOKS 1972; A88M, C54, H4, I74, K67, S97M

Green Globe: Medium to large, uniform, roundish fruit, about 3 inches in diameter; rind greenish, striped and blushed with pinkish-red; large, thick, bright reddish pulp, sweet-tart with a good pomegranate flavor; large, very hard seeds. Ripens early in the season. Medium to large bush, vigorous and productive. Originated in Camarillo, California by S.J. Chater. C22M

King: Medium to large fruit, somewhat smaller than Balegal and Fleshman; skin darker pink to red; flavor very sweet; has a tendency to split. Bush somewhat of a shy bearer. Originated in Fallbrook, California by Sam King. D57, G17, I74

Malcolm's Sweet: Very large fruit with sweet, flavorsome juice. Best quality for fresh eating is reached around Thanksgiving. Highly productive, ornamental tree. Adapted to Southeastern growing

conditions. The original tree was grown from a seed on a Georgia plantation over 100 years ago. F43M

**Muscat Red:** (Muskat) Small to medium-sized fruit; rind thin to fairly thick; pulp fleshy, juicy, medium-sweet; seeds soft to medium-hard. Tree a moderately prolific bearer. Originated in India. MORTON 1987a; R0

**Muscat White:** (Muskat) Large fruit; rind creamy-white tinged with pink, thin; pulp sweet; seeds medium-hard. Tree bears well. Originated in India, where it is desirable for commercial planting in Delhi. MORTON 1987a; R0

**Phil's Sweet:** Medium to large, roundish fruits; weight 8 to 12 ounces; skin yellowish-green to slightly pink; flesh red with a high sugar content balancing the slight acid overtones; seed carpel sections thin with much pulp, seeds soft. Tree very productive. Originated in Escondido, California by Phil Arena. D57,174, M16

**Plantation Sweet:** Original tree, believed to be over 100 years old, was found growing wild on a Georgia plantation by Dr. Silas Harmon of the Coastal Plains Experiment Station, Tifton, Georgia. Highly productive; documented to have survived 0° F. without freezing to the ground. Maximum flavor peak of fruit is reached for fresh eating around Thanksgiving. I53M

**Renan's Sweet:** Soft-seeded type. Round, light red fruit; flesh pinkish-red; sugar content high; thin membranes surrounding arils. Juices readily by cutting in half and pressing. Upright, very productive tree. Originated in Lemon Grove, California by Renan Prevost. D57,174

**Rosamia:** Medium to large, roundish fruit, 3 to 3 1/2 inches in diameter; skin shiny pink, blushed with red; bright reddish pulp with a very good, tart-sweet to sweet flavor; good pulp to rag ratio. Light colored juice; relatively soft seeds. Good for eating out of hand. Medium to large bush; produces good crops of fruit. Originated in Camarillo, California by S. J. Chater. C22M

**Sweet:** Fruit is lighter in color than Wonderful, remains slightly greenish with a red blush when ripe; pink juice; flavor much sweeter than other cultivars. Excellent in fruit punch. Tree highly ornamental, bears at an early age, productive. A63, A88M, C54, D37, H4, I68,174,183M, L47, M16, N24M

**Utah Sweet:** Medium-sized, good quality fruit; whitish skin, blushed with red; very sweet, juicy, light pinkish flesh; seeds notably softer than those of Wonderful and other standard cultivars. Vigorous and productive plant with attractive, pinkish-orange flowers. G49,183M

**White:** Large, pinkish fruit with transparent white flesh; very sweet and juicy when ripe; non-staining. Ripens in early September. Vigorous bush, grows to 12 feet tall; attractive, orange-red flowers. Requires 150 to 200 hours of chilling. A88M, C54,174

**Wonderful:** Large, deep purple-red fruit; rind medium thick, tough; flesh deep crimson in color, juicy, and of a delicious vinous flavor; seeds not very hard. Better for juicing than for eating out of hand. Plant is vigorous and productive. Leading commercial variety in California. Originated in Florida. First propagated in California in 1896. A63, B93M, F93, G49, G96, H4,149M, I68,174,183M, I91, K67, LI, L47, M16, N33, etc.

## POTATO {PL}

### SOLANUM TUBerosUM

#### BLUE/PURPLE-SKINNED

**All Blue:** 80 days. Medium-sized oval tuber; very deep bluish-purple skin; medium eyes; flesh an attractive lavender blue throughout, very moist; slightly smoky flavor; matures in midseason. Good

boiled or baked. An exceptionally good keeper. Heavy yielding. Popular specialty market potato. A95, D68, E97, H49,134M{PR}, I99M, J36M, J97M, J99G, K49M, K49T, K66, L89, M46, N7G{S}, N34, N34{PR}, etc.

**Arran Victory:** Large, round tubers with purple-tinged skin. Sought after by connoisseurs for its fine mealy flavor and floury texture. A *high* quality, late maincrop variety that stores well. Resistant to blight, and highly productive. Very popular in Ireland, where it has supplanted traditional favorites. Named for Arran Island, off the coast of Scotland. R32, S55

**Blue Victor:** 90 days. Large, blocky, roundish tuber with medium deep eyes; skin lavender with occasional white areas; flesh white, of good flavor and texture; keeps very well. Vigorous, hardy plant, high yielding. An heirloom that is still popular in parts of the potato belt. J99G, K20M

**Brigus:** 80 days. A new, high-yielding release from Newfoundland. Uniform, round tubers; bluish-purple skin; creamy yellow flesh; shallow eyes; matures in midseason. Excellent boiled or baked. Wart and late blight resistant. Shows promise as a very interesting home garden and market type. D68, J99G, N24M

**Caribe:** 65 days. Very large uniform tuber, with shallow eyes; form round to oblong; bright bluish-purple skin; tender, creamy white flesh; matures very early. Does not store well. Heavy yielding and reliable. Wide adaptability across the United States and Canada. Released by AgCanada in 1984. A95, C53, E75, D68, E24, G71, G87, H42, J99G, K66, K95M, M32, N34, N34{PR}

**Lavender:** Attractive, unusual looking potato. Very consistent deeply set eyes. Striking light lavender skin and flesh. Consistently creamy texture and excellent mild flavor. Matures midseason to late. Potential specialty market item. Developed and introduced by Seeds Bliim. K49M

**Purple Chief:** 80 days. Medium to large, oval-shaped tuber; deep purple skin; white flesh; excellent cooking qualities; matures in midseason, keeps well. Equally good cooked in any w/r. Good yields. An interesting home garden type. Has been grown in Atlantic Canada for many years. H63G, K95M

**Purple Peruvian:**<sup>3</sup> (Peruvian Blue) Purple fingerling potato introduced from South America in the 1970's. Long, narrow, dark violet tuber; weight 1/2 to 3/4 pound when mature; flesh purple throughout, of fine texture; matures medium late. One of the main cultivars used in the Altiplano of Peru and Bolivia for making *chuhu*. Excellent storage qualities, will keep until June. Attractive, purple-tinged foliage. High yields. F73D, H73{PR}, I99M, J99G, K49M

**Purple Viking:** 80 days. Unique, dark purple skin with pink-red splashes; very white flesh of smooth texture; matures in midseason; keeps very well. Excellent boiled or baked. Good yields of large tubers. Interesting item for fresh markets and gourmet sales. A95, C85M, D68, H63G, J99G, K49M, K49T, K95M

#### PINK/RED-SKINNED

**Alaska Sweetheart:** 70-80 days. Attractive, red-skinned, pink-fleshed potato. Medium-sized, round to oval tubers; slightly russet skin; moist, pinkish-red flesh; distinctive, earthy flavor. Excellent boiled or baked. Ripens midseason to late. Moderately productive. D68, E13G{PR}, H63G, K49M, K49T, K95M

**All Pink:** Smallish, round to slightly elongated tubers with shallow eyes. Very smooth, consistent exterior. Attractive pink skin and creamy light pink flesh. Has good potential as a specialty market product. Developed and introduced by Seeds Blum. K49M

**All Red:** (Cranberry Red) Medium-sized, round tubers; smooth, brilliant red skin; pinkish-ied flesh. Tends to be low in starch, lending itself well to all forms of cooking. Highly recommended for potato salads and potato pizzas. By far the best producer of the red-skinned, red-fleshed potatoes. Matures in midseason. A95, C85M, D68, H63G, I18M, J99G, K95M, N34, N34{PR}

**Bison:** 65 days. Uniform, round, medium-sized tuber; smooth, shallow eyes; bright-red skin; pale yellow flesh. Excellent for baking. Cooks up flaky and full of flavor with minimum shrinkage while retaining a smooth, firm texture. A reliable and heavy bearer. Developed in North Dakota. Bred for resistance to late blight and scab. H63G, J99G, I18M

**Blossom:** Oblong, somewhat flattened tubers with tapered ends; striking, smooth deep pink skin; delicate light-pink flesh. Good for baking. Heat resistant plant; produces large, very attractive pink flower blossoms. Ornamental as well as useful. Developed by Ewald Eliason. H63G, K49M, K95M

**Blushing:** Round tubers with deep eyes, often of very large size. Pink skin. Vibrant, bright pink flesh; white with bright pink rays when grown in certain soils. Makes delicate pink mashed potatoes. Matures in midseason. Developed and introduced by Seeds Bliim. K49M

**Chieftain:** 90 days. Tuber round to oblong, with shallow to medium eyes; attractive red skin; white flesh. Medium-sized, spreading plant; more productive than Norland; moderately resistant to scab and has field resistance to late blight. Canada's leading market red. Released by the Iowa Agricultural Experiment Station in 1968. A95, D11M, D68, F70, G50, J36M, J99G, K95M, N24M

**Cinderella:** Round tubers with shallow eyes. So named because the exterior can be somewhat rough. Pink skin. Delicate pink flesh. Flavor and quality excellent. Matures in midseason. Potential specialty market potato. Developed and introduced by Seeds Bliim. K49M

**Cinnabar:** Tuber pointed at the stem end; deep eyes. Unusual, waxy skin, an attractive deep maroon color. Deep pink flesh, somewhat darker in smaller potatoes and lighter in large-sized ones. Matures in midseason. Developed and introduced by Seeds Bliim. K49M

**Desiree:** 80 days. Very high-yielding English maincrop potato. Tuber oblong, with shallow eyes; skin pinkish-red; deep golden-yellow flesh, of very fine flavor. Excellent cooking qualities; rarely discolors. Produces well from seed, but matures somewhat later and up to 50% of the tubers may have white skin. Highly susceptible to scab. Drought resistant. A95, H42, H49, H63G, I18M, 191, J36M, J99G, K49T, K95M, P59M, R32, R83, S55

**Early Rose:** 80 days. An old standard, developed in Vermont and introduced in 1861. Tuber oblong, rather flattened, with medium deep eyes; skin pink, slightly tinged with salmon; white flesh, sometimes streaked with pink; matures early to midseason. Does not keep well. Vigorous and high yielding. Seedling of Garnet Chile. VILMORIN, WEAVER 1997; K49M

**French Fingerling:**<sup>3</sup> Medium to large, elongated tubers; very smooth pinkish-red skin; smooth, moist yellow flesh, often with an interior ring of pink when cut crosswise. Appealing, gourmet quality potato that has great potential as a specialty market item. Reportedly arrived in the United States in a horse's feedbag. D68, F73D, H63G, H73{PR}, J99G, K95M, M63M{PR}

**Garnet Chili:** 90 days. An American classic of the Nineteenth Century. Tuber large, roundish or oblong with medium deep, rounded eyes; skin thick, purplish-red or garnet-colored; flesh nearly white, dry and mealy when cooked, of very good flavor. Vigorous and productive plant. Originated in Utica, New York in 1853. BURR, WEAVER 1997; J36M, J99G

**Kerr's Pink:** Round, light pink tubers, delicate small red eyes; snow white flesh; very fine-grained, floury texture. Keeps well. Traditionally cooked unpeeled in boiling water, two thirds of which is poured off. The potatoes are then allowed to steam, after which they have the qualities of already mashed potatoes. Introduced in 1917 in Ireland, where it became the country's most popular potato. PHILLIPS; J99G, R83

**La Rouge:** 85 days. Tubers very uniform in size and shape, with deep apical eyes; attractive, smooth red skin; white to cream flesh; matures in midseason; has excellent keeping qualities. Medium-sized, spreading plant; has some resistance to common scab. Released by the Louisiana Agricultural Experiment Station in 1962. D68, J36M, K95M

**Pink Champaign:** Medium-sized, somewhat irregular tubers. Slightly rough, pinkish-red skin. Creamy, light pink flesh. More consistent and slightly deeper pink flesh coloring than Blossom. Exterior not as consistent or as attractive as Blossom. Developed and introduced by Seeds Blum. K49M

**Pink Pearl:** 90 days. Long oval tuber with attractive pink skin and shallow eyes; white flesh, of good flavor and cooking qualities. Matures very late, keeps well. Large, vigorous plant. Wart and blight resistant. Shows promise as an excellent home garden cultivar. K49M

**Red Dale:** 65 days. Large, round, very uniform tubers; attractive red skin; moist, white flesh with very good flavor; good storage qualities. Excellent for boiling, sauteing and baking. Will have good market characteristics when planted closely. Small plants, very prolific. Resistant to scab and verticillium wilt. J99G, N34, N34{PR}

**Red Erik:** 65 days. Red tubers, with shallow eyes. Excellent baked, steamed or boiled. Heavy yielder, 13% more than Norland; tends to produce "lunkeis", so should be planted closely. Tolerates wet soil; has immunity gene for late blight, low resistance to verticillium wilt, medium resistance to scab. Released in Minnesota in 1983; named after Viking explorer Erik the Red. A95

**Red Gold:** 80 days. Medium-sized tubers; light red, netted skin; delicate yellow flesh. Excellent boiled, steamed, baked, mashed, roasted, scalloped or fried; flavor very good. Matures in midseason. High yielding under most conditions. Appears to have resistance to diseases. Released in Canada in 1987. A95, E75, D68, E24, H63G, J99G, K95M

**Red LaSoda:** 80 days. Tuber round to oblong, with medium deep eyes; very smooth, bright red skin; white flesh; matures in midseason. Ideal for boiling, with no darkening after cooking. Medium-sized, upright plant; somewhat resistant to mosaic, susceptible to common scab; tends to produce misshapen tubers under adverse conditions. Released by the Louisiana Agricultural Experiment Station in 1948. E97, G71M, H42, J36M, J99G

**Red Norland:** (Norland) 65 days. Tuber oblong, regular in size and shape, with shallow eyes; skin red, very smooth; flesh white; matures very early. Ideal for boiling, with no darkening of skin. Medium-large, spreading plant; moderately resistant to scab. Introduced by the North Dakota Agricultural Station in 1957. A16, A95, C85M, D76, D82, E24, E97, G16, H42, H54,199M, J36M, J97M, J99G, M49, etc.

**Red Pontiac:** (Pontiac) 80 days. Tuber round to oblong, with medium-deep eyes; smooth to sometimes netted, intense red skin; matures midseason to late. Ideal for boiling, with only slight darkening after cooking. Also very good fresh from the garden. Large, high-yielding plant; very susceptible to scab; drought tolerant. Very popular with commercial growers and home gardeners. B75, D65, D68, D76, E97, G71, H42,199M, J36M, J97M, J99G, K71, L79, M32, M46, etc.

**Red Thumb:**<sup>3</sup> Small to medium-sized tubers, generally more oblong than other fingerling types; deep red, very smooth and clean skin; pinkish, somewhat sweet flesh; excellent texture and flavor. Matures midseason to late. Becoming popular as a specialty market item. H73{PR}, J99G

**Rojo:** Medium-sized, roundish tubers with shallow eyes. Reddish skin. Deep pinkish-red flesh. Very smooth texture. Excellent flavor. Matures in midseason. Potential gourmet and specialty market potato. Developed and introduced by Seeds Bliim. K49M

Rose Finn Apple:<sup>3</sup> Fingerling type. Medium-sized, slender tuber; skin rose-buff; flesh deep yellow blushed with red, firm, waxy, of excellent flavor; matures medium to late, stores well. Produces numerous, well-clustered "fingers". Medium-sized, scab-resistant plants with purple flowers. D68, F73D, G6, H63G, J99G, K95M, N34, N34{PR}

Rose Gold: 80 days. Round, medium-sized tubers; very attractive, bright rose skin; waxy, golden-yellow flesh of excellent flavor; matures in midseason. A good all-purpose cultivar, but low starch content makes it a quick boiler, frier and baker. Resistant to scab. Introduced by the University of Guelph. G6, H63G, N34, N34{PR}

Ruby Crescent:<sup>3</sup> Large fingerling type, 3 inches long, 1 1/2 inches in diameter; mature tubers weigh 3/4 pound each. Attractive, rose-colored skin; waxy, yellow flesh of very fine flavor, holds together well when cooked. Excellent for boiling, baking or frying. Vigorous vines that yield heavy crops. Good specialty market item. E13G{PR}, H73{PR}, I99M, J99G, K49M, M63M{PR}

Sangre: 65 days. Medium to large, very uniform, slightly elongated tuber; weight 4 to 10 ounces; shallow eyes; dark-red skin; white flesh; matures early. Becoming popular with the restaurant trade, being dug early for abundant "small reds" that are boiled and served whole, with the skin on. A95, D68, E24, H63G, I99M{OR}, J99G, K49T

Tobique: 80 days. Tuber oblong-flattened, with very shallow eyes; smooth, golden tan skin with pink splashes. White flesh with good texture. Good potato flavor. Excellent boiled, steamed or baked. Matures early. Medium-sized, productive plants; highly disease resistant. Makes an attractive specialty market product. D68

#### RUSSET-SKINNED

Acadia Russet: 80 days Very large, smooth, lightly netted tuber; rich white flesh of fine flavor; matures medium-late. Excellent for boiling or baking. Very vigorous, upright plant; high yielding. More consistent than Russet Burbank. Released in New Brunswick in 1981. A95, B75, H42

Butte: 90 days. An Idaho favorite Very large, flat oblong, heavily russet tuber; shallow eyes; white flesh; matures late. Excellent flavor; one of the best for baking. Very good keeper. Compared to Russet Burbank, Butte produces up to 7% more yield, 20% more No. 1 potatoes, 58% more vitamin C and 20% more protein. C53, E24, H63G, J99G, K95M, M49, N34, N34{PR}

Frontier Russet: One of the easiest to grow russet potatoes. Oblong to long-cylindrical, lightly russet tubers; dry, white flesh of good flavor; matures in midseason, stores well. Excellent for baking and frying. Compact, productive plant; resistant to scab, late blight, dry rot, verticillium wilt, knobiness and growth cracks. Does well in northern climates. A95, B75, D68, D76, E24, E97, G6, J97M

Nooksack: 90 days. Large to very large, uniform, oblong tubers; weight 16 to 18 ounces; fine heavy russet; dry white flesh, excellent when baked; matures late. Stores well and shipping quality is excellent. Vigorous, heavy yielding, broad-leaved plant; well adapted; has good disease resistance. J99G, K49M, L89C

Norgold Russet: 65 days. Tuber oblong to long, with very well distributed shallow eyes; uniform, heavily netted skin; white flesh. Good for baking, boiling or French fries, with no darkening after cooking. Consistent, high-yielding plant; resistant to scab. Popular with home gardeners. Released by the North Dakota Agricultural Experiment Station in 1964. D26D, D76, E97, G71M, H33M

Norkotah Russet: 65 days. Uniform, long-flattened tubers, with shallow eyes; matures early to midseason; stores well. Excellent eating qualities baked, steamed, boiled, French fried, chipped or scalloped. Best fresh from the garden. Heavy yields. Developed in North Dakota by Dr. Robert Johnson, breeder of Bison. D68, D82, G16, G50, G87, H63G, I18M, I99M, J36M, J99G, K71, K95M, M46

Russet Burbank: (Netted Gem) 80 days. Long, cylindrical or slightly flattened tuber; well-distributed, shallow eyes; russet and heavily netted skin. Good for every purpose, but ideal for baking and French fries, with only slight discoloration after cooking. Most widely grown potato in the United States. Original strain selected by Luther Burbank in 1873 from seedlings of Early Rose. A16, A95, D27, D68, D76, D82, E75, G87, H42, I34M{PR}, J36M, J99G, L79, M32, M49, etc.

Sierra: 65 days. Heavily netted russet type. Tuber long to oblong, medium to large, uniform; has excellent eating qualities; matures early; stores very well. Resistant to scab and hollow heart. Vines show good vigor. Released in 1987 by the University of California. J99G

#### WHITE/TAN-SKINNED

Arran Pilot: (Salt Water) 80 days. Large, kidney-shaped tuber; white skin; firm, white flesh of outstanding flavor. One of the earliest potatoes to mature. Heavy yielding; resistant to scab and frost, susceptible to blight. Introduced in Great Britain for the 1930-31 season. Named for Arran Island, off the coast of Scotland. J99G, R32, R83

Atlantic: 80 days. Hiber oval to round, with medium shallow eyes; skin white with light to heavy scaly netting; dry white flesh, very mealy for boiling and baking; matures in midseason. Medium large, upright plants; tolerant to scab and verticillium wilt. Yielding ability similar to Kennebec. Adaptable, especially in warm humid areas. Introduced in 1976. J36M, J99G, L89C

Candy Stripe:<sup>1</sup> 80 days. Medium-sized, oval tuber; skin white, striped or blotched with red; white flesh of good flavor and quality. Good baked, boiled or fried. High yielding and disease resistant. Potential gourmet and specialty market item. Originated in Tomales, California. J99G

Catalina:<sup>2</sup> Newest "true seed potato". Medium to large, flat-oval tubers with smooth, white skin and shallow eyes. Creamy white flesh, moderately high in dry matter. Very good for the fresh market as well as French fries. Ripens midseason to late, growing slowly the first 6 weeks. Moderately resistant to virus; somewhat susceptible to early and late blight. 139, K95M

Chippewa: 90 days. Tuber oval-flattened, with shallow eyes; skin smooth, white; stores exceptionally well. Ideal for boiling, with no darkening after cooking. Medium-sized plant with lilac blossoms; high yielding; tends to produce small tubers under dry conditions; very susceptible to scab. Introduced in 1933 by the USDA. G71, H54

Early Ohio: 65 days. An old traditional cultivar introduced in 1875. Grown in the Red River Valley by most of the early settlers until 1920 when the Irish Cobbler was introduced, yet still grown and favored by many Mid Westerners. Round to oblong tubers; smooth, pinkish-tan skin; deep eyes; matures early. Excellent baker, with a real down home potato flavor. J36M, J99G

Green Mountain: 90 days. An old favorite New England cultivar. Tuber brick-shaped, with moderately deep eyes; skin white, sometimes netted; matures late. Excellent culinary qualities, but flesh generally darkens after cooking. Large, heavy yielding plant; subject to misshapen tubers under poor growing conditions. Recommended for light soils where the growing season is cool. Originated by O.H. Alexander of Charlotte, Vermont, in 1878. GUNST [Re]; A95, D68, G71, I34M, I34M{PR}, J20, J99G, K49M, K95M

Indian Pit: 90 days. Small to medium-sized, round tuber; skin smooth, tan splashed with pinkish-red around the deep eyes; white, highly waxy flesh of very good flavor, remains firm when cooked. Well suited to slow simmering, campfire soups and stews. Vigorous, very productive plants. J99G

Irish Cobbler: (Cobbler) 65 days. Medium to large, round to oblong tuber; medium deep eyes; smooth, white skin; white flesh; matures early. May be baked, but is best boiled; darkens after



cooking. Consistent, heavy yields; grows well in heavy soils. An old standard that is widely adapted. Discovered in the late 1800's as a mutation of Early Rose. Reportedly named after its first grower, an Irish shoemaker living in New England. C85M, D26D, D68, E38, E97, G71, H33M, H54, J20, J36M, J97M, J99G, K95M

Jemseg: 65 days. Smooth, round tuber; tan skin; white flesh. Good baking and boiling quality. Considered by many as the earliest maturing cultivar, being harvested in July. Moderate resistance to scab. Grows well in hot, dry weather. Should be planted close together as it tends to "lunker". D11M, F70, G50, J99G, M49

Katahdin: Tuber flattened-spherical, with shallow eyes; skin white, smooth; maintains shape well even under poor growing conditions; matures in midseason. Ideal for boiling, with slight darkening after cooking. Medium-sized plant; not exceptionally high yielding, but very dependable; susceptible to scab. Shallow tuber set can lead to considerable sunburn. Introduced by the USDA in 1932. D26D, D68, G71, H54, I34M, I34M{PR}, J20, J97M, J99G

Kennebec: 80 days. Tuber elliptical to oblong, with shallow eyes; skin and flesh white; matures midseason to late. Good for boiling, baking and French fries; usually cooks white. Very large plant; high yielding; susceptible to scab; subject to sunburn under adverse conditions. Introduced in 1948 by the USDA. A95, B75, D65, D68, D76, E38, E97, G16, G71, H42, I34M{PR}, J36M, J97M, J99G, K71, etc.

Onaway: 65 days. Tuber elongated, with medium deep eyes; skin and flesh white; matures early. Tubers become rough when enlarged. Medium to large, upright plant; high yielding for an early cultivar; somewhat resistant to common scab. Released by the Michigan Agricultural Experiment Station in 1961. D68, K95M, N34, N34{PR}

Sebago: 80 days. Tuber deep oval to elongated, with shallow eyes; smooth, white skin; matures late. Good for boiling and baking, with no darkening after cooking. Large, upright plant; yields well; widely adapted to soil and climate; somewhat resistant to scab. Introduced in 1938 by the USDA. A95, C85M, E38

Shepody: 90 days Very long, uniform buff-colored tubers; medium shallow eyes; white flesh; matures mid-season to late. Heavy yielding. Resistant to verticillium wilt, fusarium wilt, rhizoctonia and net necrosis. Canada's leading French fry cultivar. Also good for baking and boiling. A95, G50, G87, I34M, I34M{PR}, J20, J36M, J99G, K95M

Superior: 65 days. Tubers uniform in size and shape; skin white to buff, slightly netted; matures medium early. Excellent market potato. Also a good winter keeper. Medium-sized, upright plant; has good resistance to scab. Tolerates varied spring planting soil and weather conditions. Released by the Wisconsin Agricultural Experiment Station in 1961. A95, D68, G16, G50, G71, H54, J36M, J97M, K95M, L89C, M49

Swedish Peanut:<sup>3</sup> (Mandell, Almond, Butterfinger) Small, teardrop-shaped tubers; smooth, thin, buff-colored skin, lightly russet; golden-yellow, nutty flavored flesh. Has a relatively high starch content for a fingerling. Very firm when cooked, holds its shape well in potato salads. Also excellent for roasting. Moderately resistant to blight and scab. E13G{PR}, G6, H63G, J99G, L89, N34, N34{PR}

White Rose: (Long White) Large, long, elliptical-flattened tuber; numerous, medium deep pink eyes; smooth, white skin; white flesh; matures early. Ideal for boiling and salads, with generally no darkening after cooking. Does not store well. Very good producer of uniform tubers. One of the most popular commercial market potatoes. G71M, H42, J36M, J99G

#### YELLOW-SKINNED

Anna Cheeka's Ozette:<sup>3</sup> Oblong tuber, 2 to 8 inches in length with an unusual number of eyes; thin, yellow skin; yellowish, very tasty flesh. Prolific. Historical heirloom, said to have been brought

from Peru in the late 1700's by Spanish explorers and traded with the Makah/Ozette Indian tribe of Washington's Olympic peninsula. D68, E13G{PR}, E24, H73{PR}, J99G, K49M

Augsburg Gold: 80 days. Large, flat, round to oblong tuber; golden-yellow skin; moist, deep-golden flesh; excellent buttery flavor; matures in midseason. Ideal for mashed potatoes. Superior yields. Very promising as a gourmet market potato. J99G, K49M

Austrian Crescent:<sup>3</sup> Small to medium, thin, crescent-shaped tubers; up to 10 inches long and weighing 4 to 8 ounces; smooth yellowish skin; light-yellow flesh, moist and dense; matures early. Excellent for potato salad, remaining firm and waxy after boiling. Does not keep well. Heavy bearing. E24, H63G, J99G, K95M, M63M{PR}

Belle de Fontenay: One of the classic potatoes of French cuisine. Very attractive, long, smooth tubers with yellow flesh. Highly esteemed for its fine flavor and waxy texture. Excellent in potato salad or simply eaten cold with the skin intact. Susceptible to blight and virus. Originated in Brittany. Introduced in 1885. R32

Bintje: (Yellow Finnish Bintje) 90 days. Small to medium-sized round tubers, with shallow eyes; yellow-brown skin; yellow, fine-textured, waxy flesh; matures late; keeps well. Excellent baked or boiled. High yields; up to 20 or 25 tubers per plant. The most widely grown yellow-fleshed cultivar in the world. Originated in Holland. Introduced about 1911. D27, E24, G87, H42, H63G, I18M, I34M, I34M{PR}, I99M, J99G, K49M, K95M

Carola: 110 days. Large, uniform, round to oblong tubers; shallow eyes; smooth, shiry, golden-yellow skin; firm, moist, light yellow flesh; very good buttery flavor; excellent storage qualities. Suitable for boiling, baking or frying. Vigorous, heavy yielding plants; resistant to scab. Originated in Germany. A95, D68, E75, H63G, I34M, I34M{PR}, J20, J99G, K49M, K95M, N34, N34{PR}

Catriona: (Blue-Eyed Russian) Very striking heirloom. Uniform, medium-sized, flat kidney shaped tubers; lightly netted pale cream skin, strongly marked with bluish-purple at each eye; firm, creamy yellow flesh, moderately starchy. Good flavor. High yielding, even on poor land. Susceptible to dry rot. Introduced into England by Archibald Finlay in the early 1900's. GENDERS 1975; F73D, J99G, R83

Fingerling:<sup>3</sup> (Yellow Fingerling) Light yellow-fleshed salad potato brought to the United States by early German settlers. Long, finger-shaped tuber; 2 to 4 inches in length, 1 inch in diameter; yellow skin; moist, waxy yellow flesh; unique, delicious flavor; matures early. Should be boiled with the jackets on and cut up for salads. Also good fried. G16, K49M

German Butterball: 90 days. Large, uniform, round to oblong tubers with shallow eyes; smooth, attractive golden-yellow skin; intense golden-yellow flesh of exceptional flavor and quality. Drier than other yellow-fleshed types. Excellent for boiling, baking, steaming and mashing. Dwarf plant with high yields. Heirloom. D68, H63G, J99G, K49T, K95M, M32

German Yellow:<sup>3</sup> (German Fingerling) Medium to large fingerling type. Smooth, golden-yellow skin; rich yellow flesh with a firm, sweet potato-like texture and a unique flavor; very good keeper. Excellent in salads. Extremely prolific. Good specialty market item. A95, C85M, E24, H73{PR}, J99G, L13M

Island Sunshine: Excellent all purpose potato that may rival Yukon Gold as the standard yellow-fleshed cultivar. Medium-sized, very round tubers; golden-buff skin; creamy, golden-yellow flesh with very good flavor; ripens late, and stores well. Has the strongest known resistance to late blight. Developed by Evert and Gerrit Loo, organic farmers from Prince Edward Island, Canada. A95, G6, H42, J99G, M49, N34, N34{PR}

Russian Banana:<sup>3</sup> Small to medium-sized tuber; yellow skin; slightly yellow flesh with a waxy texture, very firm when boiled; good potato taste. Matures very late. Heavy yields. Has shown

excellent field resistance to disease. Developed in the Baltic region of Russia. Very popular across Canada as a market potato. A95, B75, C53, D27, D68, G6, H73{PR}, J36M, J99G, K49M, K95M, L13M, L89C, M63M{PR}, N34, N34{PR}, etc.

Saginaw Gold: 80 days. Medium-sized, uniform, roundish tubers; skin very smooth, tan-yellow; pale yellow flesh of excellent texture and flavor; matures in midseason. Very good for boiling, baking and French fries. High resistance to virus and hollow heart. A joint release by the United States and Canada. A95, D68

Warba's Pink Eye: 65 days. Uniform, oval tuber; skin golden, splashed with pink in and around the pronounced eyes. Excellent steamed, baked, boiled or fried. Keeps well. Resistant to scab. Unique type that shows good promise as a specialty market potato. A95, J99G

Yellow Rnn: (Yellow Finnish) 90 days. Large, uniform, oval to round tubers; yellow-brown, lightly russet skin; smooth yellow flesh, more brilliant than others; matures late. Moist, smooth texture with an almost sweet flavor, especially when boiled. Very popular European cultivar, becoming well-known in North American specialty markets. E24, H63G, I99M, J99G, K49M, K66, K95M, L89, N40{PR}

Yukon Gold: 65 days. Large rounded tuber, with shallow pink eyes; attractive, light yellow-brown skin; rich yellow flesh, of very fine flavor and texture; matures medium-early. Unique for a yellow-fleshed cultivar in that it has good size and also keeps well. Excellent in storage. Medium-large, uniform yields. Released in Canada in 1980. A95, B75, D11M, D27, D68, E75, F70, G44M{PR}, H33M, H42, I99M, J99G, K49M, K95M, N34, N34{PR}, N40{PR}, N51M{PD}, etc.

#### CODES FOR SPECIAL TYPES

1. Striped
2. True-Seed
3. Fingerling

## PUMPKIN {S}

CUCURBITA MAXIMA

CUCURBITA PEPO

### HYBRID

Autumn Gold: 100 days. Medium-sized fruit, weight 10 to 15 pounds; round to rectangular in shape, nicely ribbed; has good handles; skin rich-orange when mature; flesh deep-orange, firm and meaty, suitable for pies. Contains the "precocious yellow" gene, so even the young fruits are deep yellow and there are no green pumpkins at harvest. Vigorous vine produces 3 or more fruit. All America Selections winner in 1987. C44, C85M, D6, G16, G71, G82, H33M, H49, H61, H95, K10, K50, K73, M29, M46, M49, etc.

Funny Face:<sup>1</sup> 100 days. An early, highly uniform and productive cultivar with short-vine plants, perfect for gardeners with limited space. Deep globe-shaped fruit with flattened ends, 12 inches in diameter; weight 10 to 15 pounds; skin smooth, bright-orange; flesh orange-yellow, thick, coarse, somewhat stringy. Excellent for canning and jack o'lanterns. A16, A87M, C20M, D6, E53M, F6J, G71, G79, G93M, H95, K10, M49, N16

Prizewinner: 120 days. Exceptionally large, uniform, roundish fruit; skin bright reddish-orange, smooth and glossy; ribs shallow; blossom scar small; orange flesh of good flavor. Vigorous vine, 30 to 40 feet in length. Largest "true" pumpkin, easily reaching 200 pounds in weight. Easily grown without special care. B6, B75, E97, F13, G16, G82, G93M, H57M, H61, H85M, 139, I50G, J97M, K10, K50, K73, L89, etc.

Spirit:<sup>1</sup> 95 days. Leading hybrid pumpkin for the Halloween trade. Uniform, round fruit; 12 inches in diameter, weight 10 to 15 pounds;

moderately ribbed; skin bright orange; flesh thick and meaty, suitable for pies and custards. Early maturing, but keeps well until Halloween. Short-vine plant with only a 5 foot spread, yet it produces a heavy crop of fruit. All America Selections winner for 1977. A16, B73M, D6, D11M, E38, F70, G16, G71, G79, H33M, H61, I64, K10, L89

Trick-Or-Treat:<sup>12</sup> 105 days. Hulless, "naked" seeded or "eat all" type. Round, very uniform fruit, 6 to 10 inches in diameter; weight 10 to 12 pounds; lightly ribbed; skin light orange; flesh thick, orange, suitable for pies and canning. High-protein seeds are good either raw or roasted. Also good for carving at Halloween. Short-vine plants, 5 to 6 feet long; suited for small gardens. A87M, B73M, C20M, D26D, F63, G13M, G16, G71, J20, K10, M29, M95M, N52

#### OPEN-POLLINATED

Baby Bear:<sup>2 3</sup> High quality mini-pumpkin with naked seeds. Deep orange fruits, weight 1 1/2 to 2 1/2 pounds. Sweet flesh which is excellent for pies; semi-hulless seeds are good for toasted snacks. Easy to grip handles. Produces 8 fruits per vine Very popular at farmers markets. All America Selections Winner in 1993. Developed by Johnny's Selected Seeds. A1, A25, B6, B75, C53, D74B, E9IG, G6, G16, G71, G82, 139, J20, J97M, K50, M29, M49, N40{PR}, etc.

Baby Pam:<sup>3</sup> 100 days. Very uniform fruit; 5 inches tall, 5 1/2 inches in diameter; long, tightly secured "handles"; smooth, deep-orange skin; deep-orange flesh, suitable for pies. Also used for painting and for decoration. Vigorous, 10 to 12 foot vines produce a dozen or more fruits each. D68, F13, F63, G13M, G93M, H61, I59M, K10, K50, K73, M95M, N52

Big Max: (C. maxima) 120 days. Very large, round to flattened globe-shaped fruits, often weighing 100 pounds or more; distinctive, pinkish-orange rind; bright yellow-orange flesh, 3 to 4 inches thick, of good cooking quality. Very large, spreading vine. Ideal for displaying at harvest fairs and farm shows. A1, B6, B8M, B73M, B75, D68, D74B, E5T, F13, G71, G71M, H49, J25M, J97M, K50, K71, M29, N16, etc.

Big Moon: (C. maxima) 120 days. Extremely large show pumpkin, may weigh 200 pounds or more; medium-orange, evenly ribbed rinds; thick, fine-textured, light orange flesh, of very good quality for pies. Very large, sprawling vine; requires plenty of space, water and nutrients to produce the largest fruits. C20M, D26D, E75{PL}, G27M, G57M, G82, G93M, H85M, H95, 191, K10, L89, M29, M46, M95M, etc.

Bushkin:<sup>1 3</sup> 95 days. Bush type triple-purpose pumpkin, fine for pies, carving and seed snacks. Bright golden-orange fruit; weight 8 to 10 pounds; thick, light-yellow flesh of good flavor; keeps well. Medium-large edible seeds have a slight husk. Short-vine plants spread only 5 to 6 feet, produce 1 to 3 fruits each; ideal for small gardens. B75

Connecticut Held: (Yellow Field) 110 days. Fruit moderately large; 10 to 14 inches in diameter, 10 to 18 inches tall; weight 18 to 25 pounds; form variable, globular to long oval, narrowly ribbed; skin bright yellow-orange; flesh thick, coarse, somewhat granular; slight flavor and sweetness; quality poor. Mostly used for canning and jack o'lanterns. Origin unknown, although it was probably grown by American Indians. TAPLEY 1937; A16, B75M, B78, C44, D6, E38, E59Z, F82, G16, H33M, H61, J20, K73, L7M, M49, etc.

Ghost Rider: 115 days. Uniform, deep round fruits, average weight 15 to 30 pounds; exterior dark-orange, hard, ridged; flesh yellow-orange to orange, depending on maturity. Unique, long dark-green to black handle. Ideal for processing and jack o'lanterns. A25, B75, B75M, D6, D26D, F63, G13M, G16, H33M, H54, H61, J84, K10, K50, L42, N52, etc.

Half Moon: Tall, uniform Connecticut Field type with a longer and better attached "handle". Fruit large, 12 to 14 inches in diameter; weight 15 to 20 pounds; deep-globe-shaped, with medium ribbing; skin medium-orange; flesh pale orange, thick, coarse and sweet. Excellent home garden cultivar. *AI*, A27M, C20M, C85M, *G13M*, G79, K10, M29

Howden: (Howden Field) Connecticut Field type which is considered a model for large pumpkins. Medium to large, roundish to slightly oval fruit; weight 20 to 25 pounds; rich dark orange, very hard rind, attractively ridged; extra-thick flesh. Keeps in prime condition for a very long time. Developed by John Howden of Massachusetts, in the early 1970's. B6, B8M, B73M, D6, D65, D68, F13, G6, G82, H61, H85M, J97M, K23{PL}, K50, K73, L89, M49, N16, etc.

Jack-Be-Little:<sup>3</sup> 95 days. Attractive "mini" pumpkin. Flattened, deeply ribbed, orange fruit; only 2 to 3 inches in diameter, approximately 2 inches tall, and weighing 2 to 6 ounces. Although very sweet-fleshed for cooking they are most appealing in fall table decorations and for crafts. A good specialty item for farmstands and the florist trade. Vigorous vine; produces 8 to 10 fruits that will keep up to 8 months. *AI*, A2, B73M, D6, D65, *F60*, F82, G6, G16, G71, *H33M*, H61, K73, L89, M46, N16, etc.

Jack-O'-Lantern: (Halloween) 95 days. Medium-sized fruit; 8 to 12 inches tall, 8 inches in diameter; about the size of a man's head; weight 10 pounds; irregular in shape, from round to quite oblong, slightly ribbed; skin bright yellow-orange; flesh medium-thick, deep yellow, fine-grained, suitable for pies. Very popular for Halloween decorations. A16, B6, B75M, C44, D6, D82, E38, *F60*, F82, G57M, G79, *H33M*, K5M, M46, N16, etc.

Lumina:<sup>4</sup> 110 days. Unique white pumpkin that is excellent for painting, decorating or carving. Medium-sized, flattened globe-shaped fruit, weight 10 to 15 pounds; smooth, white skin; bright orange flesh, very good for cooking. Should be harvested when slightly immature for the best white color. If plants are stressed, a blue tinge may occur on the fruit. B73M, B75, C53, D65, D68, E97, F13, G16, H49,191, J97M, K23{PL}, K50, K66, K71, L89, M29, N16, etc.

Manteca Large White:<sup>4</sup> Unique type, remarkable for its smooth, creamy white skin and large size. Excellent for pies or for carving unusual Halloween jack o'lanterns. Has the typical, roundish pumpkin shape. Will show some variation in size and coloring. J73

Munchkin:<sup>3</sup> 100 days. High-yielding, attractive "mini" pumpkin. Fruit 3 to 4 inches in diameter; flattened with a bright orange, scalloped skin; weight 1/4 pound; flesh orange-yellow, meaty, holds its firmness over a long period; has good sweet pumpkin flavor. Ideal for baking as individual servings; or for stuffing with soup, cranberry sauce, etc. Also used for decorations and carving. Heavy-yielding vines. C20A/, F13, *G13M*, G93M, K66, N16, N84, PIG

Pankow's Field: 110 days. Large, smooth fruit, deep round to tall in shape; weight 18 to 22 pounds; has good color; resembles Connecticut Field. Excellent for jack o'lanterns. Unusually thick and strong stem, much less apt to break in handling than standard pumpkins. Heavy yields. Introduced in 1981 by Joseph Harris Co. C20M, F13, *G13M*, G79, H95, M49, N16

Small Sugar: (New England Pie, Early Small Sugar, Sugar Pie) 100 days. Fruit very small; 8 to 9 inches in diameter, 5 to 6 inches deep; weight 5 to 6 pounds; more or less distinctly ribbed; skin reddish-orange, thick and hard; flesh moderately thick, yellow-orange, fine-grained, sweet and well-flavored. The standard pie pumpkin, introduced prior to 1865. BURR, TAPLEY 1937; A16, B6, B75M, C44, D3M{PR}, D6, E38, F60, G6, H61, J73, K73, L7M, M49, N34{PR}, etc.

Spookie: 100 days. An improved Small Sugar type with more uniformity, resulting in a higher percentage of marketable fruits. Fruit small to medium, 6 to 7 inches in diameter; weight 5 to 6 pounds; skin bright-orange, smooth and hard; flesh orange-yellow,

thick, fine-grained and sweet; excellent for pies. B8M, C20A/, F13, F60, F55, *G13M*, J84, K10, K20M, L79, N52

Sweetie Pie:<sup>3</sup> 110 days. Ornamental "mini" pumpkin. Flat, blocky, deeply ribbed fruits; 3 inches in diameter, 1 3/4 inches deep; weight 5 ounces; has old-fashioned pumpkin flavor. Grown from stock seed imported from China, where it is considered a delicacy. Ideal for Halloween and Thanksgiving table decorations. L42

Triple Treat:<sup>2</sup> 110 days. Triple-purpose, "no waste" pumpkin. Uniformly round fruit, 7 to 9 inches in diameter; weight 6 to 8 pounds, a good size for Halloween carving; bright orange skin; thick, deep orange, medium-fine-grained flesh is excellent for pies and puddings; keeps well for several months in a moderately cool place. Hulless seeds make a delicious high-protein snack, either raw or roasted. B75, C20A/, D11M, *E53M*, *F63*, F70, *G13M*, J25M, K10, K50, S55

Winter Luxury: (Luxury Pie, Winter Queen) 105 days. Moderately small fruit; 9 to 10 inches in diameter, 6 to 7 inches deep; weight 7 to 8 pounds; shape nearly globular, narrowly ribbed; skin yellow-orange, uniformly and finely laced with a light gray cork-like netting; flesh pale-orange, moderately thick, slightly juicy, tender and somewhat sweet; quality high. Keeps exceptionally well for winter use. Introduced in 1893 by Johnson & Stokes of Philadelphia. TAPLEY 1937; G16, K20M, K71

#### CODES FOR SPECIAL TYPES

1. Short-Vined
2. Hulless
3. Mini or Baby
4. White-Skinned

## QUINCE {GR}

### CYDONIA OBLONGA

Aromatnaya: Medium-sized, round yellow fruit; very aromatic. Has a distinct pineapple-like flavor and is sweet enough to eat out of hand. Also excellent for cooking. Ripens in October. Very disease resistant. Recently introduced into the United States from the Black Sea region of Russia and Turkey. One of the best varieties among thousands available in this area. J61M

Bereczki: (Vianja) Very large, pear-shaped fruit, golden yellow in color; quality very good; tender when cooked. Tree very vigorous; heavy yielding; comes into bearing early. A very old Serbian cultivar named after Bereczki, an eminent Hungarian pomologist. SIMMONS 1978; 081, Q30{SC}, R77, R83

Champion: Fruit very large, up to 24 ounces, intermediate in shape between an apple and a pear; skin greenish-yellow; flesh yellow, almost as tender as that of an apple, and only slightly astringent; ripens in midseason; keeps very well. Tree vigorous; very productive; bears at an early age. Will often not mature its fruit in regions with a short growing season. MEECH, WICKSON; LI, P59M, Q30{SC}

Cooke's Jumbo: (Jumbo) Large to very large, pear-shaped fruits, 6 to 8 inches in diameter; yellowish-green skin; white flesh; ripens in September and October. Good for cooking and jelly. Excellent for pies and preserves. Most likely a seedling of Van Deman. Introduced by L.E. Cooke Co. C54, G17, H4,153M, 174, N24M

Ekmek: Probably the most widely grown quince in Western Turkey. Small to medium-sized fruit; bright deep-yellow skin; pale creamy yellow flesh, dry, soft, coarse-grained. Ripens in midseason. Especially popular for making *composto*, a dessert of stewed quince. Ekmek means "bread" in Turkish. SYKES, J; U7D{SC}

Meech's Prolific: Large, pear-shaped fruit, up to 18 ounces; skin very fine-textured, bright yellow; exceedingly fragrant; of excellent

flavor; ripens 2 weeks earlier than Champion. Tree slow growing; heavy and regular bearing, often commencing to bear when only 3 years old. Originated in Connecticut prior to 1883. MEECH, SIMMONS 1978; 081, Q30{SC}, R77

Membrillo Manzano: (Apple Quince) Light greenish-yellow fruit with light pubescence; short neck at stem end; furrowed calyx end; white flesh that does not brown when cut. Much sweeter and juicier than other quinces. Also completely lacking in astringency, sourness and grittiness characteristic of most quinces. May be eaten raw like an apple. Originated in the Majes Valley, Arequipa Province, southern Peru. U7D{SC}

Orange: (Apple) Fruit large to very large, nearly round in shape; skin bright golden-yellow in color; flesh very tender, orange-yellow when raw, turning red when cooked. Quality very good in regions with cool summers, inferior where summer temperatures are high. Leading quince cultivar in the United States. A88M, C54, E84, G49, H4, H49{DW}, H65, I49M, I49P, I68, I66T, 174, J61M, V20, N24M, etc.

Perfume: Large to very large fruits, up to 1 1/2 pounds each; form oval to slightly rectangular; skin waxy, a glossy bright yellow; very fragrant; flesh tart but flavorful. Tree with attractive pink blossoms. D57, 174

Pineapple: Fruit similar to Orange, but smoother and more globular in shape. Skin golden-yellow; flesh white and extremely tender, low in astringency, with a slight pineapple-like flavor. Originated in Santa Rosa, California by Luther Burbank. Introduced in 1899. One of the leading commercial cultivars in California. WICKSON; A88M, C54, F43M, H4, I49M, I49P, I53M, I68, I74, I83M, LI, N20, N24M, N40{PR}

Pink Mist: Seedling quince recently imported into the United States from Russia. Has very attractive pink flowers, hence the name. Very fragrant fruits. Said to be somewhat good to eat out of hand, unusual for a quince. Also good baked or made into preserves. Apparently hardy in Zones 5 to 9. F43M

Portugal: Very large, oblong-oval fruit; skin almost orange when ripe, very woolly; flesh more juicy than other types, turns fine purple or deep crimson when cooked; flavor very good; ripens very early, 10 days before Orange. Tree vigorous; becoming large and spreading; not productive, and slow to come into bearing. Very old cultivar. SIMMONS 1978; F43M, N24M, 071M, R83

Smyrna: Large, round to oblong fruit; skin lemon yellow; flesh tender, mild, good to very good in quality; ripens with Orange, but keeps much better. Tree a rapid and vigorous grower, with unusually large leaves. Introduced from Smyrna (now Izmir), Turkey by George C. Roeding, Fresno, California in 1897. A88M, B93M, C34, C54, F43M, H4, I49M, I49P, I53M, I66T, I68, 174, J61M, LI, L12, N20

Van Deman: Large, oblong to pear-shaped fruit; skin pale orange; flesh pale yellow, moderately coarse, with a pleasant spicy flavor; retains good flavor after cooking; ripens in September. High yielding tree; considered among the hardiest cultivars. A seedling of Portugal pollinated by Orange. Selected by Luther Burbank. Introduced by Stark Brothers around 1891. I49M, I49P, I66T

## QUINOA {S}

### CHENOPODIUM QUINOA

407 Black: An ebony colored selection from 407. Has an unusual nutty flavor said to be like a medley of wild rice, buckwheat and adzuki bean. Best adapted to high altitude semi-arid regions. L3J

Apelawa: Very colorful quinoa with mixed green and red seedheads. Grows about 4 or 5 feet tall. Ripens in midseason. Tolerant of

drought, frost and alkaline soils. Should not be overwatered. Originated in southern Bolivia and northern Chile. C95, L3J

Black: {DF} Attractive brownish-black seeds with a pleasing nutty flavor, somewhat chewier than lighter colored forms. Requires lengthy rinsing and slightly more cooking time than other types. Can be eaten as a breakfast cereal with milk, cinnamon and sugar or ground into flour for pancakes and muffins. Especially good as an ingredient of stuffings and tabouli. Hybrid of quinoa and North American chenopods selected at White Mountain farm in Colorado. SASS; E13G, E56, F86T, M99

Cahuil: Seed small to medium-sized, light green with some variation. Good for grinding into flour. A good producer in Washington state. Yields well at lower elevations. C95, L3J

Cherry Vanilla: Very attractive strain with variably colored seedheads, from creamy-white to rose. Yields very mild flavored, especially white seeds. Whiteness of seeds is generally considered an indication of low saponin content on the seedcoat. Normally, saponin must be rinsed from the seeds before cooking to avoid its soapy bitterness. The development of low saponin strains should lead to greater acceptance of quinoa as an alternative to rice and other grains. F80, N7G

Dave: (Linares 407) 90-100 days. Medium-sized seed; yellow-brown in color. Ripens in mid-season, or mid to late summer from an April sowing. Height 5 to 6 feet. Very colorful orange and pink seed heads. Very short-season, high-yielding Chilean cultivar, adaptable to high or low elevations. Named for David Cussack, who was instrumental in bringing quinoa into North American agriculture. A2, C95, J39, K49T, L3J

Faro: 100-130 days. Small, yellowish-white seed. Height of plant 4 to 6 feet. Foliage light-green. Mid to long-season type, somewhat later than Linares. Originated at sea level. Performs well at lower elevations. Good-yielding, adaptable cultivar from southern Chile. Best yielding of 16 strains tested by Abundant Life Seed Foundation. A2, I99M, K49T

Gossi: 90 days. A mix of two Bolivian strains selected as the best of over 400 by the late David Kusak, who first introduced quinoa to the United States in the early 1970's. Will germinate in the ground in early May. Grows best in areas with cool nights. E24

Isluga Yellow: 90-110 days. Medium-sized yellow seed. Attractive golden-yellow or pink seed heads. Early-maturing, high-yielding, somewhat taller cultivar. Has grown consistently well in a variety of Western mountain and coastal sites. A2, J39, K49T

Kaslala: Very tasty quinoa that originated in the high altiplano region of Bolivia. Grows about 5 or 6 feet tall. Has a very rich flavor, and cooks drier than other sorts. Doesn't set seed well in areas with a very hot climate, especially when flowering. One of the main varieties of the Aymara and Quechua Indians. C95, L3J

Linares: Good yields of golden-yellow, medium-sized seed, high in saponin content. Flavor distinct from commercial quinoa. Ripens in mid-season. Height of plant 5 to 6 feet. Has grown consistently well at both maritime and Rocky Mountain planting sites. Originated in Chile at 36° south latitude, and at sea level. C95

Melang: Very attractive plant with large, well-filled seedheads; average weight 3 to 6 ounces; light-colored. A heavy producer. Grows 4 to 6 feet tall. Numerous arrow-shaped leaves which can be used like spinach. B49

Multi-Hued: Produces striking flower heads ranging from red through orange and yellow, to purple and mauve. Height of plant 5 to 6 feet. Very productive in northern latitudes, such as Canada. B49, K17M

Orange Head: Vivid bright orange seedheads. Golden yellow seeds. Tall, heavy yielding plants. Developed by Frank Morton of Shoulder to Shoulder Farm, from a single orange plant found in a planting of the 407 variety. F80, N7G

Pison: Produces medium to large, yellow to dark white seedheads. Grows about 4 1/2 to 5 feet tall. Will produce a crop in three or four months depending on climate, latitude and altitude. Originated in southern Bolivia. C95, L3J

Rainbow: A genetically diverse strain developed by Frank Morton of Shoulder to Shoulder Farm. Brilliant multicolored seedheads; dense and easily thieshed. Yellowish-white seeds. Tolerant of heat, drought and wind. F80, N7G, N84

Redhead: Brilliant reddish-pink seedheads Yellow-white seeds. Sturdy, high yielding plant. Should be spaced about 12 inches apart. Developed by Frank Morton of Shoulder to Shoulder Farm. Selected from the cultivar 407. N7G

Temuco: 100-110 days Very palatable, small white seeds. Ripens in midseason. Yellow-green seed heads (with some golden); large roundish leaves. Height of plant 5 to 6 feet; bears abundant crops. One of the best choices for maritime sites in the Pacific Northwest, but has grown well in the southern Rockies also. Originated in southern Chile at 38° latitude. A66, B49, C95, J9M, J39, K49T, L77D, N84

## RADISH {S}

### RAPHANUS SATIVUS

#### EUROPEAN RADISHES

#### SPRING/SUMMER HARVESTING

##### *Multi-Colored*

Bombay Red: An excellent, attractive Indian cultivar. Long, tapered roots, somewhat irregular in shape; the upper half red, the lower half white: Flesh tender and tasty. Medium-tall tops. Matures early. N91, R50, S93M

Buonissimo d'Ingegnoli: 25 days. A multi-colored radish that is rounder and plumper than the French Breakfast types. Uniform shape; bright crimson with just the edge of the tip bright white; excellent flavor; resistant to pithiness. Best harvested when 1 to 1 1/2 inches long. Very popular in Italy. Q11M

D'Avignon:<sup>1</sup> 23 days. One of the longest of the French Breakfast or "gourmet" type radishes, preferred by epicures for their delicate crunch and gentle fire. Smooth, slender root, about 3 inches long, tapered to a point; 66 to 75% red toward die top, white tipped. Medium green tops are excellent for steaming. E24, G6, Q34, S55, S95M

Early White-Tipped Scarlet: (Scarlet White-Tipped Turnip) 22 days. Root roundish, grows 1 to 1 1/2 inches in diameter; skin attractive, bright carmine pink on top, very white on the lower fourth part; flesh white, crisp and sweet. Matures rapidly, but quickly becomes hollow in the center; should be pulled as soon as fully grown. Introduced prior to 1859. VILMORIN; A25, E38, F80, G57M, G83M, G87,184, J39, L3J, L10

Easter Egg: (F.) 28 days. Multi-line hybrid that produces white, red, purple, pink and violet colored radishes. Roots have very good flavor and interior quality, remaining firm and crisp a long time without becoming pitty. Tops are medium height, medium green, and are strap-leaved. A16, B6, C44, C53, C85M, D27, E24, G79, 139,191, N40{PR}, R47

Eighteen Days:<sup>1</sup> (De Dix-Huit Jours) 18 days. A very quick maturing, half-long, French Breakfast type with a rose-carmine shaft and a white tip. Not recommended for mid-summer sowing. One of the most popular radishes in France. An older, traditional cultivar. E63D, G68, S55, S66M

Flamboyant:<sup>1</sup> 25 days. French Breakfast type. Semi-long, cylindrical, uniform roots; 2 to 3 inches long; skin Vermillion red on the upper two-thirds, snow white on the bottom third. Flesh crisp, tender and mild. Harvest when young for best quality. Short tops. Very popular in France. K66, P59M, RUM, S75M, S95M

Flamivil:<sup>1</sup> 25 days. French breakfast type. Medium-long, cylindrical root; about 90% intense red, with slightly pointed white tip and slender taproot. The French say that Flamivil, touched with a small splash of white on the tip, looks like it was just dipped in milk. D74B, F44, G68,177, S95M

Fluo:<sup>1</sup> (F.) 23 days. Hybrid French Breakfast type. Attractive bullet-shaped roots, 3 to 4 inches long; bright red with glistening blunt white tips; crisp and pleasantly pungent. Exceptional quality and uniformity. Very productive and widely adapted. Suitable for spring, summer or fall crops. Originated by Vilmorin. C53, DI 1M, F63, F70,177, J20, M46, N16, S95M

French Breakfast:<sup>1</sup> 25 days Very attractive market garden radish. Oblong, blunt-ended root; 1 1/2 inches long, 3/4 inch thick; rose-colored on the upper three-fourths, pure-white on the lower part. Flesh crisp, tender, mildly pungent, becomes hollow in the center if not pulled as soon as it is fully formed. Introduced prior to 1885. VILMORIN; A16, A25, A75, B49, C44, D3M{PR}, D82, G16, G68, G71, H33M, H42, L89, N40{PR}

Lanquette:<sup>1</sup> French Breakfast type. Medium-long, cylindrical, fleshy root with a slender tap root. Skin 75 to 80% bright red, 20 to 25% white at the slightly pointed tip. Should be harvested promptly at maturity since its fine flavor and texture does not hold in the garden. Suitable for spring and fall culture, and under glass in winter. E5T

Sparkler: (White Tip Sparkler) 25 days. Round to globe-shaped root; deep scarlet on the upper portion, pure-white on the lower end; crisp white flesh, never becomes hollow at the heart; holds its crispness long after maturing. Medium-tall tops. Popular for fresh market and home gardens. A16, A75, B6, B49, B75M, D11M, D82, E24, F70, G16, G79, H85M, 139,164, K49M, N16, etc.

##### *Pink/Red-Skinned*

Candela di Fuoco: 35-45 days. May grow to 12 inches long when planted in loose, sandy soil. Bright crimson skin; succulent, mildly pungent white flesh. Needs 35 to 45 days to reach maturity, but can be harvested and used when smaller. N84, Q11M, SI 7

Cerise: 21-25 days. A round, attractive bright red, highly uniform radish that has been selected in France for market growers. Holds well without becoming hollow or pitty. Short tops. Should be used when small, with the stems attached. Introduced by Vilmorin. G68, S66M

Champion: 24 days. Uniform, globe-shaped roots; bright scarlet skin; crisp white flesh, holds for a long period of time without becoming woody or pitty. Sturdy medium-length tops; good for bunching. For spring or fall crops. Thrives in cool weather. All America Selections winner in 1957. A16, B6, B73M, C44, D11M, D82, E24, F70, F82, G16, G71, H85M, K49M, L79, M46, N16, etc.

Cherry Belle: 25 days. Smooth, round root, 3/4 inch in diameter; bright cherry-red skin; crisp, firm, tender white flesh; holds its eating quality well as it is very resistant to pithiness. Short tops. Ideal for home use, market and forcing. All America Selections winner in 1949. A16, B6, B75M, C44, D11M, D82, E59Z, F70, F82, G16, H85M, 139, K49M, K73, L7M, M49, etc.

Comet: 25 days. Globe-shaped to round roots; skin bright scarlet red; flesh white, fine-textured, exceptionally firm and crisp. Short to medium tops, 3 1/2 to 4 inches tall. Excellent for bunching. Remains firm longer than most early globe types. All America Selections winner in 1936. A16, DIT, D12, D27, D76, F24M, G57M, G93M, H85M, K49M, L42, M49

**Crimson Giant:** 27 days. Large, turnip-shaped root; 1 to 1 1/2 inches in diameter, considerably larger than other early types; skin deep crimson; flesh firm but tender, crisp and sweet; remains in perfect condition several days after pulling. Equally desirable for forcing or outdoor planting. A25, A75, B6, B75, D65, G71, G93M, H85M, H95, I64, K49M, K71

**Early Scarlet Globe:** 20 days. Deep globe-shaped roots; bright red skin; pure-white, crisp flesh, of mild delicate flavor. Short bright green tops, excellent for bunching. For greenhouse or frame forcing, as well as muck or mineral soils. Has more heat tolerance than other cultivars. A25, A75, B6, B78, C85M, D65, G68, G71, H85M, J25M, K49M, K71, L89, M46, N16, etc.

**German Giant (Parat)** 29 days. A very large round radish that is a favorite of home gardeners in Germai. Scarlet red skin; crisp, slightly pungent white flesh. Can be harvested small or after reaching the size of a baseball. Will not split or become woody or spongy. Needs to be thinned to 1 inch apart to reach large size. B6, D76, E97, F73D, G16, G68, H85M, J20, K49T, K71, L13M, M46

**Long Scarlet (Cincinnati)** 25 days. Long root, a considerable portion growing above ground; 7 to 8 inches in length, about 3/4 inch in diameter; skin an attractive deep pinkish-red color, becoming paler towards the tapered lower portion; flesh white, transparent, crisp, mild. Very hardy; can be forced as early as February. Introduced prior to 1865. BURR; C20M, DIT, D12, D26D, F80, G57M, K27M, K71, PIG

**Pink Beauty:** 27 days. Smooth, round root, grows as large as Champion; unique rose-pink skin; crisp snow-white flesh, very mild flavor. Stays solid and crisp for a long period of time, never becoming woody or pithy. Short tops; easy to bunch. Adds variety to salads and relish trays. B6, B49, G6, H33M, RUM, R32

**Scarlet Globe:** 24 days. Smooth olive-shaped root, 1 inch in diameter at its widest point; thread-like tap root; bright scarlet skin; white, brittle flesh, very mild and tender; remains crisp over a long period of time. Small to medium tops. For forcing or outdoor culture. D12, FI, G57M, G83M, H49, R32

#### *Purple-Skinned*

**Plum Purple (Purple Plum)** 27 days. Smooth, globe-shaped roots; unique bright purple skin; crisp, juicy snow-white flesh, mild flavor; never becomes pithy or hot. Short tops; 4 to 5 inches long. Hardy and highly adaptable. Especially attractive in salads and relish trays. C28, C53, D26D, G53M, G87, G93M, I18M, I91, J97M, L10, L11, N40{PR}

#### *White-Skinned*

**Burpee White (Burpee's Round White, Snowball)** 25 days. Young roots nearly round; enlarge in diameter and become flattened as they grow. Pure-white skin and flesh. Best eaten when 3/4 to 1 inch in diameter, but stays tender, mild, and crisp for a long time. Medium-tall tops. A16, B75, D27, G87

**Hailstone (White Globe Hailstone)** 26 days. Globe-shaped root, somewhat larger than Scarlet Globe but not as large as Crimson Giant. Pure-white skin; crisp, tender, mild white flesh; earlier and larger than most round cultivars; holds its quality well. Medium-tall tops. B1, B75, D12, D26D, D65, D82, E24, G13M, G57M, H85M, H95, K10, M32

**Mimchner Bier:<sup>2</sup> (Miinchen Bier)** 67 days. A unique cultivar that produces masses of thick, tender, juicy, stringless pods at the top of 2 foot stems. Can be added whole or chopped to salads, boiled, steamed or stir-fried. In Germany, the long white roots are sliced thinly, salted lightly, and eaten on black bread or with pretzels and washed down with beer. C53, F24D, F24G, L91M, N81, N84, Q34, R32, R47, S55

**Philadelphia White Box (Earliest White Forcing)** Small, crisp round radish with very small leaves. Very quick growing, ideal for forcing in cold frames. Can also be grown in the open as a fall

radish. Very mild and delicate, especially when forced. Can be used like baby turnips. Developed by D. Landreth & Sons from the White Turnip radish. WEAVER 1997; D29P

**Snow Belle:** 26 days. Flattened globe-shaped root with a small tap root; skin pure-white, smooth, attractive; crisp, mild white flesh, tangy flavor; stays firm for a long period of time. Medium, dark green tops. Good for home gardens and bunching. C28, D11M, D76, F63, F70, H33M, H61, K10, K27M, L7M, L42, M29, M49, M95M

**White Globe (White Ball, White Pearl, Giant White Globe)** 25 days. One of the best early white radishes. Round to flattened-globe shaped roots; smooth, white skin; crisp, mild, glistening white flesh; holds its quality for a long time, never becoming pithy. Light green, medium tall tops. C92, E5T, E38, G57M, I59M

**White Icicle (Lady Finger)** 30 days. Long, slender, tapered root; 5 to 6 inches in length, 1/2 inch thick; thin, tender, snow-white skin; crisp, tender white flesh, mild in flavor; never becomes woody or pithy. Very tolerant of hot summer heat. Easy to force and fine for outdoor culture. A16, A25, B73M, C44, D11M, D65, E38, F70, F80, F82, G16, L7M, N16, N40{PR}, R47, etc.

**White Strasburg:** Stocky, parsnip-like roots with broad shoulders, 4 to 5 inches long and 2 inches in diameter; white skin; tender, white flesh, mildly pungent. Matures in about 6 weeks, and will increase in size for a month or more without loss of quality. Very productive and heat resistant. Heirloom from France. VILMORIN; K49M

#### *Yellow-Skinned*

**French Golden (Golden)** 32 days. Elongated, slightly tapered root; 4 to 5 inches long, about 1 inch in diameter; light-golden skin; very crisp pure-white flesh with a relatively mild, distinctive flavor. An attractive addition to salads. Very resistant to disease and insect problems. F73D

**Yellow Oval:** 50-60 days. Conical or elongated root, 3 to 4 inches in diameter and 6 to 8 inches long, half growing above ground; orange-yellow skin; juicy flesh with a hot, pungent flavor. E83T

**WINTER HARVESTING** Winter radishes are those that have such compact and firm-fleshed roots that they will keep through a great part of the winter without sprouting or becoming hollow at the center, as spring and summer radishes do when they are stored for any length of time. The black types are traditionally used by cooks of Russian and Jewish heritage. SCHNEIDER 1986 [Cu], [Re], VILMORIN [Cu].

#### *Black-Skinned*

**Long Black Spanish (Noir Gros Long d'Hiver)** 60 days. Uniform, cylindrical roots; 7 to 10 inches long, 2 to 3 inches in diameter; skin very black, somewhat wrinkled; flesh pure-white, firm, compact, pungent. Leaves stout, broad, long. Stores well. Can also be used for sprouting. Introduced prior to 1865. VILMORIN; D11M, D12, D82, E38, F70, F73D, G57M, G68, I39, J20, K49M, L7M, O53M

**Poids d'Horloge:** Long, cylindrical, club-shaped root; about 8 inches in length; slightly narrower at the neck than at the root end, somewhat reminiscent of Des Vertus Marteau turnip; skin pure black, smooth; flesh crisp and pungent. Sown in July and August for winter use. Keeps extremely well. P59M

**Round Black Spanish (Noir Gros Rond d'Hiver)** 55 days. Root roundish, often top-shaped; 3 to 4 inches in diameter, about 3 inches long; skin black, cracked in longitudinal lines; flesh white, very compact and firm, very pungent. Not very late for a winter radish; may be sown up to the end of July. Keeps exceptionally well. Introduced prior to 1865. VILMORIN; C44, C85M, D27, E13G{PR}, F80, G16, G71, I63Z, K71, K73, L7M, M46, N40{PR}, R47

**Wiener Runder Kohlschwarzer (Round Black Viennese)** 85 days. A round, black-skinned winter radish grown in Germany and

Austria especially for salads. A favorite Bavarian combination includes leaf lettuce, curly endive, cress, sorrel and chervil. Excellent, pungent flavor; pure white flesh. Planted in the fall for a late harvest. Stores well without wilting or losing its crisp texture. N81

#### *Purple-Skinned*

Violet de Gournay: 65 days. French heirloom. Long, cylindrical root, slightly tapered toward the end; 8 to 10 inches in length, 1 1/2 inches in diameter; dark-violet skin; pungent pure-white flesh. Stores well. Used for grating into salads, pickling and cooking. Sown in August for a fall and winter crop. Introduced prior to 1885. VILMORIN; E83T, G68

#### *Red-Skinned*

Bartender Red Mammoth: 35 days. Long, tapered root, 7 inches in length and 1 inch in diameter; skin deep red; flesh pink, firm, crisp, pungent. Tops grow 8 to 10 inches tall. Heavy yielder under semi-tropical conditions. For home gardens and fresh market. K49M

Fire Candle: Long, cylindrical roots with smooth red skin and crisp white flesh. Can grow up to 6 inches in length. Perfect for slicing. Especially appealing to those who prefer a strong-flavored radish. Usually sown from July onwards and harvested in the fall and winter. B49, R32

Salad Rose:<sup>3</sup> 35 days. Long, cylindrical roots, up to 8 inches in length; skin an attractive rosy pink; crisp, pungent white flesh. Good in salads or as a beer ndish. Young leaves can be used in salads or for stir-frying, similar to turnip or mustard greens. Excellent for fall crops. Originated in Russia. B75

### ORIENTAL RADISHES

**DAIKON** Also called *Japanese radishes*, these are exclusively white-skinned except for a few which become green where the shoulder grows above the soil. They are generally larger, coarser, later to mature, and more unpalatable in leaf texture than Lo Bok. (R. sativus Longipinnatus Group)

#### *Spring/Summer Harvesting*

April Cross: (F.) 60 days. High quality hybrid Minowase type. Slender, elongated roots, 12 to 18 inches long and 2 inches in diameter; pure bright white; crisp, mildly pungent flesh, very slow in becoming pithy. Excellent shape and uniformity. Most suited to late spring and early summer crops. Extra slow bolting. *A1, C20M, G16, G93M, 139,191, K10, K73, M29, M46, N81, S63M, S75M*

Early 40 Days: (Kaiware 40 days) 38-45 days. A cultivar developed especially for sprouting. Produces spicy sprouts in 2 to 4 days that can be added to salads, stir-fried, etc. Also grown for the white, mild-flavored roots which grow to 12 inches in length and 2 1/2 inches in diameter. Sow in early spring for an early summer harvest of roots. Tolerant to heat and cold. *D55, S63M, S70*

Minowase: (Minowase Early, Minowase Dark Green Leaved) 55 days. Very large, tapered root; 20 to 24 inches long, 2 to 2 1/2 inches in diameter; pure-white skin and flesh; juicy, crisp, mildly pungent flavor. Rapid growing and widely adapted. Heat and disease tolerant. Best sown in May for a summer crop. Optimum temperature for growth is 75° F. *A2, C97, D12, D26D, D55, E24, E97, G13M, G33, G93M, L3J, L59, L79G, Q18, S63M, etc.*

Minowase Summer Cross:(F.) Hybrid Minowase type with added disease resistance. Elongated, tapered roots, 12 to 18 long and 2 1/2 inches in diameter; pure-white skin and flesh; juicy and crisp, mildly pungent; slow to become pitty. Uniform, well-shaped and of high quality. Tolerant of heat and bolting. Resistant to virus and fusarium wilt. *A1, B75, C85M, D26D, G71,167M, J20, J97M, K10, K16M, K50, K73, M29, RUM, R32, S63M, etc.*

Pusa Himani: 55 days. Cylindrical roots, 12 to 14 inches long and 4 inches in girth; pure white skin, green at the stem end; crisp sweet

flesh, only mildly pungent. For fresh markets and home gardeners. Grown all year round in the hilly regions of northern India. Developed in Katrain, India from a temperate type and a popular Japanese daikon variety. BOSE 1993; N91, Q18, Q45M, R50

Tokinashi: (All Seasons) 85 days. Pure-white, square-shouldered root, tapering uniformly to a sharp tip; 12 to 15 inches long, 2 to 2 1/4 inches in diameter at the top; flesh fine-grained, crisp, very pungent. Slow bolting; tolerant of cold and severe heat; can be sown in any month where the temperature remains above freezing. *A2, G33, G93M, 139, J9M, J20, J73, L3J, L59, PIG, R47, S63M*

#### *Winter Harvesting*

Miyashige: (Green Neck Miyashige) 78 days. Long, cylindrical, stump-rooted radish; 16 to 17 inches long, 2 to 2 1/2 inches in diameter; skin white, green towards the shoulder; flesh white, solid, crisp, pungent. Excellent for pickling and winter storage. Sown from late August to early September in Japan. *C20M, C95, D55, F44, G6, G33, G93M, 139,199M, K49T, L3J, L13M, L77D, S63M, S70*

Miyashige Long White Neck: Pure-white, pointed root; 14 to 16 inches long, 2 1/2 to 3 inches in diameter. Flesh of very fine texture, mild pungency, and excellent quality. Usually sown at the end of summer (August or September) for harvesting from fall to winter (October to December). *G93M, S63M*

Nerima Longest: (Nerima, Nerima Long White) 90 days. Long, cylindrical root, narrow at the shoulder and tapered toward the tip; 28 to 30 inches long, 3 inches in diameter at the widest point in favorable soil conditions. The flesh is less juicy and easy to dry after harvest, yet is firm and tender. Requires deep soil. *C20M, C85M, G33, N52*

Okura: (Winter Queen) 78 days. Pure-white root; square at the shoulder, blunt-ended; 14 to 15 inches long, 3 1/2 inches in diameter; pure-white skin and flesh; mild flavor. Has excellent keeping qualities. Tolerant of virus diseases. Sown between August 20th and September 15th in Japan. *C95, E83T, G93M, L77D, N84*

Sakurajima: (Sakurajima Mammoth, Mammoth White Globe) 150 days. Very large, flattened globe-shaped root; 13 to 13 1/2 inches in diameter; average weight 40 pounds when mature, occasionally reaching 65 pounds at Sakurajima, Japan. The gigantic root development is attained only in areas where a fertile, light soil underlaid with pumice or lapilli is available, and the growing season is longer than 150 days. Rather sweet flesh; good for boiling or pickling. *A2, B73M, D65, F73D, G33,181, K49M, L77D, Q34, S63M*

Shogoin Large Round: (Shogoin Giant) 85 days. Large, globular root; vertical diameter 5 1/2 to 6 inches, horizontal diameter 5 to 5 1/2 inches, about 1/4 growing above ground. Flesh pure-white, firm, crisp, juicy, mildly pungent, excellent for boiling. Sown in mid August and harvested in early November in Japan. *C20M, D55, G33, G93M, 139, J9M, Q28, S63M*

#### *Others*

Bisai:<sup>3</sup> Widely used in Japan as a cut-and-come-again seedling crop. Cut with knife or scissors when 2 to 3 inches high. Seed should be broadcast in a small patch from spring to autumn. Also produces delicious radish sprouts. B49

**LO BOK** Also called *Chinese radishes*, these are more variable than daikon both in the color of their skin, and in their size and shape. The leaves are generally hairless and are more palatable. *E13G{PR}*. (R. sativus Longipinnatus Group)

#### *Multi-Colored*

Include here are mostly red and green fleshed Chinese and Korean radishes, usually having white and green skin. Red-fleshed Chinese radishes are indigenous to the Beijing area of northern China, where they are known as *Xin Li Mei*, *Shinrimei*, or *Beauty Heart radishes*. In the specialty food trade they are called *watermelon radishes*. The sweet roots are eaten like a fruit and are also used for carving

“radish flowers” and other decorative garnishes. Green-fleshed radishes are juicy and very sweet and are easier to grow than red-fleshed types. They can also be pickled or used for making soup. LARKCOM 1991.

Aomaru-Koshin: (Tsung Lo Bok, Beijing Red Core, Green Skin & Red Flesh) 55 days. Short, round root; 4 to 5 inches long, 4 inches in diameter; weight 1 pound; skin green above ground, white below; reddish-purple at the core, with rays spreading through the white flesh. Good raw, in salads, or pickled overnight in sweet vinegar. A good keeper, its sweetness increasing during storage. Popular in the Beijing area of China. D55, E83T, F80, L59, Q28, Q34

Green Meat: 50-60 days. An unusual radish from northern mainland China. Oblong in shape, 3 to 4 inches in length when mature; smooth white skin, green near the shoulder; flesh deep lime-green, crisp, pungent. Good sliced or grated with the Red Meat radish. Also suitable for pickling. C20M, N84, S63M, S70

Margilan: (Margelanskaya) 70 days. Very attractive, succulently sweet radish from Central Asia. Oblong roots, 3 to 5 inches in length and 1 1/2 to 2 inches wide; light jade in color. Often grated and made into a salad with grated carrots. This salad is traditionally served as an accompaniment to Uzbek lamb pilaf. VON BREMZEN [Re]; U15

Misato Green: 60-65 days. Long, cylindrical roots, about 8 inches in length; bright green on the upper two thirds, white at the base. Highly prized in Asia for its high quality, juiciness and sweetness. Light frost may enhance the flavor. Keeps well. Short tops; can be planted with close spacing. B49, C20M, G33, 139, J20, M46, N24M

Misato Rose-Fleshed: 65 days. Large, round-oblong root, about 4 inches in diameter; skin white, green over the upper one-third; flesh rose-red with lighter concentric rings; stores well. Should not be used for spring sowing. A colorful addition to salads; also good cooked. Imported from China. B49, G13M, G33, 139, 191, J20, L89, M46, N24M

Red Meat: 50 to 60 days. An unusual radish from mainland China. Large, turnip-shaped root; 1 to 1 1/4 inches in diameter when mature; smooth, creamy white skin, lightly tinged with purple; flesh red, pungent. Attractive as well as useful. C20M, G6, G13M, G68, R47, S55, S63M

Shangtung Green Skin: (Green Long, Tseng Lo Bok) 50 days. Long, slender root, about 10 inches long, 2 inches in diameter; green above ground, white below; weight about 1 pound; flesh green, crisp, juicy and sweet. Can be harvested in fall and stored until the following spring; the longer it is preserved the sweeter it becomes. Good raw, in salads, or pickled. ROSS; C95, D55, E83T, L3J, L59, L79G

Tae-Baek: (F) 70 days. Short, blunt white roots tinged with green on the upper third; weight about 2 pounds; very firm and uniform. Highly tolerant to virus, bacterial soft rot and downy mildew. Suitable for kimchi. Best suited to late summer planting. Can be stored for 4 to 5 months in winter. AI, C20M, D55, G33, H49, M29, N84, Q3

Valentine: 25 days. A novelty radish which was developed for the salad bar trade. Round in shape, with green and white skin, and red interiors at maturity. Introduced by Stokes Seeds. 177, K49M, L42

Wei Xian Qing: 90 days. Long, cylindrical root; 10 to 12 inches in length; skin dark green above ground, creamy white below; flesh green, crisp, juicy; stores well. May be eaten raw; called *fruit turnip* in China. Sown in mid-August in Shandong Province, China. 054

Xin Li Mei: (Shinrimei) 90 days. Cylindrical, turnip-shaped root, 3 to 4 inches across; skin white, green near the upper end; flesh bright pinkish-red; mild, sweet flavor. May be eaten raw as a fruit or used in salads. Sown in early August in Beijing, China. Harvested in the fall and winter. F73D, N84, 054, S70

### *Pink/Red-Skinned*

China Rose: (Chinese Red Winter) Root elongated, thicker at the lower extremity than at the neck, blunt at both ends, very closely resembling the Jersey turnip in shape; 4 to 5 inches long, 2 inches in diameter; skin bright rose-colored; flesh white, very firm, pungent. Leaves broad; leaf-stalks bright pink. Considered the best radish for sprouting. Introduced prior to 1865. BURR, MEYEROWITZ 1994a, VILMORIN; A16, C/4{SP}, E24{SP}, E38, E60P{SP}, F13{SP}, F80, G6{SP}, G16, G71, H99J{SP}, K71, K73, L7M, L59, R47, etc.

Chinese Short Red: 40 days. Slightly tapered, cylindrical root; 8 inches long, 2 inches in diameter; bright red skin; very juicy, pure-white flesh of very good flavor. Excellent for eating raw, mixed in salads. D55, L59, S70

Pink Ball: 70 days. Developed by careful selection from imported cultivars from China. Round roots with bright pink skin and pure white flesh; weight 10 to 12 ounces. High starch content and late pithiness makes it suitable for storage. Tolerant to summer heat, sudden low temperature, and virus disease. Dark green foliage with reddish petioles; somewhat spreading growth habit. Q3

Red Coat: (F) 45 days. Straight root, tapered towards the top; 7 1/2 to 8 inches long, 2 inches in diameter; purple-red skin; red flesh. Suitable for salads. Vigorous, erect plant; tolerant to mosaic virus; good for close planting. Not recommended for growing under cool weather conditions. Q39

Shunkyoh Semi-Long:<sup>3</sup> 35 days. Medium-long, smooth, slightly tapered root; about 4 to 5 inches in length; attractive reddish-pink skin; very crisp, nutty, pungent white flesh. Has a taste that is both hot and unusually sweet. Broad, smooth leaves with reddish-pink stems can be eaten in salads, pickled, or stir-fried with the roots. Slow bolting, can be sown in early spring or fall. Imported from mainland China. G6

### *White-Skinned*

Chinese Improved Earliest:<sup>3</sup> 38 days. Uniform, cylindrical root; about 5 inches long, 1 3/4 inches wide in cross section; skin and flesh white; flesh very tender and juicy, mildly pungent. Leaves dark-green, 12 to 13 inches long, unlobed, hairless, tender, well-suited for cooking with the root. Popular in Fukien, China and Taiwan where similar cultivars are called Kana. C20M, E83T, J73

Chinese White Celestial: (Chinese White Winter, California Mammoth White) 60 days. Long, cylindrical root, thickest at the lower extremity; 6 to 8 inches in length, about 2 1/4 inches in diameter; between 1 and 2 inches grows above ground; skin and flesh pure-white; flesh mild, lacking in pungency. Good for pickling and winter storage. Introduced prior to 1885. VILMORIN; A75, D12, G57M, G71, H49, H85M, J97M, K10, K49M, K71, L42, M95M, N16

Ta Mei Hwa: 55 days. Large, oblong, blunt-ended root; 6 to 8 inches long, 3 to 4 inches in diameter; can weigh 3 to 4 pounds when mature; white skin and flesh. Very tasty and mild-flavored; excellent when shredded or grated and added to soups. Quite popular in Chinatown markets. E83T, F73D, L79G

White Rat: (F) 45 days. Small, blunt, attractively shaped white roots weigh about 1 3/4 ounces each; highly uniform; very firm and resistant to pithiness; good pungent flavor. Fine, edible tops. Suitable for *chonggak kimchi*. Best for fall planting at close spacing. Retains its shape very well even when grown in high elevation areas. G33, Q3

### LEAF RADISHES

These have been bred specifically for use as a leafy vegetable, before the roots have developed. They are characterized by rapid growth of extra long leaves that are completely free of hairs.



**HYBRID**

4 Season: 25-30 days. Long, smooth, entire leaves, free of hairs; 12 to 14 inches in length at harvest stage. Vigorous and fast growing; harvestable in 30 to 35 days in spring, 25 to 30 days in summer and autumn. Moderately slow bolting. Tolerant of cold and heat; resistant to virus. Suitable for growing in all seasons. *C20M, D55, G33, L88J, N84, Q3*

Full House: Leaf radish with very slow bolting. The most useful cultivar for year round culture, being especially adapted to winter and spring growing. Can be harvested after 50 to 60 days in winter and 30 to 35 days in summer. *Q3*

No. 1: Attractive leaves and roots; suitable for harvesting when young. Young shoots are of high quality and can be harvested in 30 to 35 days in summer and fall. Grows well under mild climate conditions. *Q3*

Pearl: 30-35 days. Long, smooth, divided leaves, free of hairs; 12 to 14 inches in length at harvest stage. Harvestable in 35 to 40 days in spring, 30 to 35 days in summer and autumn. Extra slow bolting. Tolerant of heat and cold; resistant to virus. Can be grown during any season. *C20M, Q3*

Saisai: Popular variety developed especially for leaf harvest. Hairless leaves, 12 to 14 inches long; tasty and nutritious. Slow to bolt. Can be grown in all seasons. Harvested after 35 to 40 days in spring, and 30 to 35 days in summer and fall. *S70*

**CODES FOR SPECIAL TYPES**

1. French Breakfast Type
2. Edible-Podded
3. Edible-Leaved

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## RASPBERRY {GR}

**RUBUS SPP.****BLACK RASPBERRIES (R. occidentalis)**

Allen: Large, attractive fruit; flesh firm, very sweet. Ripens slightly earlier than Bristol and a large portion of the crop may be picked at one time. Excellent for jam. Good all around cultivar but not outstanding in any one characteristic. Bush vigorous and productive; somewhat resistant to mildew. Originated in Geneva, New York by George L. Slate. *BROOKS 1972; F87, H65, K71*

Black Hawk: Fruit large, up to 3/4 inch in diameter, nearly round; skin glossy black; flesh firm, with little or no tendency to crumble, sweet to mildly acid; quality excellent fresh, frozen and processed; ripens in late midseason. Bush vigorous; hardy; yields extremely well; does not sucker; somewhat resistant to anthracnose. *BROOKS 1972; A82, B19, B73M, C45M, C61, D76, E3, F16, F93, 153M, 178, J83, L33, M83*

Bristol: Large, conical fruit; skin fairly glos<sup>^</sup>, attractive; flesh firm, sweet, highly flavored, nearly seedless, quality excellent; ripens in midseason over a period of a couple of weeks. Tall, vigorous bush; hardy; highly productive; generally disease resistant but very susceptible to anthracnose. Very widely planted. *BROOKS 1972; A74, B4, B19, B43M, B58, C45M, C47, C61, C84, F16, H65, 150, J97M, L79, M99G*

Cumberland: Large, conical fruit; skin glossy black; drupelets large, round, with strong coherence so that the berries do not crumble; flesh firm, juicy, sweet and rich; quality very good; ripens in early midseason. Tall, upright-spreading bush; vigorous; highly productive; susceptible to anthracnose. Introduced in 1896 and still one of the leading cultivars. *HEDRICK 1925; A82, B43M, B73M, B75, C61, E3, F93, G43, 141P, 178, J2M, J83, K75T, L70*

Dundee: Large fruit; skin glossy black, attractive; drupelets small; flesh moderately firm, mildly subacid, of very good flavor and quality; ripens in midseason, somewhat later than Bristol. Tall, vigorous bush; hardy; productive; moderately resistant to mosaic, susceptible to powdery mildew. Introduced in 1927. *BROOKS 1972; G16, H44, 178*

Haut: Medium-sized fruit; flesh firm and cohesive, very sweet, quality excellent; ripens over a longer period than other black raspberry cultivars. Vigorous, high-yielding plant; more productive than Bristol; disease resistant. Widely planted in New Jersey and other Mid-Atlantic states. *D37, F87, 150, M99G*

Jewel: Large fruit; skin glossy black, attractive, slightly woolly; flesh firm, flavorful, of high quality; ripens in early midseason. Bush vigorous and productive; winter hardy; not susceptible to any serious disease, and only slightly susceptible to mildew. Considered an improvement over Bristol. *B19, B43M, B58, C47, C61, F87, G8, G16, G23, H65, 149G, 150, J2M, J61M*

John Robertson: Large, plump fruit; flesh medium firm, juicy, quality very good. Bush productive; one of the hardiest black raspberry cultivars, reliable as far north as Canada. Originated in Hot Springs, South Dakota by John Robertson. Introduced about 1935. *B19, C61, D76, E97*

Lowden: Extremely large fruit; skin dull purplish-black when fully ripe; flesh juicy, sweet, of excellent flavor; canning quality especially good; ripens fairly late. Bush upright, quite vigorous; productive; very winter hardy; resistant to anthracnose. Hybrid of Bristol black and Sodus purple. *BROOKS 1972; G79M, J63M, M65M, N24M*

Mac Black: Medium to large fruit; flavor very good; ripens late. Freezes well. Bush hardy, vigorous and productive; often bears into August, and will occasionally produce fruit on the tips of new canes in September and October. Ideal for extending the harvest season. An older cultivar that is still popular, especially in some colder areas. *F16, F87*

Munger: Fruit variable in size, averaging medium, roundish to roundish conic; drupelets numerous; skin black with a light bloom; flesh firm, strongly coherent, juicy, mild, sweet, of good quality; ripens in late midseason. Vigorous, upright bush; hardy; only moderately productive; susceptible to mildew. Introduced in 1897. *HEDRICK 1925; A91, C15M, K17, M81M*

New Logan: (Logan) Fruit medium to large, glossy; flesh firm, sweet, of very good quality; ripens early, about a week before Cumberland and over a short period of time, making for easier picking. Holds its firmness all season. Bush very productive; hardy; highly resistant to mosaic, susceptible to anthracnose. *B19, C45M> C61, D65, G43, H58, J63M, M65M*

Wyoming: Purplish-black fruit of mild flavor. Makes excellent black jelly or black raspberry pies. Bush quite hardy, heavy yielding. Canes grow very tall and strong and do not sucker. Popular in the Canadian prairie provinces. *B47*

**PURPLE RASPBERRIES (R. x neglectus)**

Amethyst: Large, glossy fruit of good quality; always visible on the stem. Bush very hardy, productive, and resistant to disease. Good midseason cultivar for the Midwest. Developed in Iowa and tested over a twelve-year period. *HENDRICKSON; U7D{S}*

Brandywine: Large, round conic fruit; skin reddish-purple; flesh firm, coherent, tart but of good quality; ripens late. Excellent for jams and jellies. Bush large, erect, to 10 feet; very vigorous; hardy; outproduces red cultivars by 25%. Recommended for the home gardener and the commercial grower. *A82, C61, DI 1M, F70, F87, G43, J89M, N24M*

Estate: Large, round fruit with good sweetness and a naturally distinct raspberry flavor. Ripens late in the season. Very attractive fruit for fresh market and specialty sales. Vigorous, hardy plant with

strong, upright canes. Originated in Minnesota. Has performed well in most northern states. F16

Marion: Fruit large; skin purple; flesh moderately juicy, firm, tart, of good quality; ripens late, one week after Sodus. Bush vigorous, productive; resembles a red raspberry in habit. Popular in the Northeast. Originated in Geneva, New York by Richard Wellington. BROOKS 1972; U7D

Royalty: Large to very large fruit; flesh moderately firm, sweet, dessert quality very good; ripens late. Has a strong raspberry aroma that is preserved in processing. Vigorous bush, not as erect as Brandywine; winter-hardy; productive; resistant to raspberry aphid, the vector of mosaic virus. Excellent for home gardens or pick-your-own operations. B26, B58, C61, C84, F16, G16, G23, H42, H65, I49G, I49M, I50, J2M, J61M, L79, etc.

Sodus: Fruit large to very large; flesh fairly firm, coherent, sprightly, quality good though quite tart; ripens in midseason, shortly after Latham. Bush very vigorous and productive; winter-hardy; resistant to drought; free from mosaic, but susceptible to verticillium wilt. Introduced in 1935. BROOKS 1972; D65

Success: Medium to large fruit; flesh firm, sweet, highly flavored; quality good fresh, excellent for processing; ripens in midseason. Bush erect, grows to 8 feet tall; heavy yielding; winter hardy where temperatures do not go below -20 to -25° R; resistant to spur blight. Originated in Durham, New Hampshire. BROOKS 1972; U7D

#### RED RASPBERRIES

**EVERBEARING** Also called fall-bearing or primocane-bearing raspberries, since they bear on the current season's growth or "primocane". They can begin fruiting after less than a year in the garden, usually requiring no trellising or trimming. Since all canes are removed annually, diseases and pests that overwinter in them are virtually eliminated, and there is never a worry about winter injury.

Amity: Medium-large fruit; very firm flesh of excellent flavor; quality high; ripens 5 days earlier than Heritage; tends to adhere to receptacle. Good for fresh marketing, shipping and freezing. Vigorous, productive plant; canes nearly smooth, 4 1/2 to 5 feet tall. Resistant to root rot, somewhat resistant to mildew. A91, C15M, C54, H88, K17, LI, M81M

August Red: Medium to large fruit; skin crimson red; flavor excellent, sugar content high. Compact, erect bush, growing only to about 3 feet; highly productive; bears earlier than other everbearers; produces an early summer crop on old canes and again in mid-September until freezing weather. Good all purpose cultivar. Reliable in northern areas. Developed by Professor E.M. Meader at the University of New Hampshire. C61, D69, H88

Autumn Bliss: Large, oval-conical fruit; skin very dark red; flesh firm, with a pleasant mild flavor; ripens very early, 14 days earlier than Heritage; fairly easy to pick. Bush a superior yielder to Heritage; resistant to some aphid-transmitted viruses. Canes fairly erect; may be grown without support. Bridges the gap between the late summer cultivars and the fall-bearing cultivars. Originated in East Mailing, England. A74, B43M, B58, B74, C34, D37, D65, F16, F87, G16, I49G, I49M, J2M, K17, L27M, M81M, 081, etc.

Baba:<sup>1</sup> (Bababerry) Very large fruit, up to 1 inch long; flesh very firm; flavor sweet, rich, tapgy, reminiscent of wild raspberries; quality good; ripens in June and again in September and October. Bush extremely vigorous, up to 10 feet in height; spiny. Low chilling requirement; does well in hot, dry areas of southern California; also hardy to 0° F. Discovered in the wild near Idyllwild, California by Mrs. Gertrude Millikan. Introduced in 1979. A63, A88M, C54, D76, E97, F53M, G17, H4, I49M, I53M, 174, 183M, M83

Dinkum: Medium-sized, dark red fruits, slightly more glossy than Autumn Bliss; very firm flesh, flavor excellent; ripens about 3 days earlier than Autumn Bliss. Upright canes; very productive. Has a somewhat shorter ripening season than Autumn Bliss, but higher

yields at each harvest. Easy to harvest. Originated in Toolangi, Australia. BROOKS 1997; C34, K17, M81M

Double Delight: Very attractive, winter hardy everbearer which is relatively early ripening. Small to medium-sized, bright red fruits; firm, sweet-tart flesh. Ripens before Heritage or Redwing. Short, fairly erect plant. Tends to form twin fruits from the same flower, hence the name. Originated in Morden, Manitoba. BROOKS 1997; A65, F87, G54, H42, H85, K64

Durham: Medium-sized fruit; flesh firm, of good flavor; excellent for fresh use and processing; fall crop ripens 2 weeks before the fall crop of Indian Summer. Bush extremely hardy; very vigorous and productive; bears a heavy crop in early summer and again in a few weeks on the new canes. Originated in Durham, New Hampshire by A.F. Yeager. BROOKS 1972; B73M, H88

Fallred: Fruit large, larger than most everbearers; skin red, attractive; flavor very good, quality high; ripens early. Upright, vigorous bush; produces fruit continuously on highly productive primocanes until curtailed by frost; suckers freely; cold-hardy to -25° F. Developed by Professor E.M. Meader at the University of New Hampshire. BROOKS 1972; B19, C61, D65, E97, G79M, H65, H88, J83, K71

Heritage: Medium-sized, conical fruit; skin brilliant red, attractive; flesh very firm, quality excellent; first crop ripens in mid-July, second crop about September 1 at Geneva, New York. Bush tall, grows 5 to 7 feet; very vigorous; hardy; suckers prolifically; sturdy, requiring no support. Excellent for home gardens. BROOKS 1972; A38M{PD}, B43M, C61, C67{E2}, C84, F16, F87, G4, G16, G23, I78, J83, L33

Indian Summer: Fruit large, conic; skin bright red, glossy; flesh very aromatic, sweet; crumbles frequently. Quality good as an autumn fruiting cultivar; also useful for jam. Bush very productive; vigorous; hardy; escapes mosaic infection; produces a first crop in July and a second from September to the first hard frost. One of the oldest everbearers still in cultivation. BROOKS 1972; A88M, B19, C45M, C54, C61, F53M, G71

Nordic: Medium-sized fruit, firmer than Boyne, with tougher skin; ripens 14 days after Heritage. Bush very productive; extremely hardy; appears to have more resistance to fungal diseases and aphids than Boyne. Bears a fall crop too late for some northern areas. Good summer producer if primocane production is poor. Boyne x Fallred. Originated at the University of Minnesota. A74, F87, L27M

Oregon 10-30:<sup>1</sup> (California) Unique, continual-bearing raspberry, producing fruit from May through late November. Medium-sized fruit of very good quality. Bears fruit on new wood of current season's canes. Formal trellising system not required but some support is helpful. No chilling or heat units required for high quality fruit. D57, I83M

Red River: Medium-sized, glossy red fruits; good sweet-tart flavor; ripens earlier than either Heritage or Redwing. Recommended for fresh market. Short, stout canes that may require trellising if cropping is very heavy. Winter hardy in harsh prairie climates. Originated in Morden, Manitoba. Introduced in 1993. A65, B47, H42, H85, K64, L79

Redwing: Fruit slightly larger and somewhat softer than Heritage; dessert quality superior to Fallred; ripens 10 to 14 days earlier than Heritage. Outyields Fallred and Heritage. More heat resistant than Heritage, having performed well as far south as Georgia. Heritage x Fallred. Released by the University of Minnesota. A74, B4, D65, D76, F16, F87, I49G, J89M, K17, L27M, L70

Rossana: Highly regarded new raspberry with superb flavor. Medium-sized, conic, bright red fruit; not as firm as Heritage; ripens 3 to 4 weeks later than Heritage in Minnesota. Productive plant, about 5 feet tall; primocane fruiting. Hardy to USDA Zone 4. Somewhat resistant to rot. Originated in Torino, Italy. BROOKS 1997; F87, I49M, J61M

Ruby: Very large, conical fruit, up to 50% larger than Heritage; skin bright red; flesh firm, flavor slightly milder than Heritage; does not darken like Heritage; holds very well after picking. Not recommended for pick-your-own. Moderately vigorous plant; productive; highly susceptible to phytophthora root rot. Heritage x Titan. F87, 150, K17, L33

September: Medium to large fruit; skin bright red, attractive; flesh firm, coherent, juicy, sweet, of high dessert quality. Summer crop as early as that of Indian Summer, or about 5 days earlier than Newburgh; fall crop matures 2 to 4 weeks before that of Indian Summer. Bush vigorous; a reliable and heavy bearer; handy. BROOKS 1972; A88M, C45M, C47, C54, C61, E97, G43, G79M, H88, J63M, K75T

Southland: Medium-sized fruit, symmetrical and cone-shaped; skin light red, does not darken upon maturity; flesh firm, does not crumble; flavor slightly acid with good dessert quality; ripens early, 2 to 3 days after Sunrise, also produces a substantial crop in early or mid-August. Bush moderately vigorous; highly disease resistant. BROOKS 1972; C47, F93, K75T, L47, M83

Summit: Medium-sized, conical fruit; skin dark red, slightly darker than Heritage; flesh firm, of excellent flavor; ripens 10 days earlier than Heritage, ships well. Bush considerably less spiny than Heritage; does quite well in heavier soils; resists root rot. Introduced in 1988. C15M, F87, H88, 150, J61M, K17, L18, M81M

**SUMMER-BEARING** These bear fruit on "floricanes", or primocanes that have overwintered. They are susceptible to insects and diseases that overwinter in them, and also to winter cold damage. Most are limited to northern areas because the floricanes require a period of winter chilling to break dormancy.

Anelma: (*R. arcticus* x *R. idaeus*) Large, spherical fruit, about 3/4 inch long; skin highly colored; flesh very firm, very sweet, of good quality; ripens about a week after Boyne, fruits continuously throughout the summer. Bush spreading; very large and vigorous; very hardy. Canes nearly smooth. Originated in Piikkio, Finland. BROOKS 1972; U7D

Boyne: Medium-sized fruit; skin dark red, tending to become somewhat purplish-red when over-ripe, medium glossy; drupelets medium to small, cohering firmly; flesh tender, juicy, flavor aromatic, sprightly, moderately acid, superior to Latham in flavor but not as sweet as Chief. Especially adapted to home gardens and local markets. Bush moderately vigorous; very productive. BROOKS 1972; A16, A91, B26, B43M, B47, C61, D65, F67, F87, G16, G54, H42, 150, 178, K64, L79, etc.

Canby:<sup>2</sup> (Wonder Thornless) Fruit large, almost equalling Willamette; skin light bright red; flesh fairly firm, sweet, flavor mild; ripens in midseason, with Willamette. Bush very hardy; canes tall, straight, virtually thornless; highly productive; very hardy; immune to aphid, resistant to virus; susceptible to heavy soils. BROOKS 1972; B73M, C61, C76M, D65, E3, E97, F87, H49, H88, 150, 178, M81M

Chief: Small to medium fruit; skin cherry red; drupelets medium-sized; flesh very firm, juicy, very sweet, flavor and quality good; ripens early. Excellent for freezing. Bush very winter-hardy, vigorous. Originated in Excelsior, Minnesota. Introduced in 1930. BROOKS 1972; A16, B47, J89M

Chilcotin: Medium-sized, conic, glossy light red fruits; moderately firm. Flavor very good, recommended for fresh market. Ripens early and over a very long season. Moderately vigorous, productive plants. Moderately winter hardy in the Pacific Northwest. Originated in Vancouver, British Columbia. H88, J63M, K17, M81M

Chilliwack: Fruit large to very large; skin bright red, glossy; flesh firm, very sweet, of excellent flavor; quality exceptionally high; ripens over a short season in July; keeps well. Bush very productive; resistant to root rot, thriving on wetter sites where most others fail.

Originated in Vancouver, British Columbia, Canada. C15M, F16, J61M, K17, ZJS

Citadel: An older cultivar becoming popular once again. Very large, dark-red fruits; very firm flesh, good flavor; resembles Willamette. Ripens in late midseason. Extremely vigorous plant; highly resistant to leaf spot disease. Recommended for U-Pick operations because the fruits are easy to harvest. Originated in College Park, Maryland. B43M, D37, F16, F87

Cuthbert: (*R. strigosus*) Medium to large, conical fruit; skin dull dark red, with a heavy bloom; flesh juicy, moderately firm, aromatic, sweet and rich, of very good quality; ripens late, season long. Bush tall, vigorous, upright-spreading; not very productive; widely adapted to soils and climate; very susceptible to leaf curl and mosaic. Originated in New York City by Thomas Cuthbert, about 1865. Once the most widely grown red raspberry in North America. HEDRICK 1925; U7D

Dormanred:<sup>1</sup> (*R. parvifolius* x) Large, round fruit; skin light red, glossy; flesh very firm, flavor slightly reminiscent of mulberries; ripens very late. Has the habit of blackberries, and must be trellised; produces vines that grow 15 to 20 feet per season. Low chilling requirement; does well in Florida and other southern states; also survives the winter in St. Paul, Minnesota with snow cover. B19, B43M, B45M, C30M, F93, G8, 153M, K75T, L33, M83, N33

Hilton: Large to very large, long-conic fruit; skin medium red, darkens quickly, very attractive; flesh moderately firm, thick, quality fair to good; cavity small; clings to plant until fully ripe; ripens in midseason. Bush compact, vigorous; very productive; hardy. BROOKS 1972; C45M, C61, D76, H88, J63M, J89M

Killarney: Fruit somewhat larger than Latham; skin bright medium red, very attractive; flesh firm, sweet, flavor sprightly pleasant, excellent for dessert; good frozen or canned; ripens about a week after Boyne, and has a more prolonged harvesting season. Bush very hardy and productive. BROOKS 1972; B47, D69, F87, H65, H88, I49G, 150, J2M, L27M

Latham: Fruit large, frequently 1 inch in diameter, roundish; skin bright red, attractive; flesh firm, but often crumbly, moderately juicy, sprightly; season medium to late, ripening over a long period; quality superior for canning and freezing. Bush vigorous and productive; very handy. Standard cultivar in the East. Introduced in 1920. BROOKS 1972; B43M, B58, B73M, C61, G16, G23, G71, H42, 149G, 150, 178, J63M, J83, M65M

Madawaska: Medium-large fruit; skin medium dark-red; flesh moderately firm, with some tendency to crumble, quality fair; ripens early. Tends to be acid and dark when canned or frozen. Bush hardy; very winter-hardy; productive; canes moderately spiny. Originated in Ottawa, Ontario, Canada. BROOKS 1972; B73M, D11M, E3, F70, G50, H88, 178

Mammoth Red:<sup>2</sup> (Mammoth Red Thornless) Very large fruit, up to 1 inch long, conical; flesh soft, juicy, aromatic, sweet, highly flavorful. Very good fresh or in jams. Ripens in *My*. Bush very vigorous, up to 8 feet tall; winter-hardy; highly productive; canes thornless. B19, B75, C61, D76, E97, K89

Meeker: Very large fruit; skin bright red; flesh firm, flavor good; very good for freezing and jam. Bush very tall; vigorous; very productive; somewhat resistant to botrytis fruit rot; requires well-drained soil and mild winters. Excellent for home garden and local market use; also ships well. BROOKS 1972; C15M, C34, 149M, K17, L18, M81M, P68M

Newburgh: Large, attractive fruit; skin bright red; flesh fairly firm; dessert quality fair to good; keeping and shipping quality very good; does not process well; ripens 3 to 4 days before Latham. Bush productive; very resistant to root rot; widely adapted, being grown in the Northeastern states and the Pacific Northwest. BROOKS 1972; B19, C54, C61, H88

Nova: Medium to large-sized fruit; skin dark red; flesh firm, of very good flavor, will freeze well; ripens in midseason. Bush vigorous; winter-hardy; productive; exceptional in that it has shown complete immunity to late yellow rust. Bears a small fall crop. Originated in Kentville, Nova Scotia. B26, B43M, B75, C58, F1, F16, F87,149G

Reveille: Very large fruit; skin bright red; flesh of excellent quality; ripens early, with Sunrise. Bush upright, vigorous; productive; suckers freely; very winter-hardy; highly resistant to fluctuating winter temperature injury. Recommended for home gardens, roadside sales and pick-your-own operations. BROOKS 1972; B58, C85M, 150

San Diego: Dual-season raspberry, bearing spring and fall crops on 1 year-old canes and primocanes. Medium-sized fruit of very high quality. Vine needs traditional trellising and pruning. Requires less than 100 hours of chilling. Does very well along the coast or inland in California. U7D

Skeena: Fruit medium to large, conical; skin bright red; flesh firm, of good quality; ripens in late June in most areas. Bush high-yielding; one of the hardiest cultivars; requires excellent drainage; resistant to mosaic virus. Sturdy, upright canes are moderately spiny. Originated in Vancouver, British Columbia, Canada. H88, K17

Sunrise: Fruit large; skin bright red; flesh firm, flavor and quality excellent, does not crumble; matures very early, nearly 2 weeks before Latham and over a long period of time. Bush very hardy; resistant to leaf spot and anthracnose. Originated in Glen Dale, Maryland by George M. Darrew. Introduced in 1939. BROOKS 1972; A82

Taylor: Very large, long-conic fruit; skin bright red, attractive; flesh firm, flavor and quality very high, does not crumble; excellent for freezing; ripens midseason to late, with Latham. Bush vigorous and productive; more subject to mosaic than Newbuigh. Well adapted to all northeastern states. Introduced in 1925. BROOKS 1972; C76M, D69, H65, H88,150, K71, N24M

Titan: Large to very large, long-conic fruit; skin bright red; flesh moderately firm, dessert quality average to good; ripens early and over a prolonged season. Bush highly productive; winter-hardy to -15° F.; resistant to mosaic virus. Canes stout, nearly spineless, require trellising. Suckering is light to medium, resulting in a well-spaced row. B58, D76,150, L33

Tulameen: Very large, long-conic, glossy medium red fruits; firm, aromatic flesh with good flavor. Begins ripening with Meeker, but has a longer season, into July and August. Suitable for fresh market and processing. Vigorous, very productive plant; moderately winter hardy in the Pacific Northwest. Originated in Vancouver, British Columbia. C15M, F16, F87,150, J2M, J61M, K17, L18, M81M, M99G

Willamette: Very large, nearly round fruit; skin dark red; flesh very firm, slightly acid, but lacks an intense raspberry flavor; flavor good for canning, fair for freezing; excellent for shipping; ripens in midseason, with Canty. Bush vigorous; very productive. Grown extensively in Oregon and Washington. BROOKS 1972; A88M, C54, C61G{PD}, F53M, J61M, K17, L1, L18, M81M, P68M

#### YELLOW RASPBERRIES

##### EVERBEARING

Fallgold: Similar to Fallred, except for the color. Large, round fruit; skin golden yellow; flesh juicy, moderately firm, extremely sweet; ripens in late summer, with harvesting continuing into autumn. Bush moderately vigorous; high yielding; very winter-hardy. Good specialty market item. Developed by Professor E.M. Meader. A91, B43M, C61, D65, G8, G23, G43, H42, H58, H65, K89, L33, L79

Golden Harvest: Medium-large bright yellow fruits. Good flavor and quality. Vigorous, consistently productive plants. Resistant to virus diseases. Sturdy canes that sucker prolifically. Attractive in fall and winter, the canes having an appealing maroon color. Introduced by Makielski Berry Nursery. D37, F16

Golden Summit: Recently discovered golden mutation of the high quality Summit cultivar. Has the potential to become a new standard in golden raspberries. Attractive golden-colored fruit with qualities similar to Summit. Production and overall performance comparable to Summit. J61M

Goldie: (Graton Gold) Primocane fruiting sport of Heritage with superb quality. Medium-sized fruits. Unique golden color, deeper yellow than other yellow-fruited raspberries. Comparable to Heritage in firmness and flavor. Yields a heavier fall crop. Originated in Sonoma County, California. Introduced by Nourse Farms. B75, D11M, D69, F70, G16,150, J20

Kiwigold: Yellow-fruited sport of Heritage. Medium-sized, conic, firm yellow fruits; sweet and flavorful, quality excellent; ripens with Heritage. Vigorous, erect, sturdy primocanes; spicier than Heritage. Recommended for fresh markets and home gardens. Originated in Murrinsville, New Zealand. Introduced by Nourse Farms. BROOKS 1997; I49M, 150

##### SUMMER-BEARING

Amber: Large, long-conic fruit; skin amber; flesh tender, sweet, flavor good, quality very good; ripens in midseason. Bush very vigorous; hardy; productive once established. Originated in Geneva, New York by George L. Slate. Introduced in 1950; intended for home use, not considered of commercial value. BROOKS 1972, HENDRICKSON; B73M, H88

Golden Queen: Medium-sized fruit; skin light yellow, sometimes tinged with pink; flesh soft, sweet, delicately flavored, of very high quality. Excellent for home gardens and local markets. Bush hardy; very susceptible to mosaic; foliage tender, easily injured by strong winds. Originated in Berlin, New Jersey in 1882. Said to be a sport of Cuthbert. HEDRICK 1925; B19, C61

Honey Queen: Medium-sized fruit; skin amber; flesh very juicy, flavor mild, sweet, distinct, aromatic; seeds few; makes excellent jam. Bush vigorous; high yielding; very winter-hardy; produces well on natural rainfall amounts. Adapted to Canadian prairie states. Originated in Alberta, Canada by Robert Erskine. B47, B58, F67, F87, G54, H85, J89M, L27M, M35M

##### CODES FOR SPECIAL TYPES

1. Low-Chill
2. Thornless

## RHUBARB {PL}

##### RHEUM RHABARBARUM

Canada Red: (Canadian Red) Long, thick stalks; exterior dark-red from top to bottom; interior strawberry-red; does not lose its color in cooking. Juicy and sweet; needs less sugar. Very tender, never becomes tough or stringy; skin tender, needs no peeling. Highly productive; stalks can be pulled all summer. Developed in Winnipeg, Canada. A16, A91, B4, C61, D65, G16, G43, G71, H44, J63M, K64, L27M

Cherry Red: Large, well-colored stalks; rich cherry-red on outside of stalk, greenish inside; very tart, juicy and tender; has a good blend of tartness and sweetness; holds its quality well. Easy to process. Heavy yielding. Suited for mild-winter areas. A65, DI 1M, E13G{PR}, E97, F70,191, K64

Chipman's Canada Red: Large, thick stalks; rich cherry-red all the way through to the core; flesh tender, sweet and juicy; does not lose its color in cooking; good texture. Hardy, vigorous grower. Very heavy yielding. Seldom seeds so it must be propagated by root division. A74, D76, E97, G89M, H88, J83

Crimson Cherry: Bright crimson stalks, up to 2 feet long; red through to the core; keeps its color when cooked. Requires no peeling. Full, rich flavor with a good blend of sweetness and tartness. Reliable producer of heavy crops. H42, M81M

Crimson Red: Tall, thick, bright red stalks; red inside and out; free of fiber; very good flavor, sweet yet agreeably tart. Makes a rich red pie. Well-adapted to all areas. Disease resistant and cold hardy. A consistent producer of large stalks. Widely grown commercially. D76, E97, F35M, J99G

Early Red: Very sweet variety with lots of flavor. Easily grown from seed. Usually sown from April to June. Also suitable for gently forcing in a greenhouse or tunnel for an early crop. Should only be harvested sparingly the first year after transplanting. Introduced by Unwins of England. G53M{S}

German Wine: Large, deep-red stalks; thick yet tender; rich in natural sugars; full of the sweetness of a late-harvested wine grape. Winter hardy; vigorous and productive; will produce crops each spring for years. C85M, E33, F1

Glaskin's Perpetual:<sup>1</sup> {S} Greenish stalks of excellent flavor, never become bitter as they mature. Has the lowest oxalic acid content of any rhubarb. Can be pulled the first year from an early spring sowing. The only rhubarb that can be harvested late in the season as the oxalic acid content remains low. B49, L89, L91M, N84, O53M, R32, S55

Holstein Blood Red: (Holstein Red) Vigorous in growth, with erect, thick red to green stalks of excellent quality. Easy to grow. Sow when soil is warm (May-June); ready for harvesting the following summer. N81, P68M

Honeyred: An excellent rhubarb which produces rich, red stalks that are free of the usual stringiness of other cultivars. It requires less sugar than other sorts when used for fruit or desserts. Vigorous, extremely productive plants. Developed by Honeywood Lilies & Nursery. F67, H42, L79

MacDonald: (MacDonald's Canadian Red) Large, tender stalks; deep red inside and out; no peeling needed; lends a deep pink hue to sauces and pies. Extremely vigorous and upright-growing; resistant to wilt and root rot. Excellent production for commercial growers and home gardeners. Developed at MacDonald College, Quebec, Canada. A65, B47, B75, C58, D69, F13, G43, G54, L50, J20, K64, L27M, M99G

Ruby Red: Long, thick, deep red stalks; tender and juicy with a good sweet-tart flavor. Tall plant, very vigorous and erect growing. Popular in Texas where it is usually grown as an annual. Normally planted in February and March. Harvested throughout the month of June. M83

Starkrimson: Tall, moderately thick, bright crimson stalks; red through to the core. Very tender and sweet, contains less acid than most varieties. Ready for harvesting in May. Makes delicious rich red pies. Starkrimson is a registered trademark of Stark Brothers Nurseries & Orchards. L33

Strawberry: (Strawberry Red) Stalks of good size on mature plants; both the interior and exterior rose-red in color. Flavor mild and pleasing. Never becomes tough or stringy. Do not remove the tender skin; it cooks up well with the stalk. M81M

Tilden: (Tilden's Canada Red) A strain of Canada Red that has been selected for many years by the Tilden family for its fine red color. Not as upright in growth habit or as tall as the MacDonald strain, but the stalks are thick and attractive. B26, L50

Timperley Early: The earliest cultivar and the most rapid forcer. Can be forced to be ready for Christmas and pulled outdoors even in February in mild climates. Rather thin, bright-red stalks; green-fleshed. First raised prior to 1945 by H. Marshland. PHILLIPS; O81

Valentine: Attractive, thick, red stalks; 18 to 24 inches long, 1 to 1 1/2 inches in diameter; flesh deep-red, fine-grained, tender, juicy, very sweet; flavor pleasing; holds up well and does not lose its color during cooking; relatively little sugar required. Heavy yielding and precocious. Excellent for home gardeners. Thrives in areas where winters are cold enough to freeze the ground 3 to 4 inches deep. B6, B47, B75, E97, F16, G16, G43, H49, H65, L78, K89, L27M

Victoria: (Giant Victoria, Myatt's Victoria) Leaf-stalks very large, up to 3 inches at their broadest diameter, 2 1/2 to 3 feet long, up to 2 pounds per stalk; greenish, stained with red; skin rather thick; meat green, tender, not quite as sweet as other cultivars. Extremely heavy producer; excellent for commercial purposes. Reliably hardy. Introduced prior to 1852. BURR, VILMORIN; C85M{S}, D11M{S}, E38{S}, F70{S}, G57M, G71{S}, J63M, M65M, R47{S}

#### CODES FOR SPECIAL TYPES

##### 1. Low Oxalic Acid

## RICE {DF}

### ORYZA SATIVA

#### GLUTINOUS RICE

Also known as *sweet rice*, *sticky rice* or *waxy rice*. Very high in amylopectin, a waxy starch which causes the grains to form a sticky mass when cooked. Does not contain gluten. Soaked in cold water and then steamed, rather than boiled like other rice. Frequently made into desserts which are wrapped in banana leaves. Both long and short grain as well as white and brown (whole grain) types are available. A7, C34G, E56, E60P, F88, G47B, I8M, L16M

Calmochi-101: Short grain, waxy endosperm rice, often used for making sticky *mochi* rice cakes. Larger seed size and superior cooking qualities. Very early maturing. Semi-dwarf plants with excellent seedling vigor; photoperiod insensitive. Developed by the California Cooperative Rice Research Foundation, Biggs, California. Introduced in 1985. U8M{S}

Indonesian Black: (Black) Sweet, sticky rice with a somewhat fruity aroma reminiscent of blackberry jam. Long, black or brownish-black grains; distinctive, nutty flavor similar to wild rice. Excellent for making uniquely-colored mochi, pudding and other desserts. Often combined with coconut milk and palm sugar. Popular in Southeast Asia. GRIGSON, S. [Re], PASSMORE, YOONG [Re]; A7, E56, E60P

Thai Purple: (Purple) Long, purplish-black grain reminiscent of wild rice; rich, earthy, distinctive flavor. Turns an attractive, reddish-purple color when cooked, staining other ingredients. Ideal for classic Thai desserts or as a savory side dish. Often combined with coconut milk and pandanus leaf. Usually available in Oriental stores. A7, A90M, D93M, F86T, H73, L16M

#### NON-GLUTINOUS RICE

Includes the familiar long-grain, pilaf rices which cook up fluffy and separate, as well as short and medium grain types such as Japanese sushi rices, Italian risotto rices, and Spanish paella rices. More translucent and easier to digest than glutinous rice. Indica and Javanica rices, originating in India and Southeast Asia, are generally long-grained. Japonica rices, introduced into Japan from China, are mostly short-grained. ZEVEN.

Akitakomachi: Japanese short-grain sushi rice of premium quality. Short, roundish grain. Cooks up very glossy and sticky with a

smooth texture. Remains soft even after cooling. Also highly regarded for its aroma and flavor. Lodges badly and is much less productive than similar California varieties. However, California acreage continues to increase due to higher market prices. Developed by Akita Prefectural Agricultural Experiment Station. F86T

Ambar: (Ambar-Boo) Rare, very expensive Middle Eastern rice. Refined, slender, extra long grains, pointed at both ends; unbroken and pleasantly firm to the touch; attractive pale-golden translucence; very strong, appealing fragrance. Cooks up white, fluffy and quite separate, the grains becoming even longer. Highly esteemed in Iran and Iraq. MOJTAHEDI, SHAIDA; U8M{S}

Arborio: Classic Italian risotto rice of the *superfino* grade. Medium-sized, plump grains; high in amylopectin. Absorbs liquid well without breaking or becoming musty. Cooks up creamy and rich, the inner opaque core remaining slightly chewy or al dente. Traditionally not rinsed before cooking. Grows 3 1/2 feet tall. Raised commercially in the Po River aiea. Available in white or brown (whole grain) forms. A7, A90M, B71G, C34G, C94M, D93M, E56, E60P, H7G, H15T, H86, 194, L16M, L99, M56M, N54, etc.

Balam: Famous rice from the Barisal district of what is now Bangladesh. Very popular in Bengal where it is one of the most flavorful and longest-grained varieties of *siddha* or parboiled rice. Keeps better and is more nutritious than *atap* rice. Becoming somewhat rare. BANERJI; U8M{S}

Baldo: New, short-grain, *superfino* rice from Turkey. Has a quicker cooking time than other *superfino* varieties, which usually need 18 to 20 minutes. Favored by restaurant chefs due to its versatility. Suitable for risottos, soups, salads, stuffings, and even desserts such as rice pudding. A7,194, M56M

Basmati: Famous long-grain, aromatic rice of Pakistan and northern India. Prized for its very long grains, delicate bouquet, and buttery, nut-like flavor. Slender grains which elongate and often curl when cooked. Traditionally washed and soaked before use. Usually aged from 6 months to 2 years to enhance flavor, fragrance and cooking qualities. The aroma is said to resemble that of *Madhuca longifolia* flowers. DEVI, GRIST; A7, C34G, C94M, D26M{PD}, D93M, E47M, E60P, F74, H15T, H91,176T, L16M, L24G, L50M, L99, etc.

Bhutanese Red: Short-grain, semi-glutinous rice grown at 8,000 feet in the Paio Valley of the Himalayan kingdom of Bhutan. Irrigated with 1,000-year-old glacier water. Attractive, salmon-pink color; mild, earthy, nutty flavor; very soft texture. Lightly milled, cooks in only 20 minutes. Suitable for pilafs, soups, salads, risottos and puddings. Very popular with gourmet chefs. A7, E56, H3T

Black Japonica: Grows together in fields as a blend of short grain black rice and medium grain mahogany rice, forming a unique black and brown mixture. Nutty, mushroom-like flavor with a subtle, sweet spiciness; chewy texture. Well suited to stir fries, stuffings, side dishes and casseroles. Developed by Lundberg Family Farms from seeds originating in Japan. A7, A90M, C73P, E60P, F86T, H7G, J11M, L16M

Bomba: Rare, traditional, Spanish paella rice. Had fallen into disuse as it is difficult to grow and the yield is decidedly low. Being grown commercially again due to demand from restaurants in Spain because it makes a perfect paella. Small, round, flavorful grains which are extremely absorbent but remain firm and separate. Widely grown in Calasparra. DOMINE, FERGUSON [Re]; L13P

Cal Riso: The first large grain, Mediterranean-type Japonica rice originating in California. Resembles Italian and Spanish risotto and paella rices, but the kernel is whiter and has a higher starch content. Delicate, soft flavor; very creamy texture. Excellent for rice puddings and *torta di riso*. Selected from a complex breeding line developed at the Rice Experiment Station in Biggs, California. C60D, H3T, M63M

Calasparra: Famous Spanish paella rice of superb quality. Medium-sized, plump grains; excellent, robust flavor; firm texture. Cooks up slightly sticky yet dry. Makes a perfect paella. Grown near the town of Calasparra, on the upper reaches of the River Segura northwest of Murcia. The only controlled denomination of origin rice in Europe. DOMINE, FERGUSON [Re]; N54

California Basmati: (A-301) Long-grain, aromatic rice with the fragrance of Indian Basmati, but no elongation. Does not cook up as flaky as typical southern U.S.A. long-grain rices. Excellent in pilafs, salads, stir-fries and stuffings. Available in both white or brown (whole grain) forms. Developed by the California Cooperative Rice Research foundation. Introduced in 1987. H7G

California Jasmine: (A-201) Long-grain, aromatic rice with a nutty or popcorn-like fragrance when cooked. Cooks up softer, drier and less fluffy than typical non-aromatic long-grain rices. Does not elongate into a very long, slender grain when cooked, as Basmati does. Developed by the California Cooperative Rice Research Foundation. H7G

Calrose: Market class of conventional California medium-grain rices. Cooks up soft and sticky, but does not have the glossiness and smooth texture of Kokuho Rose, M-401, Akitakomachi, and Koshihikari. The original Calrose, developed in 1948, is no longer grown. Currently the cultivars M-201, M-202, and M-204 yield most of the Calrose rice, and account for 85% of rice acreage in California. C27G

Camargue Red: Premium whole-grain rice often grown by organic methods. Plump, oval, medium-sized grains; attractive, reddish-brown color. Cooks up slightly sticky, firm and chewy. Subtle, earthy flavor. Excellent with game, duck or goose. Spontaneous mutation originating in the Camargue region of southern France. FERGUSON [Cui, Re]; L24G

Carnaroli: Highest quality Italian rice. Has the best balance between absorption and starch loss during cooking of any rice. Also notable for having the largest kernel of the Italian grown Japonica or medium-grain rices. Makes the creamiest risotto. Classified as a *superfino* rice, a kernel size descriptor. Increases in volume and length during cooking. Fairly recent hybrid of Vialone and Lencino, two older cultivars. B71G, C60D, 194, L99, M56M, N54

Carolina Gold: Fabled long-grain rice of the South Carolina Low Country. Produces a snowy white, dry, velvety rice, with every grain separate. Excellent for pilaf and related dishes. Very attractive, delicate seed, ripening in the field to a spectacular sea of molten gold. Highly esteemed and famous throughout the world in the 19th Century. Reportedly the chosen rice of the emperors of China. Recently reintroduced to the trade by Richard and Patricia Schultz. HESS, SMITH, C; F68P

Chinese Black: (Forbidden) Distinctive, medium-grain black rice from China. Non-glutinous, unlike most other black rice from Asia. Plump, glossy black grains; delicious, slightly fruity flavor; soft texture; cooks up separate. Turns an attractive, deep, rich-purple color when cooked. An ancient grain that was offered as a tribute to the Chinese Emperors during the Tang Dynasty. E56, F86T, H3T

Colusari Red: Short-grain, Asian Japonica type rice. Plump, very attractive, translucent grains. Deep, rich, burgundy color, both before and after cooking. Delicious, nutty flavor; chewy texture reminiscent of wild rice. Pleasant, faint aroma while cooking. Excellent blended with long-grain rice and other grains. E56, F86T

Della: (Popcorn, Wild Pecan) Short-season, long-grain, Basmati-type hybrid developed for the specialty trade. Distinctive, subtle, nutty flavor and aroma reminiscent of roasted popcorn or wild pecans. Cooks up dry and flaky into separate grains with a smooth, even texture. Originated at the Rice Experiment Station in Crowley, Louisiana. Introduced in 1971. A7, B23P, C34G, E38M, G39M, H15T, I8M, I34J, I63T, J58

Dom Siah: (Black-Tailed) Excellent Basmati type rice. One of the most desirable of the traditional Iranian rices. Very long-grained, aromatic, hard, and with a creamy transparency. Most commonly used for festivals and entertainment. Not very productive. Occasionally available at Persian or Indian stores. SHAIDA [Re]; U8M{S}

Gerdeh: 140-150 days. Plump, short-grained, nearly round rice; easily milled; soft, very starchy. Mostly used for puddings, soups, stews, stuffings and *kofteh* (meatballs). Somewhat of a shy bearer. One of the three main types of rice traditionally grown in Iran. MOJTAHEDI, SHAIDA; U8M{S}

Gobindabhog: (Kala Jeera) Tiny, fragrant, Basmati-like rice from India and Bangladesh. Prized for its delicate aroma, flavor and texture. Cooks in only 10 minutes. Traditionally reserved for *pullao* and *payesh*, a rice pudding. Classified as an *atap* rice, i.e. one which has not been parboiled. Sometimes known as "baby Basmati". The Indian name translates as "rice for God". BANERJI [Re], KIRCHNER; A7, E56, H3T

Golden Rose: 120 days. Multipurpose, medium-sized grain; shorter and more cohesive than long grain types. Excellent in baked goods or whole grain casseroles and desserts. Highly esteemed in macrobiotic cuisine. Bred for whole grain brown rice flour. Developed by Lundberg Family Farms. G44M, H7G, H91, I19M, L3J{S}, L24G

Himalayan Red: Traditional red rice grown in the foothills of the Himalayan Mountains. Has been grown there for thousands of years. Medium to long, unmilled grains; firm, chewy texture. Retains its attractive, reddish hues when cooked. Still prized locally for its unique flavor and nutritional properties. Seldom available commercially due to low yields. BALLENTINE; D93M, F86T, H73

Jasmati: American jasmine-type rice developed by RiceTec. Has the same sweet aroma and subtle, nutty flavor. Cooks up snowy white, separate, very soft and tender. Suitable for a wide range of Oriental dishes. Short-straw, early-season rice adapted to the climate of the southern United States. A90M, G47F, H15T, J80M, L99

Jasmine: High-quality, long-grain, aromatic rice from Thailand. Slender, pointed grains with a unique, delicate fragrance. Said to be as fragrant as jasmine, hence the name. Cooks up fluffy and separate, although somewhat stickier than Basmati. For best flavor and texture, steaming is recommended. Sometimes sold as "Thai Fragrant Rice", especially in England. LOHA-UNCHIT [Pre, Re]; A7, A7M, A90M, C34G, C60D, D93M, E56, H3T, H15T, H73, I8M, I76T, L16M, M63M

Kasmati: New Basmati-type rice developed by RiceTec. When aged, the quality is very similar to Basmati. Long, slender grains with an exotic aroma and delicious flavor. Does not require rinsing. Cooks up fluffy and separate. Unlike Texmati, the grains elongate significantly after cooking. Excellent in curries and pilafs. Early-season, short-straw rice adapted to the U.S. climate. G47F, J80M

Kokuho Rose: Japanese medium-grain sushi rice of premium quality. Preferred by some connoisseurs over all others of this type, including varieties from Japan. Short, plump, oval grains. Cooks up firm yet tender, and moist enough to be picked up with chopsticks. Most desirable as "new rice" or *shinmai*, available in October and November. Developed in 1948 by the Koda brothers of South Dos Palos, California. COST 1988, TSUJI [Cui, Re]; G20M, L16M

Koshihikari: Japanese short-grain sushi rice of exceptional quality. Most often rated as the highest quality rice by the Japanese. Grain and cooking characteristics similar to Akitakomachi. Lodges badly and is much less productive than standard California varieties but commands premium prices. Somewhat later maturing than Akitakomachi. Introduced into California by the Rice Experiment Station. N49M

M-101: 120 days. Plants average 3 feet tall and produce good yields (5 lbs./100 sq. ft.). Easy to grow as upland rice; requires less water than com; has shown no insect or disease problems. California-type,

medium grain rice of the same quality as commercial brown rice. Grows from Albany, Nov York south to Florida. Requires dehussing prior to cooking. Dehussing equipment for small-scale growers is being investigated. L7M{S}

M-401: (Nishiki, Tamaki) Medium-grain sushi rice of premium quality. Grain and cooking characteristics similar to Kokuho Rose. Preferred by Japanese and Koreans as a table rice, and often used for sushi. Semi-dwarf rice with excellent yield potential, superior agronomically to Kokuho Rose. Matures late. Developed by the California Cooperative Rice Research Foundation, Biggs, California. G20M, I76T

Richvale Red: Short grain, red rice. Has some of the cohesiveness typical of short grain rice, but is characterized by its distinctive, musky flavor, almost mushroom-like. Well-suited for gourmet dishes such as casseroles, soups, side dishes and entrees, especially where a stickier texture is desired. Developed from Asian rices by Lundberg Family Farms. Used in their blend called Christmas rice. A90M, H7G, J11M

Rose Matta: Unique, medium-grained, rose-tinted rice. Peculiar, slightly smoky aroma and flavor; distinctive, mealy texture. The everyday rice of villagers in Kerala, Madras and other parts of south India. Becoming popular in the West with those seeking lightly milled, more nutritious rices. Occasionally available at ethnic and specialty stores. A7

Royal: Exotic, long grain, aromatic rice developed from Indian seed by Lundberg Family Farms. Resembles Basmati rice in fragrance and taste. Produces a fluffy rice, with each grain remaining separate after cooking. Excellent for making rice salads. Also good in soups and entrees. A90M, E60P, H7G, J11M

Texmati: Aromatic, Basmati-like rice grown in Texas. Long, slender grains; mild, nutty flavor and aroma. Cooks up light and fluffy. Does not elongate as much as Basmati when cooked. Washing or soaking before cooking is not required. Excellent in pilafs. Available in both white and brown (whole grain) forms. Originally marketed as "Ibpcorn Rice". A90M, G47F, H15T, J11M, J80M, L99

Vialone Nano: Medium-grain risotto rice from the Vento and Manatoba region of Italy. Roundish grain, shorter and plumper than Arborio; holds twice its weight in liquid, creating a very hearty, soupy risotto. Cooks in 16 minutes. Excellent paired with fish and other seafood. Classified as a *fino* rice. B71G, 194, L99, M56M

Wehani: Long grain, aromatic, mahogany-colored rice. Distinctive, hearty flavor and nutty aroma; chewy texture. Cooks up fluffy and separate, with split kernels reminiscent of wild rice. Suitable for stuffings, salads, side dishes, entrees, pilafs and some desserts. Developed by Harlan Lundberg of Lundberg Family Farms from Indian Basmati-type seed. COLE, C. 1991 [Re], SASS; A90M, E56, E60P, H7G, H91, J11M, L16M

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## ROOTSTOCKS {GR}

### VARIOUS GENERA

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#### ALMOND ROOTSTOCKS

Titan: Seedlings will produce sweet, intermediate flavored and bitter kernels. Mainly used as a parent to produce almond x peach hybrids. Selections from these hybrids are then used as rootstocks for superior almond cultivars. Trees grafted to these rootstocks are very vigorous, have a deep, well-anchored root system, and are well adapted to poorer soils and where calcareous conditions exist. JAYNES; A91,J61M

## APPLE ROOTSTOCKS

Alnarp 2: According to Polish information, the most hardy stock available. Produces trees that are standard sized. Vigorous and well anchored; susceptible to woolly aphid. Induces early bearing and productivity in the scion cultivar. Promising understock for use with interstem combinations. Originated in Alnarp, Sweden. Introduced in 1944. BROOKS 1972; F91T{SC}, I49G{SC}

Antanovka: Produces vigorous, standard size trees. Very resistant to winter injury. Often planted out and grown for several years before topworking; this insures maximum cold hardiness of the tree's framework. Trees on Antanovka are free from suckering. Widely used where winter hardiness is required. Also bears a large, yellow, white-fleshed apple that is highly prized in Russia for pies, strudels, salads, sauerkraut and pickles. Originated in Siberia. VON BREMZEN; A91, F88G, G66{PL}, G66{S}, H45M{PL}, I49G, J89M, K38{S}, K63G{S}, L27M, N71M{S}, N84{S}, P49{S}, R7S{S}

Borowinka: Most compatible and vigorous growing of the cold hardy rootstocks. Cold hardiness about equal to Antanovka. Does noticeably better in heavy moisture conditions. Recommended for Zone 3. G66{PL}, G66{S}, K63G{S}

Budagovski 9: Produces trees that are M.9 to EMLA 26 size and require support or staking. Induces early fruiting and is compatible with most cultivars. Resistant to collar rot, moderately resistant to powdery mildew and apple scab; very resistant to winter frost. Trees on Budagovski 9 have an open growth habit and bear in 2 to 3 years. Recommended as an interstem for colder apple growing regions. A91, I49G, /75, /75{IN}, J93, J93{IN}

Budagovski 118: Produces trees that are 75 % the size of those on seedling rootstocks. Resistant to collar rot and apple scab. Extremely winter hardy; has reportedly survived temperatures of -16° C. with no root damage. Can be employed as an interstem base on rich soils or as an understock for spur-type cultivars on poor soils. A91, I49G, /75, J61M

Budagovski 490: Scion cultivars on Budagovski 490 are comparable in vigor to those on EMLA 106. Induces early, very heavy production. Moderately resistant to collar rot. Very winter hardy. Trees on Budagovski 490 are well anchored and do not require staking. Developed by Dr. Budagovski in Michurinsk, Russia. 175

EMLA 7: Produces sturdy trees that are approximately twice the size of those on M.9 or 55 % the size of trees on seedling rootstocks. Trees on EMLA 7 have good anchorage and exceptional winter hardiness; are less precocious and have a lower crop efficiency than EMLA 9 or EMLA 26. Moderately resistant to collar rot. /474{PL}, A91, C76M, G66, H45M, H49, /75, J61M, J93, N19

EMLA 9: Has a dwarfing influence on all scions worked on it. Induces cropping early in the life of the tree. Considerably more vigorous and productive than M.9. Trees on EMLA 9 show a wide degree of tolerance to soil conditions; require staking throughout their life; resist collar rot. Fruit is larger and ripens earlier in the season, especially during the early years of the tree's life. G66, I75, I75 {IN}

EMLA 26: Scions on EMLA 26 produce a tree 40% the size of that on seedling rootstocks. Trees on EMLA 26 require permanent staking on exposed sites; should be planted with the union a few inches above ground level; produce few but very vigorous suckers; are susceptible to collar rot and fire blight. Not as hardy as EMLA 7. Useful for high density plantings. A91, C76M, G66, /75, J61M, J93

EMLA 27: Scion cultivars grown on EMLA 27 grow into small, compact, precocious trees, approximately half the size of trees on EMLA 9. Trees on EMLA 27 rarely sucker; yield heavy crops the second year after planting; show some resistance to apple mildew. Fruit is of good quality. Valuable for small gardens or pot culture. A91, H45M, /75, /75{IN}, J61M, J93

EMLA 106: (East Mailing 106) Produces trees that are 65% the size of those on seedling rootstocks. The most widely used rootstock in high latitude countries due to its heavy cropping potential, moderate vigor, freedom from suckering and resistance to woolly aphids. It is more sensitive to soil moisture than most rootstocks. Susceptible to mildew; not resistant to collar rot. G66, H45M, I75, N19

EMLA 111: Produces trees that are similar to, but more vigorous than, EMLA 106; approximately 75% of that on seedling rootstocks. Has a well anchored root system and is resistant to woolly aphids and collar rot. Susceptible to mildew. Recommended for dry sandy soils in low rainfall areas. An excellent rootstock for spur-type cultivars. A91, G66, H45M, /75, K88T, N19

Geneva 11: (G.11) Produces well anchored trees, precocious and productive; few burr knots and suckers. Dwarfing similar to M. 26. Moderately resistant to fire blight; somewhat susceptible to woolly apple aphids and powdery mildew. Originated in Geneva, New York by J.N. Cummins and H.S. Aldwinckle. Introduced in 1993. BROOKS 1997; C76M

Geneva 30: (G.30) New disease resistant rootstock developed at the Nov York Agricultural Experiment Station in Geneva, New York. Produces well-anchored trees, 50% of those on seedling rootstock. Resistant to fireblight, woolly apple aphid, and collar-rot. Reported to be precocious and productive. Appears to be adapted to a wide variety of soils. Recommended for trial.. C76M, /75, J93, M59M

Geneva 65: (G.65) Very dwarfing, disease resistant rootstock. More dwarfing than EMLA 9 but less dwarfing than M.27. Resistant to crown rot, fire blight, apple scab, and powdery mildew; somewhat susceptible to woolly apple aphids. Highly compatible. Originated in Geneva, New York by J.N. Cummins and H.S. Aldwinckle. Introduced in 1991. BROOKS 1997; C76M

M.7: (Mailing 7) Produces trees 55 to 65% of those on apple seedling. Has been the backbone of the U.S. fruit industry during the first 50-year introductory period of rootstocks in the United States. Still the most commonly used stock, the most disease tolerant, and the most adaptable to a range of soil types and climates. Has a tendency to sucker from the roots. ROM; F91T{SC}, G66, L12

M.7a: An improved clone of M.7 which was originally reselected free of the economically important viruses. Produces trees approximately 50% the size of those on apple seedling. Tends to sucker from the roots. About 20% of trees on M.7a require staking in their early years. Trees on M.7a bear heavily. A74{PL}, G66, I49M

M.9: (Mailing IX, Jaune de Metz) The most commonly used dwarfing rootstock throughout the world, both for single-union trees and also for interstem trees. Produces trees 25 to 35 % the size of those on apple seedling. Promotes earlier growth and fruit maturity, and precocious cropping. Tends to sucker from the roots; is susceptible to fire blight. Trees on M.9 require support. Widely used in high-density plantings. Originated in France in 1879. ROM; C76M, G66, /75, J93, J93{IN}, L12, N19

M.9/MM.106: A two piece interstem stock. Unites the anchorage and soil adaptability of the MM. 106 base stock with the dwarfing characteristics of the M.9 stem piece. Inherits the collar rot resistance of M.9. Trees on M.9/MM.106 are slightly larger than those on M.26, and do not require support. They should be planted with the top graft union intersecting the soil surface, the point where the collar rot organism normally attacks. L12

M.9/MM.111: An interstem combination, wherein the dwarfing stem piece M.9 is grafted onto MM.111, and grown 1 year in the nursery before the desired cultivar is propagated to it. Produces trees about 40% the size of those on apple seedling. Trees on M.9/MM.111 are well anchored and drought tolerant. Fruit quality is enhanced. The oldest interstem combination in use. A91, L12

M.26: (Mailing 26) Produces trees 40 to 50% of those on apple seedling. More vigorous and better anchored than M.9 with most



cultivars. Tolerant of extended wet soil conditions; susceptible to collar rot and fire blight. The most winter hardy of the Mailing rootstocks now used commercially. Trees on M.26 do not require support when planted in a deep, well-drained soil. ROM; A74{VL}, G66, H49, I49G, I49M, J89M, L12

M.27: Has a very dwarfing effect, producing trees only 4 to 6 feet in height. Very precocious and induces heavy fruiting. Trees on M.27 are well suited for growing in a container or a small yard. Requires staking. Not widely used commercially as a single-grafted tree. More commonly used as interstem material for grafting on vigorous clones. F91T{SC}, J93{IN}

Mark: (MAC 9) Produces trees that are approximately the size of EMLA 26. Trees on Mark are early flowering with good fruit set, highly productive, and open in habit resulting in excellent fruit color. One of the first dwarfing rootstocks which is strongly anchored and free standing without support. Resistant to fire blight; tolerant to cold temperatures. Developed by Dr. Robert F. Carlson at Michigan State University. H45M, /75, J61M, K88T

MM.106: (Malling-Merton 106) Produces trees that are 60 to 75% the size of those on apple seedling. Very precocious and more vigorous than M.7. Has shown a tendency for collar rot on poorly aerated soil. Trees on MM.106 are well anchored, do not sucker, and are very productive. Excellent for spur-type cultivars and as an interstem base stock. ROM; C76M, G66, H49, J93, LI

MM.III: A semi-standard stock that produces trees 90% the size of those on apple seedling. Not precocious, but more productive than apple seedling. Adapted to a wide range of soil and climatic types and has survived well compared to others. Widely used as an interstem stock base. Trees on MM. 111 are well anchored and tolerant of drought. C76M, F91T{SC}, G66, J93, L12

Ottawa 3: Produces dwarf to semi-dwarf trees, between M.9 and M.26 in size; not free standing. Consistently hardier than M.26; better anchored than M.9. Free of burr-knot and suckering. Resistant to crown rot; susceptible to woolly aphids and fire blight. Well suited to high density planting. Has a tendency to make its scion cultivar over-crop, resulting in small fruit if not properly managed. Developed at the Agriculture Canada Research Station, Ottawa, Ontario. A91, I49G, H45M, /75{IN}, J93

P.1: (Poland 1) Produces trees that are approximately the size of EMLA 26. Requires a rich well-drained soil and doesn't do well in wet soils; resistant to crown gall and mildew. Susceptibility to fire blight and woolly apple aphids is comparable to that of M.9. Trees on P.1 require staking and are suitable for high density plantings. Winter hardiness is comparable with EMLA 111. F91TISC}, /75, /75{IN}

P.2: (Poland 2) Produces trees that are M.9 to EMLA 26 size. Widely used in Poland as an interstem because of its exceptional winter-hardiness. Cropping efficiency is similar to M.9. Trees on P.2 display good open growth. Resistant to collar rot, susceptible to scab and mildew. Used for high density trellis plantings with vigorous cultivars. Precocious; crops in the third year. A91, F91T{SC}, /75, /75{IN}

P.16: (Poland 16) Produces non-suckering trees that are comparable in size to those on M.9. Induces early fruiting, with cropping occurring in the second year. Requires staking. Resistant to apple scab, powdery mildew, and crown gall; susceptible to fire blight. Suitable for rich, well-drained soils. Recommended for the central and southern states. F91T{SC}, /75

P.18: (Poland 18) Produces free-standing trees that are similar in size to those on EMLA 111. Resistant to collar rot, apple scab, powdery mildew, and crown gall. Adapted to poor, light, sandy soils. Cropping efficiency is slightly lower than EMLA 106. Very winter hardy. Trees on P.18 begin to bear in 3 to 4 years. Developed by Dr. S.W. Zagaya at Skierniewice, Poland. F91T{SC}, I49G, /75

P.22: (Poland 22) Traces on P.22 are smaller than those on M.9 and are comparable to those on EMLA 27. Resistant to collar rot, canker, apple scab, powdery mildew and crown gall. Has exceptional winter hardiness. Recommended as an interstem which will produce trees that are M.9 size. Induces early fruiting. Has a cropping efficiency like that of M.9, is better anchored and not as brittle. A91, I49G, I49M, /75, /75{IN}, J61M

Ranetka Purpurea: Cold hardiness greater than Antanovka but less than Malus baccata. More vigorous than Malus baccata; less problems with incompatibility. Withstands tough situations. Recommended for Zones 2 to 3. A91, G66{PL}, G66{S}, I49G

#### APRICOT ROOTSTOCKS

Haggith: Produces standard size trees that are cold hardy, consistently productive, self-fertile and disease tolerant. Haggith seedlings are quite uniform in the nursery new. Scion cultivars on Haggith stocks tend to have wider crotch angles and a more spreading growth than those on Alfred. Originated in Harrow, Ontario, Canada by R.E.C. Layne. Introduced in 1974. F91TISC}, I61MIS}, K88T, M89{S}

#### AVOCADO ROOTSTOCKS

Borchard: Chlorosis resistant clonal rootstock of the Mexican race. In grower trials, Borchard has shown superior growth under conditions which normally cause lime induced chlorosis. Also has good salt tolerance, but is susceptible to phytophthora root rot. B58M

Duke 7: Root rot resistant clonal rootstock of the Mexican race. Has moderate resistance to avocado root rot; also very good cold and salt tolerance. Preferred by most nurserymen because of superior horticultural qualities. The first commercially successful resistant rootstock. Selected from the Duke cultivar, which was discovered by George Zentmyer of the University of California, Riverside. B58M

TopaTopa: Seedling Mexican rootstock that shows a high rate of survival in clay soils as well as resistance to frost. A prolific seed-bearer. Produces vigorous, relatively uniform seedlings. Extremely susceptible to avocado root rot. A traditional rootstock that was used on many of the initial avocado groves in California. Originally selected in 1907 on the Topa Topa ranch in Ojai, California. B58A/{S}

Toro Canyon: Root rot resistant clonal rootstock. Has shown high resistance to phytophthora root rot in test plots, more so than Duke 7 or G6. Also shows good salt tolerance. Discovered as a surviving tree in an infested orchard in Carpinteria, California. B58M

Walter Hole: Seedling Mexican rootstock that produces a tree of manageable size, good shape, and healthy color throughout the year. More than 250,000 trees on Walter Hole rootstock have been planted in California since 1977. B58M, B58M{S}

#### CHERRY ROOTSTOCKS

EMLA Colt: (Prunus avium x Prunus pseudocerasus) Produces trees that are 70 to 80% the size of those on Mazzard seedling, 60 to 70% of those on F12/1. Compatible with most sweet and sour cherry cultivars. Resistant to bacterial canker, crown gall and cherry replant disease. Trees on EMLA Colt are well-branched with wide angles; yield significantly larger crops of good quality fruit earlier in the life of the tree. H45M, I75, K88T

F12/1: Compatible with all sweet and most sour cherry cultivars. Resistant to canker; susceptible to crown gall. Very prone to root suckering. Trees on F12/1 adapt to a wide range of loam to clay-loam soils, and are more vigorous than those on Mazzard seedling. Often used in Europe to transform bush form morello cherries into more easily manageable tree forms. F91T{SC}

G.M. 61/1: (Damil) (Prunus dawycensis) Scions on G.M. 61/1 are approximately 1/3 to 1/2 the size of scions on F12/1. Very precocious and induces early fruiting. Trees on G.M. 61/1 are less

bushy and more open, and much more productive than those on F12/1. Suitable for plantings of 150 to 230 trees per acre. Fruit has increased size and improved color. *H45M, J61M*

**Mahaleb:** (*Prunus mahaleb*) Produces well anchored, standard size trees. Cannot tolerate poor drainage; very drought resistant. Compatible with most sweet and sour cherry cultivars. Moderately resistant to crown gall; resistant to bacterial canker. Trees on Mahaleb may be slightly smaller, come into bearing sooner, and have a heavier set of fruit than those on Mazzard. Especially popular as a stock for sour cherries. *A74, A91, G66{PL}, G66{S}, K38{S}, K88T{PL}, L12{PL}, N19{PL}*

**Mazzard:** (*Prunus avium*) Produces well anchored, standard size trees. Many roots are shallow, resulting in injury by deep cultivation and drought. Compatible with most sweet and sour cherry cultivars. Moderately resistant to oak-root fungus; less susceptible than Mahaleb to peach tree boier. Recommended for soils that are too heavy for Mahaleb. *A74, A91, G66{PL}, G66{S}, K38{S}, K88T{PL}, L12{PL}, N19{PL}*

### CITRUS ROOTSTOCKS

#### CITRATES

**C-32:** Recommended for trial because of its resistance to the citrus nematode, *Phytophthora* species and tristeza virus. Produces vigorous seedling trees, equal in volume to Troyer, but less dense. More productive than C32. Ruby orange x trifoliolate orange. Released in 1985 by the Citrus Research Center, University of California, Riverside. *C29M{SC}, N18{S}*

**C-35:** Recommended along with C-32 because of its resistance to the citrus nematode, *Phytophthora* species and tristeza virus. Slightly smaller than C32, rather open and subject to some low-branch dieback in older trees. Ruby orange x trifoliolate orange. Released in 1985 by the Citrus Research Center, University of California, Riverside. *A71, B58M, C29M{SC}, N18{S}*

**Carrizo:** Trees on Carrizo are among the most vigorous, growing well on a wide range of soils. They are prone to zinc and manganese deficiency, and are less cold tolerant than those on trifoliolate orange, sour orange or Cleopatra mandarin. Carrizo is tolerant to the burrowing nematode. In Florida they grow and fruit unusually well in their early years. Fruit quality is often comparable with that produced on Cleopatra and sour orange. ROM; *A71, B58M, C29M{SC}, J73M{S}, N18{S}*

**Savage:** Has seeds that are highly polyembryonic, but usually produces seedless fruit. Trees on Savage have yielded well and withstood freezes in several trials on sandy and loam soils, and may be suitable as rootstocks for close plantings. The yellow, 2 1/2 to 3 inch fruits yield large amounts of fragrant, good quality juice. 174

**Troyer:** Along with Carrizo, the only commercially important citrange rootstocks. Trees on Troyer are among the most vigorous, growing well on a wide range of soils. Troyer has poor salt tolerance and sensitivity to exocortis and calcareous soils; not affected by xyloporosis. Susceptible to burrowing nematode. Sweet orange trees on Troyer in California are subject to tristeza decline in coastal areas. ROM; *C29M{SC}, G66{S}, J73M{S}, N18{S}, 093{S}*

#### CITRUMELoS

**CPB. 4475:** Trees on CPB are vigorous, productive and cold hardy. Resistant to nematodes and phytophthora root rot. Good for replants in commercial groves. Swingle is the name reserved for seed source trees propagated by budding from the original Swingle tree, while GP.B. 4475 trees are propagated from seed. ROM; *B58M, C29M{SC}, J73M{S}, N18{S}*

**Sacaton:** Trees on Sacaton are small and have potential for high-density plantings. May be susceptible to tristeza in some environments. Lemons on Sacaton have performed well in Arizona and California experiments. Sacaton seeds are polyembryonic but produce about 40% zygotic seedlings. Has been evaluated in the United

States with inconsistent results. ROM; *K67, N18{S}*

**Swingle:** One of the rootstocks that induces as much cold hardiness as sour orange. Swingle is very tolerant to the citrus nematode and root rot. In Texas, Red Blush grapefruit, Orlando tangelo, and Marrs orange yield and fruit quality surpass that of trees on most other stocks. In California, Swingle is compatible with Lisbon lemon and has performed well in grower trials. *A71, Q93*

#### ROUGH LEMONS

**Milam:** Possibly a rough lemon hybrid. Resistant to the burrowing nematode; susceptible to the citrus nematode. Has evolved essentially as a special-purpose rootstock in Florida, where commercial trees on this stock behave similarly to those on Rough Lemon. However, Milam has performed poorly in calcareous soil in Texas. ROM; *N18{S}*

**Rough Lemon:** An excellent rootstock for warm, humid areas with deep, sandy soils. In such an environment trees on Rough Lemon grow rapidly and are long-lived and highly productive, yielding large fruit with a low total soluble solids content. In arid or coastal environments and clay soils, trees on Rough lemon often decline prematurely. They are notably drought tolerant. Orange, grapefruit and lemon cultivars can be used with Rough Lemon. ROM; *A71, D13, J73M{S}, N84{S}, P5{S}, P17M{S}, Q93*

**Volkamer Lemon:** (*Volkameriana*) Has many of the same characteristics as Rough Lemon, although trees on this stock are more cold hardy and have often yielded more fruit with slightly higher juice quality than those on Rough Lemon. Apparently tolerant to mal secco, gummosis and foot rot; susceptible to root rot. Appears to be as susceptible to blight and woody gall as Rough Lemon. MORTON 1987a, ROM; *A71, B58M, D13, G66{S}, J73M{S}, N18{S}, N84*

#### TRIFOLIATE ORANGES

**Barnes:** Used as a clonal rootstock for sweet oranges. Highly resistant to phytophthora root rots. Seedling of trifoliolate orange. Originated in Gainesville, Florida. Developed by H.J. Webber at Riverside, California. Introduced in 1957. BROOKS 1997; *N18{S}*

**Flying Dragon:** Trees on Flying Dragon have been consistently small during field trials in California and Florida. Otherwise their performance is essentially the same as for other Trifoliolate Orange selections. Grown primarily as a potted plant in Japan where it is called *hiryo*. It has slender, crooked branches armed with large, downward-curved spines. REUTHER, ROM; *A71, C9, D37, D95, H4, 174, 183M, K67, M16, N18{S}, Q93*

**Rubidoux:** Trees on Rubidoux trifoliolate orange are 30 to 60% of standard size. Imparts a greater cold-hardiness to the tree. Susceptible to quick decline virus. Used extensively in the past for orange and grapefruit cultivars. Seedling of trifoliolate orange, originating in Riverside, California. Introduced about 1920. BROOKS 1972; *A71, 183M, N18{S}*

**Trifoliolate Orange:** Trees budded to Trifoliolate orange are cold hardy, standard sized on heavy soils and dwarfed on light soils, and intolerant of calcareous conditions. Tolerant to phytophthora and the citrus nematode. Yields small, high-quality fruit. Excellent for commercial replantings. The primary rootstock in Japan for large satsuma and unshiu plantings. ROM; *A79M{S}, B96, C9, D26G{S}, D95, F43M, G96, H4, J73M{S}, K38{S}, K63G{S}, N37M, 093{S}*

#### ot her s

**Alemow:** (*Macrophylla*) Trees on Alemow are vigorous, precocious, and fruit heavily when young. Resistant to phytophthora. Juice quality is lower than that for trees on virtually any other rootstock. Scion cultivars other than lemon produce fruit of only marginal quality. Trees on Alemow decline from xyloporosis and tristeza. Popular in California as a stock for lemons. ROM; *B58M, C29M{SC}, D13, N18{S}, 093{S}*

Citremón 1449: (CRC 1449) Used as a rootstock for limes, lemons, oranges and grapefruits. Trees grafted to Citremón 1449 have good size and vigor and are adapted to a wide range of soil conditions. Has shown good tolerance of crown rot but is susceptible to *tristeza*. C29M{SC}, N18{S}

Cleopatra Mandarin: Trees budded to Cleopatra are capable of achieving a large size, but are often slow to bear. Tolerant to *tristeza*, *exocortis*, *xyloporosis*, cold, and calcareous soils. Juice quality is excellent but fruit size is small, particularly with Valencia scions. Cleopatra is an excellent rootstock for mandarin and related cultivars, and Pineapple and Hamlin sweet oranges. ROM; C29M{SC}, J73M{S}, N18{S}

Rangpur Lime: Trees on Rangpur Lime are vigorous and highly productive, particularly as young trees. Sensitive to cold and *phytophthora*; very tolerant to drought. Fruit is medium to large with low to moderate juice quality. An excellent stock for deep, sandy soils in humid climates, where grapefruit and sweet oranges yield well. ROM; G49, I83M, J73M{S}, N18{S}

Ridge Pineapple: A sweet orange cultivar that is tolerant to the burrowing nematode. Has also shown good resistance to *tristeza*, *anthracnose*, *exocortis* and *cachexia*. Trees on Ridge pineapple are long-lived and have excellent fruit quality. Good compatibility with lemons and limes. Originated in Orlovista, Florida. BROOKS 1972, ROM; J73M{S}, N18{S}

Shikwasha: (Hirami Lemon) Various scions on Shikwasha are average or better in vigor and yield, with generally good fruit size and juice quality. Moderately cold and salt tolerant, but has a high level of tolerance to lime-induced chlorosis; also tolerant of *phytophthora* and the rootstock-related viruses. Shows promise as a rootstock for mandarins. ROM; N18{OR}, N37M

Sour Orange: Trees on sour orange are moderately vigorous and their size is generally considered as the standard for comparison. Valued as a rootstock for producing fresh market fruit. Fruit from trees on Sour Orange have high total soluble solids, and high vitamin C content. Navel orange juice quality and flavor are improved on Sour Orange stock. The premier citrus rootstock, common throughout the world where *tristeza* does not preclude its use. ROM; B58M, J17, J73M{S}

Sunki: (Suenkat) Tolerant to *tristeza* and *xyloporosis* like Cleopatra but is affected by *exocortis*, which is unusual for a mandarin-like fruit. Trees on Sunki are highly salt tolerant, moderately cold hardy, and adaptable to calcareous soils. In Florida, has induced greater yield and higher juice quality than Cleopatra. Commonly used as a stock in China and Taiwan. ROM; N18{OR}

Sweet Lime: Trees on Sweet Lime are medium to large. Juice quality is generally poor, but has been slightly better in some instances than that recorded for Rough Lemon. Nucellar scions perform best on Sweet Lime. Valued mainly as a rootstock, although it is grown in some countries for fresh consumption. ROM; I83M, J73M{S}

Sweet Orange: Most commercial scion cultivars on Sweet Orange are long-lived, and produce crops often equal to or better than those from trees on Sour Orange. Valencia oranges, mandarins, and lemons on Sweet Orange yield well, with good fruit size and juice quality. Trees on Sour Orange are often slow growing, and perform best on sandy loam soils. Susceptible to *phytophthora* and drought; tolerant to *tristeza* and *exocortis*. ROM; B58M, Q93

#### CUCURBIT ROOTSTOCKS {S}

Bond Shintosa: (*Cucurbita maxima* x *C. moschata*) Rootstock squash. Excellent for grafting watermelon, cucumber and melon. Scion varieties grafted onto Bond Shintosa are more vigorous under low temperature conditions. Resistant to fusarium wilt. Widely adapted to various soil types and growing conditions. Q3

Companion: (*Luffa cylindrica*) Rootstock sponge gourd. Special variety of Luffa, only used for grafting bitter melon (*Momordica*

*charantia*). Very compatible with scion varieties, retaining resistance to fusarium wilt and improving the yield and quality of crops. Q39

Knight: (*Citrullus lanatus*) Rootstock watermelon. Used only as a rootstock for grafting watermelon. Scions on Knight retain fusarium wilt resistance and improve the yield and quality of crops. Q39

Mutual Boom: (*Cucurbita* sp.) Rootstock squash. Only used as a rootstock for grafting watermelon, cucumber, melon or bitter melon (*Momordica charantia*). Scions on Mutual Boom have better growth, fruit-set, yield and tolerance to cool temperature, while maintaining their original quality. Resistant to fusarium wilt. Q39

Power Gourd: (*Cucurbita ficifolia*) Figleaf gourd rootstock. Special variety of figleaf gourd, only used as a rootstock for grafting watermelons. Thick hypocotyl, easy to graft. Good root system, plants remain vigorous through all stages of growth. Grows well under low temperature conditions. Resistant to fusarium wilt. Q3

Strong Man: (*Cucurbita* sp.) Rootstock squash. Used only as a rootstock for grafting melon, cucumber and \*atermelon. Very vigorous plant with small stems and leaves; early and prolific. Resistant to powdery mildew and viruses. Will produce a small, orange-yellow squash which is not suitable for eating. Q39

Tetsukabuto: (*Cucurbita maxima* x *C. moschata*) Rootstock squash. Used as a disease-resistant rootstock for watermelons, melons and cucumbers. Most suitable for grafting onto watermelon. Provides resistance to fusarium wilt. Also produces a delicious squash. C20M, L59, J20, L79G, Q3, Q28, S63M, S70

White Skin: (*Cucurbita ficifolia*) Figleaf gourd rootstock. Special variety of figleaf gourd, only used as a rootstock for grafting cucumbers. Scion varieties grafted onto White Skin come into production earlier, and have greater cold tolerance and disease resistance. Q39

#### GRAPE ROOTSTOCKS

A x R #1: (Ganzin #1) (*Vitis vinifera* x *Vitis rupestris*) Produces vigorous grafted vines that bear good yields of high quality fruit. Resistant to *phylloxera* biotype A; susceptible to *phylloxera* biotype B and nematodes. Roots its cuttings quite readily, and buds and grafts easily. Recommended for use with lighter bearing raisin and table cultivars in deep, heavier soils. E39, E39{SC}

Couderc 1613: (1613) (*Vitis solonis* x) Imparts moderate vigor to its scions. Resistant to the more prevalent strains of root-knot nematodes; moderately resistant to *phylloxera*. Cuttings of this stock readily root in the nursery and it buds and grafts easily. Does not sucker excessively, but disbudding is recommended before planting. Widely used with wine, raisin and table cultivars in California. El {SC}, E39, E39{SC}, J31M, J31M{SC}

Couderc 3309: (3309) (*Vitis riparia* x *Vitis rupestris*) Scion vines on Couderc 3309 are moderately vigorous and bear well. Has relatively poor compatibility with *vinifera* cultivars. Cuttings of this stock have medium rooting ability in the nursery; are relatively difficult to bench graft. Resistant to *phylloxera*; very susceptible to nematodes and drought. Widely used in Europe. B92M, D19, El {SC}, J31M, J31M{SC}, LIM, LIM{SC}

Dog Ridge: (*Vitis* x *champini*) Imparts great vigor to its scions. Resistant to nematodes; moderately resistant to *phylloxera*. Cuttings of this stock root with difficulty, however the rootings bud and graft readily. Suckering may be a problem, therefore disbudding the cuttings is recommended. Only recommended for light, less fertile, sandy soils. Gives best results with heavy-bearing wine and raisin cultivars. D79{OR}, El {SC}, E39, E39{SC}, LIM, L7M{SC}, N33

Freedom: (*Vitis* x *champini*) Produces grafted vines that are vigorous and heavy bearing. Has some resistance to *phylloxera* and is very resistant to root knot nematodes; not tolerant of drought. Cuttings of this stock root moderately well in the nursery, and it buds and grafts fairly easily. B92M, D19, El {SC}, E39, E39{SC}, J31M, J31M{SC}, LIM, LIM{SC}

Harmony: (*Vitis x champini*) Vines grafted on Harmony have moderate vigor and bear well. Has some resistance to phylloxera and root knot nematodes, but is not immune to either. Cuttings of this stock readily root in the nursery and vineyard, and it buds and grafts readily. Satisfactory for table grapes; especially suited for Thompson Seedless. *B92M, D/9{OR}, El {SC}, E39, E39{SC}, J31M, J31M{SC}, LIM, L7Af{SC}*

Salt Creek: (Ramsey) (*Vitis x champini*) Imparts great vigor to its scions. Very resistant to nematodes; moderately resistant to phylloxera. Roots its cuttings with difficulty, but buds and grafts readily. Performs well with wine and raisin cultivars in light sandy soils of low fertility. Has a greater range of use than Dog Ridge. Suckering is less of a problem than with Dog Ridge, however, dis-budding is recommended. *B92M, D/9{OR}, El {SC}, E39, E39{SC}, L/Af, LIM{SC}*

SO-4: (Oppenheim #4) (*Vitis berlandieri x Vitis riparia*) Scion vines on SO-4 are vigorous and productive. Has good resistance to phylloxera and nematodes; not tolerant of drought. Medium compatibility with vinifera cultivars. Cuttings of this stock root with some difficulty and it is not easy to bud or graft. Used commercially in German vineyards. *B92M, D79{OR}, El {SC}, E39, E39{SC}, L7M, LIM{SC}*

St. George: (St. George 15) (*Vitis rupestris*) Produces quite vigorous grafted vines. Drought tolerant, highly resistant to phylloxera; susceptible to nematodes and oak root fungus. Very compatible with vinifera cultivars. Cuttings of this stock root readily and it is readily budded or grafted. Suckers profusely, therefore careful disbudding is recommended. *B92M, D19{OR}, El {SC}, E39, E39{SC}, LIM, LIM{SC}*

Teleki 5BB: (5BB, Kober 5BB) (*Vitis riparia x Vitis berlandieri*) Produces grafted vines that are very vigorous. High resistance to phylloxera; moderately resistant to cold and nematodes; not tolerant of drought. Cuttings of this stock do not root well, and it is relatively difficult to graft. Very poor compatibility with *Vitis vinifera* cultivars. ROM; *B92M, D19, El {SC}, J31M, J31M{SC}, LIM, L/M{SC}*

#### PEACH ROOTSTOCKS

Bailey: Cold hardy seedling rootstock that produces a standard size tree. Develops an abundant root system. Adapts to sandy and sandy loam soils. Resistant to root lesion nematodes. Seedlings may vary in their resistance to cold. Originated in Scott County, Iowa by Jacob Friday. Introduced prior to 1909. *A74, F91T{S}, G66{S}, I61M{S}, M89{S}*

Chui-Lum-Tao: Relatively new cultivar from northern China, currently being developed in Canada. One of the hardiest rootstocks for peaches, along with Siberian C and Tzim-Pee-Tao. Moderately tolerant to nematodes. Has performed well as an understock for both nectarines and peaches. *g £S6{S}, M89{S}*

Halford: Seedling rootstock that produces a standard size tree. Similar to Lovell in performance. Has proved its consistency and adaptability to a wide range of growing conditions. Not resistant to nematodes. Compatible with all commercially grown cultivars. Also used as a rootstock for Japanese plums and Italian prunes in the Northwest. *G66{S}*

Lovell: Produces well-anchored trees of standard size. Prefers well-drained, sandy loam soils; is sensitive to wet soil conditions. Compatible with all peach cultivars. Highly susceptible to peach tree borer and root knot nematodes. One of the most valuable rootstocks in the United States and Canada. Widely planted where nematodes are not a problem. *A9{PL}, B71M{PL}, E4{PL}, G66, G66{S}, K73M, K88T{PL}*

Nemaguard: (*Amygdalus persica x Amygdalus davidiana*) Produces well-anchored trees of standard size. Sensitive to wet soil conditions. Very resistant to most economically important root knot nematodes; highly susceptible to peach tree borer. Has an adverse

effect on scions with regard to cold hardiness and bacterial canker. Widely used and preferred stock, especially in California and Florida. *A9{PL}, B71M{PL}, C9M{S}, E4{PL}, G66{PL}, G66{S}, K88T{PL}*

Nemared: Similar to Nemaguard, but red leaves of Nemared help identify "missed" buds in the nursery row. Has proven resistance to root knot nematodes. Lacks productivity in soils without nematodes when compared with other rootstocks. Susceptible to wet soils and bacterial canker. *F91T{S}, G66{S}, K38{S}*

Siberian C: Produces semi-dwarf trees that are 75% the size of those on standard seedlings. Transfers cold hardiness to scion cultivars. Induces earlier defoliation and hardening off of the scion cultivar. Susceptible to nematodes. Trees on Siberian C are precocious. Fruit matures earlier. Recommended for colder areas. Also used as a stock for apricot. Originated in Harrow, Ontario, Canada. *A91{PL}, F91T{S}, G66{S}, I61M{S}, MS9{S}*

Stark Red Leaf: Selected by Stark Brothers Nurseries for its resistance to heavy, wet soils and for its cold hardiness. West Coast trials have also proven it to be better adapted to western sandy loam soils than other red leaf peach rootstocks. Vigorous and precocious, worthy of trial in all areas where stone fruits are grown. *A9{PL}*

Tzim-Pee-Tao: Relatively new seedling rootstock from northern China, currently being developed in Canada. One of the hardiest rootstocks for peaches, along with Siberian C and Chui-Lum-Tao. Moderately tolerant to nematodes. Has performed well as an understock for both nectarines and peaches. *F91T{SC}, G66{S}, M89{S}*

#### PEAR ROOTSTOCKS

EMLA Quince A: Virus-free re-introduction of Quince A selected at the East Mailing and Long-Ashton experiment stations in Great Britain. Resistant to pear decline, root aphid and root knot nematodes; susceptible to fire blight. Produces trees that are relatively vigorous and hardy. Moderately tolerant of wet soils. */75, L12*

EMLA Quince C: More dwarfing and precocious than Quince A. Produces trees that are similar in size to those on M.9 apple stock. Resistant to pear decline, crown gall, mildew, nematodes and root aphids. Trees on EMLA Quince C are higher yielding and fruit size is greater than cultivars on Quince A; should not be planted in areas of severe cold. */75, J93*

Kirschensaller: Produces well anchored trees that are 90% the size of those on pear seedling. Slightly more vigorous and uniform. Nearly free of root sprouts. Excellent compatibility. Good resistance to pear decline and oak root fungus; tolerant of wet soil conditions; susceptible to fire blight. Trees on Kirschensaller are precocious and heavy yielding. *G66{PL}, V7/M{S}, P49{S}, R78/S*

OH x F 97: (Old Home x Farmingdale 97) Produces a vigorous, full-sized tree, 10% larger than that of seedling pear. Highly resistant to pear decline and fire blight. Somewhat susceptible to winter injury due to its growing vigor late in the season. Does not do well in heavy, clay soils. *J93*

OH x F 333: (Old Home x Farmingdale 333) Produces well anchored trees that are 70% the size of those on pear seedling. Nearly free of root sprouts. Has good compatibility, even with Asian pears. Resistant to pear decline, fire blight and bacterial canker. Trees on OH x F 333 are cold hardy, precocious and very productive. Fruit quality is very good. Selected by Lyle Brooks. *H45M, J61M, J93*

OH x F 513: (Old Home x Farmingdale 513) Produces trees that can be maintained at about 15 feet tall. Compatible with all pear cultivars, including Asian Pears. Induces heavy early production and is very hardy. Does well on a variety of soils. Resistant to pear decline, fire blight and bacterial canker. Trees on OH x F 513 are nearly free from suckering. *I49M*

Old Home: (*Pyrus communis*) One of the first clonal pear rootstocks used in the United States. Largely discontinued as a stock because of the very low yield efficiency it induces. It also tends to

sprout wry badly. Produces standard sized trees. Resistant to fire blight and pear decline; susceptible to root aphid and nematodes. Cuttings of this stock root readily. Still widely used as an interstem. I61M{SC}, M39M

Provence Quince: (*Cydonia oblonga*) Produces trees that are 50 to 65% of standard, larger than those on Quince A or Quince C. Characterized by vigor, resistance to drought, and tolerance to alkaline soils. Resistant to pear decline, root aphid, and nematodes; susceptible to fire blight. Trees on Provence Quince are heavy bearing, but not as hardy as pears on seedling rootstock. F91T{SC}, G66

Provence Quince (BA 29-C): Produces trees that are from 1/2 to 2/3 the size of standard pear trees. Compatible with Anjou, Comice and Flemish Beauty; other cultivars require an interstem to form a strong union. More winter hardy than Quince A. Resistant to pear decline, crown gall, nematodes and root aphids. Trees on BA 29-C are precocious and very high yielding. /75, J61M

Quince A: (Angers Quince A) Selected from Angers quince at the East Mailing research station in the 1930's. Produces trees that are about 50% the size of those on pear seedling. Trees on Quince A are generally precocious and productive. Tolerates wet soils better than Provence Quince; susceptible to fire blight. Widely planted in the more northern regions of Europe. G66, K88T

#### PLUM ROOTSTOCKS

Besseyi: (*Prunus besseyi*) Produces mostly dwarf trees that are poorly anchored. Prone to severe suckering. Compatible with most prunes; incompatible with Damson and Victoria plums. Resistant to crown gall. Trees on Besseyi are productive and very cold hardy. Cuttings of this stock are often easy to root. Seedlings vary widely. G66{PL}, G66,{S} H49, L12

Brompton: (*Prunus domestica*) Produces very large, well anchored trees, nearly free from suckering. Compatible with most European plums; incompatible with some prunes. Resistant to cold temperatures; susceptible to bacterial canker. Adapted to heavy, damp soils. Trees on Brompton are moderately productive. Widely used in Europe. F91T{SC}, G66{S}, N71M{S}

Marianna 2624: (*Prunus cerasifera* x *Prunus munsoniana*) Produces tree that are smaller than peach trees. Widely adapted to different soil types and moisture conditions, however will not tolerate extremely heavy soils. Not well anchored in early years. Resistant to oak root rot, root knot nematodes and prune brownline. Induces heavy production. Fruit is slightly earlier ripening. Best of the Marianna selections. ROM; A9{T\*L}, £4{PL}, F91T{SC}

Marianna 4001: (*Prunus cerasifera* x *Prunus munsoniana*) Produces very large, well anchored trees. Moderately prone to suckering. Compatible with most European and Japanese plums. Resistant to drought and bacterial canker. Induces heavy fruit production. Fruit is slightly later ripening. Widely planted in the United States. F91T{SC}

Marianna GF 8-1: Very vigorous. Relatively shallow rooting; well-adapted to calcareous soils. Compatible with all varieties of European plums, however unions with Count Althann's Gage may be weak. Very sensitive to nematodes. Not very winter hardy. More tolerant to root asphyxia than Myrobalan. Originated near Bordeaux, France. BROOKS 1997; H45M

Myrobalan: (Myro Plum) (*Prunus cerasifera*) Widely adapted to different soil types and moisture conditions, however will not tolerate extremely heavy soils. Compatible with most European and Japanese plums; poor compatibility with Green Gage and Stanley. Trees on Myrobalan are large, have good anchorage and are very productive. Fruit is slightly later ripening. Best worldwide stock, but highly variable from seed. ROM; A91, G66{PL}, G66{S}, K38{S}, K88T{PL}, L12, N19{PL}

Myrobalan 29C: (*Prunus cerasifera*) Adapted to a wide range of soil and moisture conditions. Anchorage is not very good in early

years. Compatible with most European and Japanese plums. Somewhat resistant to nematodes; susceptible to prune brownline. Trees on Myrobalan 29C are large and high yielding. Fruit is slightly later ripening. Widely used in the United States. ROM; A9{?L}, F91T{SC}, H45M

Myrobalan B: (*Prunus cerasifera*) Very vigorous stock with strong anchorage; does not sucker. Difficult to root in the nursery. Wide compatibility, especially with European plums; incompatible with Gages and Mirabelles. Recommended for lighter soils, especially in hot climates. Trees on Myrobalan B come into production late, but bear heavily when mature. F91T{SC}

St. Julien A: (St. Julien, EMLA St. Julien A) (*Prunus insititia*) Produces semi-dwarf trees, about 10 to 15 feet tall. Somewhat prone to suckering. Tolerates a variety of soils. Compatible with most European plum cultivars. Resistant to low winter temperatures. Trees on St. Julien A are precocious and moderately productive. Not recommended as a stock for Stanty. Also used as a rootstock for peaches and apricots. G66{PL}, G66{S}, I49M, J61M, J93, K63G{S}, L12, P49{S}, R78{S}

#### TOMATO ROOTSTOCKS {S}

Kage: Multiple disease resistant tomato rootstock. Provides resistance to bacterial wilt, verticillium wilt, fusarium wilt races 1 and 2, nematodes and tobacco mosaic virus. When using tomato varieties which are resistant to tobacco mosaic virus, only use rootstocks which have a similar tolerance. S63M

KNVF: A tomato rootstock which gives resistance to corky rot, root knot eelworm, and verticillium and fusarium wilts. Used as a rootstock for cultivars which are susceptible to these problems, especially under greenhouse conditions. R32, TIM

KNVFR Tm Signal: Resistant to tobacco mosaic virus, corky root, root knot nematodes, verticillium wilt, fusarium wilt (Race 1 & 2), J<sub>3</sub>, and similar to TMV (Tm2a/+) resistant tomatoes. S70

#### WALNUT ROOTSTOCKS

Paradox: (*Juglans regia* x *Juglans hindsii*) Trees grafted onto Paradox are more vigorous and have a greater circumference when grown on volcanic hillside soils. Resistant to some forms of root rot and root lesion nematodes; susceptible to the cherry leaf roll virus (black line disease) and crown gall. Seedling vigor and performance very variable. Widely used as a rootstock for Persian walnuts in California. Originated in Santa Rosa, California by Luther Burbank; first described in 1893. B71M{PL}, C54{PL}, D7S{PL}, K73M{PL}, K88T{PL}, L47{PL}

## RUNNER BEAN {S}

### PHASEOLUS COCCINEUS

#### BICOLOR-FLOWERING

Pointed Lady: (Bicoloi; York, Lancaster) 90 days. Not as long-podded as modern cultivars, but has a very good flavor; pods 9 to 12 inches long. Flowers half red and half white, the keel and wings being pinkish white, and the standard scarlet-red. Seeds dark brown to black, mottled with creamy white. Suitable for both the vegetable and ornamental garden. Originated before 1855. HEDRICK 1931, VILMORIN; B49, E33, J11M{DF}, K53, K66, L89, N84, O89, R32, R83, S55

#### PINK-FLOWERING

Sunset: Produces medium-length, richly-flavored pods. Has the added attraction of carrying pale pink flowers. Among the earliest maturing cultivars; can be pinched back and grown as bush beans for exceptionally early crops. S61

RED-FLOWERING

**Black Runner:** (Phipps Black Runner) Primarily used as a gourmet dry bean. Large, handsome, glossy pitch black seeds, about 7/8 inch long. Tender-skinned bean with firm texture and good flavor. Very good in black bean soup, chile or cooked and used in salads. Developed by Tom Phipps. MAYES; A90MJDF, 191, J11M{DF}

**Butler:** 65 days. Pods stringless all along their length; also fiberless in the thick flesh surrounding the seed itself; pod length averages 12 inches. Juicy pods remain in edible stage longer than other cultivars. Fast, productive grower; sets well in hot weather. Flower clusters ornamental with a very heavy bloom to stem ratio. B49, G53M, R32, R83, S61

**Dwarf Bees:**<sup>1</sup> 75 days. Unique dwarf Scarlet Runner type, growing only 18 to 24 inches tall. Does not produce runners, allowing for easy culture without the need for staking. Good quality pods. Seeds can be used as shell beans. Attractive, bright scarlet blossoms. Makes a colorful border. ^475, G16, G82, H49, J20, J39, L89, M32

**Enorma:** 92 days. Produces extremely long, slender pods, often up to 20 inches long. More highly flavored than Crusader which it replaces. Seeds purple with some black stripes. If picked young, pods can be used whole; as they mature they form tough strings along the edges which should be removed before cooking. Good freezing and exhibition qualities. Very productive. C95, N84, RUM, R83, S55, S75M

**Goliath:** (Prizetaker) 92 days. A very productive cultivar producing very long, bright green pods, often up to 20 inches. It has all the qualities of an outstanding bean—fine texture, heavy cropping, reliability and uniformity. Excellent for freezing. Seeds purple with over 50% black splashes. M46

**Gulliver:**<sup>1</sup> Smooth, bright green, fleshy pods, 9 to 10 inches long; completely stringless. Early high-yielding plant; does not produce runners, allowing for easy growing without the labor of tying and staking. Attractive, scarlet flowers. An Improved Hammond's Dwarf type. Developed by A.L. Tozer Ltd. J9M

**Hammonds Dwarf:**<sup>1</sup> (Hammonds Scarlet Runner Bush) 60 days. A true dwarf, non-climbing cultivar; height 16 to 18 inches. Needs no staking providing pods are picked regularly, however the top may need to be pinched out of an occasional plant to stop them running. Pods 7 to 8 inches long; when picked young they make good snap beans, later they can be used as a shell bean. Introduced in 1961. B49, E7M, G53M, M46, R32, R83, S55

**Kelvedon Marvel:** 84 days. Very early, producing long straight pods very freely. Pods 10 to 12 inches long, somewhat rough. Seeds purple with over 50% black splashes. Shorter than the average runner, growing only 4 to 5 feet tall; most productive if unsupported and left to spread horizontally. R32, R83, S55, S75M

**Lady Di:** 65 days. Large, slender, dark-green stringless pods; up to 12 inches long; very slow seed development; tender and delicious; quality excellent. Vigorous, very productive plant, adaptable to difficult growing conditions. Attractive red blossoms. Bears over a long period. G53M, L91M, R83

**Musica:** 55 days. Wide, flat, stringless pods; 9 to 10 inches long and 3 1/4 inches wide. Has an excellent, delicious true bean-like flavor. Very high yielding plant with red blossoms. Very early maturing, making it an ideal choice for growers in hot climates. L91M

**Pickwick:**<sup>1</sup> Compact, bushy plants without runners; height about 12 inches. Ideal for small or exposed gardens or for growing under protection. Quite early maturing, with stringless pods that should be picked regularly for continuity of supply. Can also be used for shelling and dry beans. J9M, S61, S75M

**Prizewinner:** 93 days. Produces a large crop of rich green pods, which are straight, smooth-skinned, 20 to 24 inches long, stringless when young, and have a rich bean-like flavor. Seeds purple with

some black stripes. Good for general garden use; also used along trellises for the flowers, which are brilliantly red. M46, N81, 053M, S61

**Red Knight:** 70 days. Long stringless pods, smoother than the rough-textured older stmins; ripen early. Can be picked young as snap beans, or left to mature for dry beans. Very heavy cropping, produces pods all summer long. Vines grow 10 to 12 feet and are covered with crimson blossoms. One of the best modern cultivars. C95, K66, N84, R32, R83, S55

**Red Rum:** 40 days. Narrow, medium-length pods, 6 to 8 inches long; fleshy, nearly stringless, well-flavored; matures very early. Produces very heavy crops. Somewhat resistant to Halo Blight. Highly recommended for organic gardeners. Developed by A.L. Tozer. L91M, S75M

**Scarlet Emperor:** 90 days. One of the longest-podded cultivars, with flat, slightly fuzzy pods of rich, dark-green color, frequently 15 inches long, but nevertheless of fine flavor and texture. Seeds purple with over 50% black splashes. Preferred by many gardeners for its rich, sweet, bean flavor. Vine a heavy producer, with large sprays of attractive red flowers. A75, B49, C53, C85M, E24, 139, J11M{DF}, K49T, L89, M49, N84, R32, S55

**Scarlet Runner:** 90 days. Dark green pods, moderately brittle, firm-fleshed, somewhat stringy and rather coarse in texture; quality fair. Seeds very large; shining black to violet-black, mottled with deep red; can be used as green shell beans. Flowers scarlet, very large, 20 to 40 on each long flower-stalk. One of the oldest known cultivars, originating before 1750. HEDRICK 1931; A16, A25, A90M{DF}, D11M, E7M, E38, FI, F70, F80, F92, G71, H42, L7M, L79, M46, R47, etc.

**Streamline:** 91 days. One of the longest cultivars, the pods being up to 18 inches long, straight and narrow; borne in large trusses and over a long period. Flavor very good. A good producer, ideal for those who want to exhibit, and who want to pick enough for a meal quickly. Seeds purple with over 50% black splashes. Good for heavy soils. GENDERS 1975; B49, 053M, R32, R83, S61, S75M

**Tarahumara Tecomari:** Produces very large beans in various colors such as all black, purple with black spots, all white, or gray with black spots. Attractive, red flowers. From the Tarahumara Indians of the Sierra Madre, Chihuahua, Mexico. F73D, 116, N84

WHITE-FLOWERING

**Czar:** (The Czar) A fine old white-flowered cultivar that produces long, tender, mild-flavored pods for eating green. If left to dry it will produce a crop of plump, fine-tasting white "butter" beans. One of the cultivars favored for quick freezing. An heirloom cultivar that was almost lost. B49, N84, R32, S55

**Desiree:** A white-seeded, white flowering cultivar that produces long, slender, fleshy pods 10 to 12 inches in length. Exceptional flavor and genuinely 100% stringless. As is it is a shy seeder, there is much more juicy, fleshy, edible area. Suitable for freezing. Bears very heavily, especially in dry conditions when 40 pods per plant can be expected; will attain large crops from a small area. B49, L91M, RUM, R32, R83

**Emergo:** 88 days. Long-podded type; white-flowered and seeded. Of good quality, but pods must be picked when young. Creamy white seeds are known as *sweet white runners*, and are considered excellent for use in soups and salads. Vigorous plants withstand adverse weather; are heavy-yielding. A75, E5T, F73D, G53M, J11M{DF}, K18M{DF}, N40{DF}, RUM, S75M

**Emergo Stringless:** 87 days. Produces an abundance of large (8 to 12 inch), tender, and flavorful beans. Well suited to Northern gardens as it may be planted earlier than other beans and thrives in relatively cool conditions. White-flowered and seeded. Vine length can exceed 10 feet. M46

Tkrahumara Bortal: 120 days. Large white runner bean, reputed to be one of the best tasting. Dry farmed on thin, rocky soils. From the remote mountain community of Otachique, Chihuahua, Mexico. 116, N84

White Aztec: (Dwarf White Aztec, Potato Bean) 55 days. Pods usually long, much curved, flat, dark green with a rough surface. Seeds very large, much thickened, very plump; color glossy white. Has a distinct running, spreading habit that forms a dense mass of runners over the ground around the central stem. Flowers numerous, large, white. Supposedly found in a sealed vase in an ancient Anasazi dwelling in New Mexico. HEDRICK 1931; 116, J25M, J97M, K49T

White Dutch: (Oregon Lima) Resembles Scarlet Runner very closely, differing from it in having stems and leaf veins solid green and flowers and seeds pure white. Seeds very large. Pick when 6 inches long for snap beans; for a meatier taste, pick when 12 inches long, or use later as a shell bean or a baking bean. A very old cultivar, listed by American seedsmen as early as 1825. HEDRICK 1931; E7M, F73D, K49M, M46

#### CODES FOR SPECIAL TYPES

##### 1. Dwarf

## RUTABAGA {S}

#### BRASSICA NAPUS NAPOBRASSICA GROUP

Acme: (Garden Purple Top Acme) 90 days. Small, early, purple top globe-type with sweet yellow flesh of very high quality. Uniform size and shape. High yielding. Recommended by the National Institute for Agricultural Botany of Great Britain. B49, 053M, R32

Altasweet: 90 days. Very large, globe-shaped root, 4 to 7 inches in diameter; skin, smooth, very thin, yellow with a purple top; flesh deep-yellow, tender, fine-grained, very sweet and mild; keeps well in the ground all winter. One of the best tasting rutabagas. A cross of Laurentian and Macomber, Altasweet is similar in form and color to Laurentian, but much milder in flavor. Developed by Robert Simonet of Alberta, Canada. I39M, J39

American Purple Top: (American Purple Top Yellow, Golden Neckless) 100 days. Large, smooth, globe-shaped root with small neck and tap root; 4 to 6 inches in diameter; skin bright yellow, purple on top; flesh creamy-yellow, fine-grained, sweet, firm, tender and crisp; stores well. Widely used for home gardens, local market and shipping. Traditional North American cultivar; introduced prior to 1888. A25, A75, B75M, D76, D82, G57M, G83M, K49M, K71, M46, N16

Best of All: 90 days. Medium-sized, globe-shaped root with a purple top; to 6 inches in diameter when well grown; flesh creamy-yellow, tender and mild; stores well. Very hardy; will stand in the ground all winter in milder climates. A home garden gourmet cultivar from England. Introduced in 1896. N84

Cambridge: (Waldoboro Green-Neck) Maine heirloom. Rescued from the steamship Cambridge, which sank in the Atlantic Ocean on February 10, 1886 after striking the Old Man's Ledge off of Friendship, Maine. Sweet and non-woody, can reach 20 pounds or more if planted early; matures midseason to late. Best harvested after several frosts. F73D, H15P

Canadian Gem: 120 days. Flesh light-yellow, firm, very fine-grained and sweet; flavor very good. Extremely hardy; a very good winter keeper in storage. Excellent for fall and winter use in the North. A16, K49M

Champion Purple Top: 90 days. Good quality roots that are improved by frost. Rose-colored skin; yellow flesh. Cooks to a

pleasing rich color and flavor. Long keeping. Reliable and widely grown. **PIG**

Eastham: (Eastham Tbrnip) A variety still grown commercially on Cape Cod in Massachusetts, but otherwise fairly rare. Large, rounded roots, 8 to 12 inches in diameter; delicious, sweet white flesh. Excellent green tops that can be used as a cooked vegetable. An early New England heirloom. D29P, J26M

Fortin: An heirloom from Quebec, Canada. Maintained there by the Fortin family. Roots are purple on the outside and yellow within and have an excellent flavor. Can grow to a large size. Appears to have some resistance to insects and disease. L88J

Fortune: (Fortune Certified) Similar to York in yields, with a wider tolerance to 6 strains of club root and a good tolerance to storage rot. Appearance, size and color similar to Laurentian or York. Good appearance and table quality. Bred at the Canada Research Station at Mount Pearl. L42

Gaze's Special Purple Top: Has proven to be a very high yielder. Superb table quality with a very mild flavor. Very good keeping qualities; stands up in storage better than Laurentian. Should not be planted too early as the roots can become overly large. E38

Improved Purple Top Yellow: (Burpee's Improved Purple Top Yellow) 90 days. Large, slightly oblong, short-necked, purple top yellow type; free of branching and coarseness of neck. Flesh yellow, solid, sweet and rich; keeps well when mature. Hardy and very productive. For table, stock, storage and shipping. Introduced by Burpee in 1883. C44, M95M

Joan: 95 days. An earlier cultivar suitable for drilling and covering with plastic. Uniform, attractive, round roots; purple-topped; yellow flesh. Good color. Sweeter, fresher and milder in flavor than other yellow varieties. An overall good quality horticultural type. G6, S75M

Laurentian: (Laurentian Purple Top, Laurentian Golden) 105 days. Uniform, nearly globe-shaped, almost neckless roots; 5 to 6 inches in diameter; free of branching; skin creamy-yellow, deep purple on top; flesh pale-yellow, texture fine, flavor mild; keeps well. Moderately short tops. Quality very good for table use; also used for storage, shipping and canning. Most popular rutabaga in North America. A16, C85M, D11M, E24, E38, F70, H42, H61, K49M, K73, L79, N34{PR}, N52

Marian: 76 days. Uniform, globe-shaped, purple-topped root; up to 8 inches in diameter; flesh yellow, of fine flavor, retains its color when cooked; keeps well. Highly resistant to clubroot, mildew, and root cracking. Vigorous, very productive plant; has shorter, wider leaves that allow for closer spacing. Introduced by the Welsh Plant Breeding Station. B49, E38, L89, R32, S55, S75M

Pike: 100 days. A purple top rutabaga similar to Laurentian. Flavorful yellow flesh. The larger tops give better protection to the roots from heavy frost. Can be left in the ground a little later in the fall. Storage quality equal to Laurentian. A local Maine favorite. G6

Purple Top Yellow: 90 days. An old, long-cultivated type, from which, most of the improved yellow-fleshed cultivars have originated. Form regularly egg-shaped, smooth, but with a few small roots at its base; neck short; size large, 4 or 5 inches at its largest diameter; skin purple above ground, yellow below; flesh yellow, firm, of good quality, turns orange when cooked. Very hardy; yields abundantly in rich, deep soils. BURR; B75, I39

Wilhelmsburger Gelbe: (Pandur) 85 days. Very early, very cold-hardy, fiberless cultivar with an attractive pink top and an excellent, mild flavor. Good size. Perfect for short season areas. Has the ability to store in a cool place for several months. N81

Wilhelmsburger Green Top: Green-topped root; flesh pale orange. Of fine table quality but also used for feeding stock. Keeps well. Has extremely high resistance to club root, a real boon to

farmers who are troubled with this disease. Popular in Atlantic Canada. E38

York: (York Certified) Similar to Laurentian but has resistance to some strains of club root. Produces smooth, uniform roots with fine quality yellow flesh and excellent storage capabilities. Selected from Laurentian by the Charlottetown Research Station, Prince Edward Island, Canada. E38, L42, M27, M49

## SALAD MIXES {S}

### VARIOUS GENERA

Popular in France, where they are called *mesclun* (mesclun and melange are both French words that mean mixture or miscelany), these seed mixes are carefully chosen so that the individual components have generally similar growth rates when planted together. The plants chosen for the mix also complement one another when harvested and form an attractive and tasty salad. ANDREWS, C. 1996; E97, F82, G82, K49T, M32

Bon Vivant: Gourmet lettuce blend designed to provide the best combination of flavor, shape, texture, and color including deep red and bronze leaves, and green colors ranging from dark emerald to light green. For added zest arugula, endive, raddichio and other greens can be added. A25, B73M, C85M, D74B, D76, FI, F63, G57M, G87, K71, M46, M49

Braising Mix: 28 days. Bright mixture of items like Red Russian kale, Gien Wave and Red Giant mustards, Hon Tsai Tai, Spring raab, and komatsuna. Provides a combination of various textures and tests for stir-frying and other light cooking. Grown secondarily as a salad mixture. G6, K57{PL}

Cutting Lettuce: A mixture which combines attractive leaves, looseleaf habit and vigorous regrowth after cutting to give the best possible base for salads. Suitable for cut-and-come again or once over harvesting. As a salad base, about 10 feet or so a week will be required. C53

Early Season Mix: Mix of gourmet greens chosen for springtime growing conditions. Contains lettuce, arugula, leaf radish, bok choy, mizuna, mustard, endive and spinach. Can be followed with Mid Season Mix. C44

Exotic Mesclun Mix: Unique blend of spicy salad greens including arugula, Tres Fine Maraichere endive, Giulio radicchio, mizuna, and Cocarde and Pirat lettuces. May be planted in a garden or a hanging basket in a shady patio area. K23{PL}

Fedco Mesclun: Contains a mixture of mizuna, chervil, corn salad, endives, sorrel, Giant Red mustard, arugula, tatsoi and the following lettuces: Rouge d'Hiver, Red Sails, red oak leaf, Salad Bowl, Green Ice and Black Seeded Simpson. D68

Flower Petal Salad: Specialty mix of 6 edible flowers for salads, baking and decorating. Selected for bright colors and uniquely different flavors and textures. Includes bee balm, borage, Calendula, Viola, nasturtium, and Tagetes. L91M

Garnish Mix: A mix for small gardens that makes it possible to add a touch of both beauty and taste to soups, dips, and entrees, without having to maintain a bed of garnishes. Contains Bronze fennel, green fennel, Dukat dill, cutting celery, Catalogno flatleaf parsley, and Bravour curly parsley. C53

Gastronome: Well balanced mixture of 8 green and red salad varieties: Salad Bowl, Red Salad Bowl, Marveille des Quatre Saisons, and Lollo Rossa lettuces, Bed Verona chicory, chervil, mache, and maraichere endive. Will add a gastronomic touch to your meals. P59M

Gourmet Salad Mix: An eclectic mix of Verte Maraichere, Sierra and Red Grenoble lettuces, arugula, Red Giant mustard, Ruby swiss chard and Verte d'Cambrai com salad. Colorful as well as delicious. Can be planted once a month beginning in spring and ending in early summer, the final sowing yielding a fall crop. E24

Harris' Mesclun: Carefully selected mix provides a combination of different colors, textures and flavors. Includes New Red Fire, Black Seeded Simpson and Oakleaf lettuces, Green Boy bok choy, Red Giant Mustard, Red Russian kale, Mizuna and Melody spinach. Should be planted in blocks and harvested when young. F13

Herbal: Distinctive mixture of various herbs and greens including sweet basil, borage, arugula, bronze fennel, sugar beet, and red leaf lettuce. Heat tolerant; suitable for mid-summer plantings. J82

Late Season Mix: Gourmet mixture of greens and herbs formulated to grow best in the fall, following Early Season Mix and Mid Season Mix. Contains lettuce, mizuna, mustard, garden cress, chicory, onion, endive and leaf radish. C44

Lettuce Alone: Special mixture of looseleaf lettuces offers a selection of color and textures that will continue to produce salads for months. Selected to grow well together and are easily harvested as a cut-and-come-again crop. Includes Deer Tongue, Oakleaf, Simpson Elite, Tango, Royal Red and Red Oakleaf. 139

Mesclun: A mixture of up to 11 different greens, usually including French lettuces, curled endive, arugula, com salad, spinach, chervil, cress and chicory. Best harvested when very young. Traditionally gathered by pulling up whole plants. Ideal for broadcast seeding in wide-row and raised bed plantings. C81M, D3M{PR}, D11M, D27, F92, G68, H21, H42, 167M, 089, PIG, P59M, Q34

Mesclun Ni^oise: A mixture that usually contains endive, chicory, dandelion, upland cress and arugula. It requires a little more attention, but is a must for those who like their salads tart. Best crops will be produced during cool weather. May also include wild onion or other greens. C53, L89

Mesclun Provençal: A traditional French mix popular in Provence, which usually combines dandelion, chervil, arugula, Feuille de Chene lettuce and Fine Curled Louviers endive in precise proportion for best effect. Good for the home garden or a balcony planter. May also include additional lettuces, mache, watercress, purslane, basil, parsley or raddichio. OLNEY; C53, E63D, L89, 089

Mid Season Mix: Attractive gourmet mixture of greens and herbs. Developed to follow Early Season Mix, as the weather warms up. Contains lettuce, corn salad, arugula, chervil, bunching onions and beet greens. C44

Mild Mesclun Mix: 21 days. Formula mix of lettuces and mild tasting leafy greens in green and red colors. Ingredients may include Red Sails, Salad Bowl, and Rosalita lettuces as well as Chinese bok choy, mache, Kyona, Red Russian kale, and Hon Tsai Tai. D76, G6, K490, K71, L42, L89, M46, Q34

Mild Mix: 21 days. A combination of mellow-flavored, heat tolerant greens that will provide a range of rare greens for salad making right through the hot weather. The early growth is dominated by Mizuna; as the Mizuna is cut, an understory of succulent, Golden purslane, Red orach, Brussels Winter chervil, and 3 cultivars of nutty mache begin to take their place. Keep the mixture cut and watered. C53, 191, K57{PL}

Miscuglio: An Italian chicory mixture including radicchio. Ideal for perennial cut and come again. The radicchio can be left to head up over winter, or may be blanched to produce attractive, tender pink leaves. Green varieties may also be left to grow on where required. S55

Misficanza: (Misticanze, Saladisi, Saladini) An Italian mixture of common and lesser known loose-leaved salad plants, usually including lettuces, chicories, endives, and water cress, blended in precise



proportions. As one variety finishes another appears. Ready for use when the leaves are approximately 5 inches long. For an extra spicy flavor, add arugula and upland cress to the mixture. And for even more variety, add purslane, rampion and mache. DE VITA [Re]; B8, C53, G53M, H49, J20, K66, L89, L91M, 053M, Q11M, Q34, R32, SI 7, S55

Napa Valley Lettuces: A custom formula blend containing Bibb, Little Gem romaine, green Oakleaf, Rouge d'Hiver, red Romaine, Red Oakleaf and rosy crisphead. Plus curly endive for extra texture. K66

Nouvelle Cuisine: A mixture of cut-and-come again greens for complementing standard lettuces. Plant and harvest a ready made salad. Good for gardeners with limited space. Long a tradition in fine French cooking, and becoming a popular trend at better restaurants. B49

Oriental Salad: (Oriental Saladini) Blend of Oriental leaf vegetables for growing in the "cut and come again" method that allows for harvesting each sowing 2 or 3 times. Usually includes komatsuna, bok choy, red mustard, mizuna, and red kale. May also include red Romaine lettuce, Santo cabbage and mibuna. All have been selected to grow evenly together. Can be cut at 2 to 3 inches for salads. Also suitable for stir-frying when 7 to 10 inches tall. 139, K66, L89, Q34, R32, S55

Piquant Salad Greens: A custom formula blend containing peppery sharp arugula, tart-sweet nutty Mizuna, tangy smooth Giant Red mustard and spicy Curly Cress. Contains enough seed to plant a 3-foot-square area 2 or 3 times. C20M, K66

Richters Special: Contains a mixture of red leaf lettuce, Kagraner Summer lettuce, arugula, radicchio, corn salad, borage, mizuna, mustard spinach, chervil and curled cress. Sow in early spring or late summer. J82

Spicy Mesclun Mix: 21 days. Formula mix of red and green leafy vegetables that usually includes spicy and strong-flavored ingredients such as Green Wave mustard, Arugula, Salad King endive and Catalogna chicory with a mild base of red lettuces, Hon Tsai Tai, and Kyona. G6, J82, K490, M46

Spring Mesclun: Includes 3 chicories, both red and green types, curly endive, 3 lettuces (late romaine, curly looseleaf, and Red Viper), plus minutina—Plantago coronopus. B75

Spring Mix: Contains a mixture of more than five cultivars, including looseleaf and butterhead types. Selected to provide a good range of leaf colors and forms without taking up too much space. Should be sown February through April for a late spring and early summer harvest. C53

Summer Mix: Contains a mixture of five or more cultivars of both looseleaf and butterhead types. Custom blended from a wide selection of the best heat-tolerant types. Should be sown April through July for a harvest in late summer and fall. C53

Super Gourmet Blend: A blend of five looseleaf types—Slobolt, Buttercrunch, Red Sails, Salad Bowl and Valmaine—in equal quantities. Even as seedlings, their appearance is quite different and they can be easily thinned to equal proportions in the row. L89

Tangy Mix: 21 days. Combines flavorful and colorful Japanese mustards with the piquancy of arugula, the clear peppery flavor of Broad Leaved cress, and the tangy beauty of a range of red and green chicories and endives. Good for livening up a salad of milder greens, or served on its own with a creamy dressing. Best adapted to cool weather, but can be kept going into the dog days of summer by frequent planting and prompt, once-over harvest. Shade and water also help. C53, D76, 191, K57{PL}, L89

## SHITAKE {SIM}

### LENTINUS EDODES

#### COLD WEATHER

These strains require cool or cold temperatures to fruit; with many, fruiting is arrested or aborted at high temperatures. Mushroom quality is very high due to cool fruiting temperatures. Fastest vegetative growth is near 77° F., but growth continues at colder temperatures. They have their highest yield after the second year and logs will produce heavily for four or more years. C27, I1M{CU}, M87{CU}

#855: Greenhouse or outdoor strain. Vigorous mycelium for good growth. Fruits during 3 seasons (October to June), not in summer, with large flushes at one time. Produces especially well during changes in weather - November, December, January and M<sup>^</sup>. Fruiting temperature 41° to 68° F. A good strain for drying. 13

CS-11:<sup>1</sup> Robust, thick-fleshed caps with a heavy white fringe and short, stout stems, often *Donko* grade. Has a spawn run of 16 to 20 months. A rapid colonizer, growing well at low temperatures. Logs can be fruited 3 times each cool season, will continue to fruit for 4 or more years. Optimum fruiting temperatures 45° to 60° F. 149

CS-16:<sup>1</sup> Robust, dense, thick-fleshed caps with heavy white fringe, often *Donko* grade. A rapid colonizer, with a spawn run of 16 to 20 months. Fruiting can be induced twice with only a 20 to 40 day resting period between times. Logs will produce for 4 or more years. Optimum fruiting temperatures 45° to 64° F. 149

CS-118: Medium, thick-fleshed cap with dense white fringe retains in-curved margin longer than other strains. An aggressive, rapid colonizer, has a spawn run of 6 to 12 months. Two or three fruitings can be induced in rapid succession. Logs will produce for at least 3 years. Optimum fruiting temperatures 45° to 68° F. 149

CW-12: A strain that produces the largest, thickest-fleshed mushrooms. Perhaps the most widely cultivated outdoor strain throughout the world. Notable for producing under the coolest conditions. Has a short fruiting period in the North, but produces heavily under late fall and winter conditions in the South. A long incubation period of 18 months can be expected before first fruiting. D75T

CW-25: Produces a smooth, medium thick-fleshed, flat-capped mushroom with a lacy ornamentation on its rim. Time to first fruiting 12 months. Natural outdoor fruiting season early to late spring, and mid to late fall. Indoor fruiting season fell through early summer. Optimum fruiting temperatures 47° to 68° F. Very popular among indoor growers. D75T

Flying Goose: A strain that fruits once as the snow melts, and once again when the snow threatens in the fall. Compared to Snowcap, fruitings are heavy and concentrated, taking place over several days instead of several weeks. Spawning is vigorous. Does not respond to soaking. Spawn run is generally 9 to 12 months. Fruiting range D75T

Neptune: Medium thick caps with dense white fringe; retains its inroll longer than most strains. Produces a very early spring crop and latter in the fall. Good indoors or out. Aggressive spawn run of 6 to 12 months. Fruits best at 45° to 68° F. Forcing requires a cold period followed by a 50° to 64° F. water soak. Short resting period of 20 to 40 days between flushes. K97

Pluto:<sup>1</sup> Grows slowly during cold spring and fall weather, resulting in attractive, thick-fleshed *Donko* caps with a heavy white fringe. The slow growth is also said to create the most healthful vitamin and mineral content. Spawn run of 15 to 18 months. Forcing requires a cold shock followed by a 45° to 54° F. soak. K97

Snowcap: Produces a large, thick, uniform mushroom brushed with abundant white tufted veil remnants. Very attractive. Good for

seasonal outdoor production. Time to first fruiting 12 months. This strain has a long natural fruiting season with most abundant production occurring in spring and fall in the north. Also fruits very well throughout the South in the winter months. Optimum fruiting temperatures 45° to 77° F. D75T

#### WARM WEATHER

These strains produce good quality mushrooms at high fruiting temperatures. They are well adapted to fruiting in warm, moist areas from the spring until the late fall when periodic rains or irrigation induce fruiting. Maximum growth during the spawn run is near 77° F., but growth is good at higher temperatures. C27, 11M{CU}

#512: Outdoor strain. Produces large mushrooms with medium-thick flesh. Begins fruiting 6 to 12 months after inoculation. A good producer. Optimum fruiting temperatures 50° to 77° F. 13

#852: Greenhouse only strain. Fruits faster than any other strain. Has a fast spawn run that prevents the growth of unwanted contaminants. Sensitive to overwatering, the fruiting area should be well ventilated and less humid. Fruits easiest in hot weather. Optimum fruiting temperatures 50° to 86° F. 13

#853: Greenhouse or outdoor strain. Produces the largest mushrooms with the thickest flesh. Highly productive, even old logs produce large mushrooms. Most strains stop growing at 89° to 93° F., but #853 can grow at temperatures up to 95° F., enduring high summer heat. Slowest to fruit but has the longest production life by 20 to 40%. 13

CS-24: Robust, thick-fleshed caps with a thick white fringe; stems thick and well proportioned. An aggressive, rapid colonizer, has a spawn run of 8 to 12 months. Fruitings can be forced 2 or 3 times with a 20 to 40 day resting period or fruitings can be evenly spaced throughout the year. Three to four years of production can be expected. Optimum fruiting temperatures 60° to 72° F., with a maximum of 81° F. 149

CS-125: Medium to thick-fleshed mushrooms with a moderate white fringe are produced at high temperatures. Thin to medium stems. An aggressive, rapid colonizer, with a spawn run of 6 to 12 months. Three fruitings in rapid succession can be achieved if logs are rested the remainder of the year. Optimum fruiting temperatures 50° to 68° F., with a maximum of 86° F. Optimum relative humidity low, 60% to 75%. 149

Felt Hat: Newer strain with a fine felt texture and impressive white ornamentation. Fleshier but less dense than other warm weather strains. Highly productive when force fruited, both indoors and out. For the best quality, pick as soon as the cap separates from the stem. Spawn run time 6 to 12 months. Fruiting range 50° to 80° F. D75T

Mercury: Produces mushrooms during the warm active summer months. Medium thick caps with moderate fringing. Spawn run time of 6 to 12 months after inoculation. Easily stimulation of fruiting by heavy irrigation or rainfall makes for easy home cultivation. Fruits best between 50° to 85° F. Excellent for summer farm stands and farmers markets. K97

V-3: A fast spawn run and early, heavy production characterize this strain. Produces an attractive mushroom with feathery scales brushed across the cap. Time to first fruiting 6 months. Optimum fruiting temperatures 50° to 80° F. Does best as an outdoor strain because of its prolonged pin formation period. From the 1986-1987 Ohio Shiitake Project. D75T

WW-44: Produces a thick-fleshed, dark-capped mushroom with abundant lacy ornamentation on cap rim that holds up well during storage. Has consistently high quality production during its fruiting season. Time to first fruiting 14 months. Natural outdoor fruiting season summer through mid fall. Indoor fruiting season late fall through early spring. Optimum fruiting temperatures 50° to 77° F. D75T

#### WIDE RANGE

These strains produce mushrooms under a wide range of temperatures and are easily induced to fruit by soaking following a dry period. They are particularly well suited to forced fruiting and can be produced year-round under controlled conditions. Under natural conditions they fruit during the late spring and early autumn. Growth during the spawn run is fastest at 77° F. but higher temperatures can be tolerated. C27, 11M{CU}, M87{CU}

406: Mid-range strain that is a fast, consistent producer of high quality mushrooms. Developed in France specifically for growing shiitake on sterilized sawdust. One 6 pound bag can inoculate up to 240 pounds of sawdust substrate. 13

410: Wide range strain that produces a large, full bloom of mushrooms from sawdust spawn when the logs first begin to flush, for a quick start into the season. The fruiting range of the strain is from 55 to 80° F. 13

510: Greenhouse or outdoor strain. Produces large mushrooms with thick flesh. An early strain that is tolerant to cool weather at higher elevations. Has one of the fastest spawn runs, fruiting 4 1/2 to 5 months after inoculation. First flush is initiated by soaking right after spawn run. After a flush rest the logs for 20 days before next soaking. Optimum fruiting temperatures 50° to 75° F. 13

CS-15: Thick caps with heavy white fringe; thick stems in good proportion to cap. An aggressive, rapid colonizer, has a spawn run of 8 to 12 months. Tolerant to low log moisture content. Often produces mushrooms in clumps. Highest yields are achieved if 3 or 4 fruitings are spaced evenly throughout the year. Three or four years of production can be expected. Optimum fruiting temperatures 50° to 64° F., but will tolerate higher temperatures. 149

CS-41: Medium-thick to thick caps with minimal white fringe. An aggressive, rapid colonizer, has a spawn run of 6 to 12 months. Four fruitings can be evenly spaced throughout the year. Three years of intensive fruiting can be expected. Optimum fruiting temperatures 50° to 64° F., with a maximum of 77° F. Optimum relative humidity low, 60% to 75%. 149

Jupiter: Attractive thick caps with a generous white fringe, on thick stems. Spawn run of 8 to 12 months. For forcing, soak in water of 55° to 65° F. Fruits best at 50° to 65° F. Produces during spring and fall outdoors. Also good for indoor production. The least demanding strain in the planet series. Highly recommended for home or commercial growers. K97

Mars: Widely adapted strain, growing well anywhere that shiitake is cultivated. Heavy producer of medium thick caps with a moderate white fringe. Fruits easily indoors or out, with an optimum temperature range of 50° to 70° F. Natural outdoor fruiting is in spring and fall. Spawn run of 6 to 12 months. Forcing soak water should be 60° F. K97

Saturn: Thick caps with a moderate white fringe, on medium stems. Because of an aggressive spawn run, has the shortest wait from inoculation to picking. Responds well to rainfall and irrigation soaking outdoors, fruits at 50° to 68° F., even with humidities as low as 62%. Only 20 to 35 days between forced flushes. K97

Southwind: Fast spawn run and ornate mushrooms characterize this strain. Super sensitive to fruiting stimuli, whether it be temperature change or log movement. The best strain for use in rain rooms to initiate fruiting. Holds up well to the heat in July and August under protected conditions. Fruiting range from 55° to 75° F. D75T

Venus: An easy to cultivate strain that produces good quantities of medium thick caps with a medium white fringe. Aggressive spawn run of 6 to 12 months. Force with soaking water of 52° to 68° F. Pinning range of 54° to 70° E, with 60° F. best. Fruits at 52° to 75° F. Grows indoors or out with natural fruiting in spring and fall. K97

West Wind: Very fast spawn run and consistency in yield and mushroom quality make this strain ideal for indoor or outdoor production. Abundant flushing occurs outdoors when forced or

spontaneously with rain and temperate change. A very easy strain to fruit. Time to first fruiting 6 months. Natural outdoor fruiting season mid spring through mid fall. Optimum fruiting temperatures 50° to 80° F. D75T

WR-46: Fast spawn run and relative ease of fruiting characterize this strain, making it an ideal choice for both indoor and outdoor cultivation. Produces thin-fleshed, honey colored mushrooms during the summer and a thick-capped, bright brown mushroom when temperatures are cooler. Time to first fruiting 6 months. Natural outdoor fruiting period mid spring to mid fall. Indoor fruiting year round. Optimum fruiting temperatures 50° to 75° F D75T

WR-85: An ideal strain for operations requiring high yields from minimal space, as it produces excellent yields early in the life of the bed. Produces superior quality mushrooms under cool fruiting conditions, thin fleshed mushrooms under warmest temperatures. Best suited as a commercial outdoor strain because of quality considerations. Fruiting range from 55° to 75° F D75T

#### CODES FOR SPECIAL TYPES

1. Donko

## SOYBEAN{S}

### GLYCINE MAX

#### FIELD SOYBEANS

Used as dried beans for cooking, flour, *soymilk*, *tofu*, *soy sauce*, *miso*, *tempeh*, etc. They require a longer growing season than vegetable soybeans, and need to ripen and dry before harvest.

**BLACK-SKINNED** {DF} For use as dried beans, black soybeans are sweeter, tastier and more versatile than the yellow type. Their rich distinctive flavor can be appreciated alone, or in mixed vegetable dishes. Also used for *fermented black beans* or *salted black beans*, popular in oriental cooking for adding a pungent, beefy flavor to meats and vegetables. The pods can be left on the plant to dry, for unlike many cultivars, they don't shatter as the plants begin to yellow. BELLEME 1993 [Re], CHANG, W. [Cul, Re], COST 1988, CUSUMANO [Cul, Re], HALPIN; E31, E56, E56{PD}, F73D{S}, F88, G44M, G47B, H91, H91{PD}, I19M, I19M{PD}, J11M

Black Jet: 104 days. Early maturing black soybean developed by Johnny's Selected Seeds for short season areas. The 2 foot tall plants are prolific yielders of medium-sized, jet black soybeans. The beans are thin-skinned, with good flavor and cook more quickly than other black types. A2, G6, J20, J39, K17M, L77D, N24M, N84

Kuromame: (Hokkaido Black) Large, black seeds. Good for tofu and soymilk; excellent for baked beans, refried beans and chili if pressure cooked. Popular in macrobiotic diets because it's more easily digested than yellow soybeans. Yields fresh green shell beans in 95 days, dry beans in 120 days. Organically grown in the rich volcanic soils of Hokkaido Island, Japan. Renowned for their nutritional and medicinal properties. C95, F88{DF}, G47B{DF}, H91{DF}, I19M{DF}, J97M, K17M, L77D

Lammer's Black: 104 days. The best black soybean for short season areas. Thin-skinned beans with good flavor. Very high in protein. Makes delicious black bean dishes. Can also be used for tofu. Large, bushy prolific plants, to 2 feet tall. Somewhat drought tolerant. Heirloom. K46T, K49T, L77D

Panther: 120 days. A highly regarded full-season black soybean introduced by Johnny's Selected Seeds. Large, dull-black beans with a very sweet, rich flavor, probably the finest of the dry soybean cultivars. Matures mid to late September from an early June planting. High yielding. C95, L31, R47

### YELLOW-SKINNED

Chico: 90-100 days. An excellent cultivar for making tofu and for sprouting. Nice, clear white hilum. High in protein. Recommended for planting in all regions except the extreme North. Developed by the University of Minnesota. K17M

Easycook: 125 days. Straw yellow seeds with a brown hilum; 2 to 3 seeds per pod. Oil content 19.3%. Has been found to cook fully as soft as navy beans in less time after a preliminary soaking of 12 hours. Stout, erect plant. Maturity group VI. Introduced from Shandong Province, China in 1894. PIPER; U38

Kura Kake Daizu: Two-toned, yellow and brown seeds of gourmet quality. Sweet, buttery and highly digestible. Delicious as a cooked dry bean. High yielding plant, about 3 1/2 feet tall. Ripens in mid-September from a late May planting. K17M

Maple Arrow: 113 days. Very popular early yellow soybean developed in Canada. Grows 30 inches tall. Produces large crops of medium-sized pods containing 2 to 3 beans each. Bright yellow, medium-sized beans have a brown hilum. Very high protein content; rich flavor. Good for processed soy products such as tofu and tempeh. Dependable in short season areas. M46

Natto: Very small, light-colored seeds. Traditionally used for making *natto miso*. Also one of the best varieties for sprouting. Very prolific plant, about 3 1/2 feet tall. Matures late, in September from a late May planting. C14, K17M, N24M

#### VEGETABLE SOYBEANS

Developed to be eaten in the fresh shell stage, green-seeded vegetable soybeans have a delicious, buttery flavor and a firm but tender texture, in Japan, they are cooked in the pod, popped into the mouth as needed, and served along with beer or sushi to form the summer snack called *edamame*. They are better adapted to northern growing conditions than limas, have more protein, and are higher yielding. HALPIN, TSUJI [Re]; B73M, C95, G33,197{DF}, L59

Agate: 90 days. An early maturing heirloom cultivar, originally introduced from Sapporo, Japan in 1929 by P.H. Doisset and W.J. Morse. Small, attractive beans are dark-brown blending into greenish-tan at the outer edge. Usually used as a vegetable soybean. Small, determinate plant; height 28 inches; daylength neutral. C95, F73D, I81M, K17M, K49T, N84

Buker's Favorite: 90 days. High quality vegetable soybean. Large, butter yellow seeds with excellent flavor. Very good eaten straight from the pod, in salads or stir-fried. Not sensitive to daylength, having tested well in North Dakota as well as Thailand. Selected by Dr. Robert J. Buker of Vancouver, Washington. 139

Butterbeans: 90 days. Sweet, buttery, bright-green beans are delicious cooked fresh and excellent for freezing. A good percentage of pods contain 3 large beans which are relatively easy to shell. Stocky 2 to 2 1/2 foot tall plants; well-branched and resistant to lodging; produce a prolific crop of pods. Widely adapted. Developed by Johnny's Selected Seeds. B6, F46, G6, K17M, N84

Envy: 75 days. A popular, well-established short season type. Reaches its prime picking stage considerably ahead of lima beans. Bright green beans have the delicious flavor characteristic of the green-seeded cultivars. For fresh shelling or drying. Upright, 2 foot tall plants are heavy yielding. Developed by Professor E.M. Meader at the University of New Hampshire. G6, L4, L77D, L91M

Hahto: 130 days. Large, olive-yellow, flattened seeds; hilum black; 2 to 3 seeds per pod. Oil content 17.9%. Excellent as a green shell bean. Dry seeds need no more preparation than the kidney bean as they cook up very readily. Stout, erect, bushy plant. Maturity group VI. Introduced from Wakamatsu, Japan in 1915. PIPER; U38

Hakucho Early: 75 days. A very early cultivar from Japan. Pods uniformly large, about 2 1/2 inches long, bright green; 3 to 4 small, yellow-green beans per pod. Can be cooked as green shelled beans

or dried like lima beans. Dwarf plant, only 12 to 14 inches tall; produces a densely concentrated pod set. Very reliable, even for short season areas. Not sensitive to short day-length. C85M, D55, 191, L88J, N84, S63M

Kegon: 83 days. Large podded type with excellent eating quality. Medium-green pods with white pubescence; bright green seeds, mild, sweet and tender. Suitable for eating fresh or freezing. Very productive plant; white-flowered. Standard midseason variety. C92, K16M

Prize: 85 days. Erect, bushy plants produce large clusters of pods, each pod containing 2 to 4 beans. Large, oval, plump bright-green beans are good for fresh use, canning, or freezing. Mature dried beans are yellow, nearly round; excellent for winter use, suitable for sprouts. Widely adapted; does well as far south as Florida. C92, G57M, G71, L77D

Tohya: 88 days. Light green pods, often with 3 beans per pods; delicious, light green beans. Vigorous, prolific plant; produces a concentrated crop of easy-to-pick beans. Very reliable, yields well in wet or dry conditions. A good substitute for lima beans in short-season northern regions. D68,199M, K49T, L77D, S70

White Lion: 70 days. Slightly curved, bright-green pods with white pubescence; contain mostly 3 plump beans of good quality. Vigorous plant, height about 30 inches; produces large clusters of pods. Very popular in Japan. Highly recommended both for fresh market and home gardens. C20M, D55, N84, S63M

## SPINACH {S}

### SPINACIA OLERACEA

#### SMOOTH-LEAVED

A distinct type, mostly of Oriental origin, that is considered the best for salad use. The leaves are thin and tender, with long upright petioles that protect them from rain and make for easier harvesting. They have a sweeter flavor, and being flat and smooth, are easier to clean.

#### HYBRID

Correnta: (Canadian Green) 45 days. Smooth, oval, very dark-green leaves; thick and heavy; mild, sweet flavor. Excellent in salads. Heat tolerant and very slow to bolt, can be grown from late spring until early fall. Erect growth habit. Resistant to downy mildew strains 1, 2 and 3. A16, B8M, C44, C92, D26D, D76, G57M, G87,139,164,177, J20, K49Z, K73, N52, etc.

Tamina: 38 days. High quality Asian spinach developed for slow bolting qualities. Smooth, dark-green, arrow shaped leaves; thick, crisp and sweet. Resistant or tolerant of downy mildew, virus and damping off. High yielding and heat tolerant. Recommended for spring sowing. K66, Q3

Teton:<sup>2</sup> 45-50 days. Smooth, uniform, very dark-green leaves; thick and succulent. Heat tolerant and slow to bolt. Erect growth habit makes for easy harvesting and bunching. Recommended for "baby" spinach. Suitable for late spring, summer and early fall production. Resistant to Races 1, 2, 3 and 4 of downy mildew. B75, D74B, D76, E33, F63, L89

Winter Green: Very distinctive type with deeply lobed leaves resembling dandelion or chicory. Thick, medium-sized leaves which retain a somewhat dark-red color when grown under low temperature conditions. Good resistance to downy mildew; tolerant of cold. Recommended for fall and over-winter crops. Potential specialty market item. Prickly-seeded. Q3

#### OPEN-POLLINATED

Summer Green: 25-30 days. Thick, dark green, serrated leaves with long erect-growing petioles. A very quick and sturdy grower from mid-summer to mid-winter, under short-day conditions. Sow seed at regular intervals beginning in early summer for a continuous supply. Q34

Ushiwakamaru: Fast-growing, erect, fall spinach with medium-green leaves and long petioles. The leaves are broad and smooth making it ideal for fine salads and mixtures with other greens. Resists bolting. Prickly-seeded. C20M

#### SAVOY-LEAVED

Better suited for cooking and processing than the smooth-leaved types. The leaves are broader and thicker and more bulk is retained after boiling or steaming. They are also much more difficult to clean due to the rough surface of the leaves.

#### hybrid

Indian Summer: 39 days. Large, thick, medium-savvy, dark-green leaves have an excellent flavor. Darker green, more crinkled, and longer standing than Melody. Upright growth habit makes for easier harvesting and cleaner leaves, Tolerant to mosaic virus, and races 1 and 2 of downy mildew (blue mold). For spring, summer and fall crops. AU B75M, C53, D26D, D68, G6, K49Z

Melody: 40 days. Semi-savoy type producing large, upright plants adapted for both spring and fall production. Leaves are thick, rounded, and deep-green in color. Popular for fresh market, freezing and canning. Bolt resistant. Vigorous plant growth results in higher than usual yields. Good resistance to cucumber mosaic virus, and downy mildew. All America Selections winner in 1977. C44, DI 1M, D82, F70, G16, G79, H33M, H61, H95,164, K73, M46

Olympia: 45 days. Large, heavy, deep dark-green leaves. Relatively smooth and easy to clean. Semi-erect plant; vigorous and productive; very slow bolting. Resistant to downy mildew races 1, 2, and 3. Suitable for fresh use or processing. Recommended for spring and summer crops. Good home garden variety. A16, C20M, C28, C97, E97, F13, F82, G16, G83M, G87, H33M, K10, L42, L89, N52, TIM, etc.

St. Helens: A smooth-leaved, hardy over-wintering cultivar. May be planted late summer for fall harvest or late fall (September-October) to over-winter for early spring harvest. Has an erect growth habit and is very resistant to mildew. Medium-long standing type suitable for bunching or processing. Resistant to downy mildew. Introduced in 1981. C20M, C28, N52

Tyee: 42 days. Dark-green, semi-savoy leaves, Very upright growth habit. Resists bolting under high temperatures and long day conditions. Compared to Indian Summer, Tyee is darker green, even more upright in growth, and stands over a week longer in hot weather. Good for spring, summer and fall crops, and for over-wintering. Tolerant to downy mildew races 1 and 3. AI, E24, F82, G6, H61,164, K71, K73, L7M, L79, M46, M49

Vienna: Most popular variety where full savoy types are preferred. Deep green, heavily savoyed leaves, thick and durable. Suitable for fresh market and processing. Semi-erect growth habit. Recommended for fall, overwinter and spring crops. Resistant to downy mildew races 1 and 2 and cucumber mosaic virus. AI, C28, F63, 191, G79, G82, H54, K50, K73, L42, M29, M49

#### OPEN-POLLINATED

America: 43 days, Very thick, well-crinkled, glossy dark green leaves. Taste trials show America to have a milder fresh taste than other cultivars, but superior taste when stir-fried. Grows 6 to 8 inches high, 10 to 12 inches in width. Intermediate in bolt resistance. Can be used in spring or fall, but is not suited for over-wintering. All America Selections winner in 1952. A16, F24M, G57M, L13M, Q11M, S17

**Bloomsdale Long Standing:** (Bloomsdale Savoy) 43 days. Thick-textured, heavy, dark-green, fully savoy leaves. Uniform, compact plants, dependable and heavy bearing; heat tolerant. Erect plants remain in the rosette stage for a long time without bolting. Recommended for home and market gardens. Also a popular commercial cultivar, being shipped extensively from the extreme South. Introduced in 1925. MAGRUDER 1938; A75, B75M, B78, D82, E24, E38, E59Z, FI, G16, H33M, H61, K23{PL}, L7M, M46, R47, etc.

**Broad Leaved Prickly:** (Standwell Broad Leaved Prickly) 40 days. A large-leaved, very hardy spinach which is extremely long standing. Short, thick stems with broad, deep-green, fleshy leaves that are produced over a long season. Does well in hot weather. Sow between mid-summer and the following early spring. B49, F24G, 053M, R32

**Cold Resistant Savoy:** 45 days. Dark-green, well-crinkled leaves. Good fresh flavor. May be used for late summer or fall harvests, as well as a wintered-over spinach for early spring cutting. Tolerant to heat, cold and blight. Slightly less resistance to bolting than Long Standing Bloomsdale. I39M, L42

**Fall Green:** (Improved Green Valley) 45 days. Developed by the University of Arkansas for superior disease tolerance. Highly tolerant of white rust, fusarium, anthracnose, blight, and cercospora. Produces deep green, semi-savoy leaves. For fall production. AI, A87M, C28, G57M, K73

**Giant Nobel:** (Giant Thick Leaf) 45 days. Large, medium-green leaves, notably thick in texture, moderately crinkled. Cooks very tender, and is of excellent flavor. Highly recommended for canning. Vigorous, spreading plant, often 25 inches across; has a quantity of thick, succulent leaves in the center resembling a half developed head of lettuce. Very heavy yielding. Introduced in 1926. MAGRUDER 1938; B75M, C92, DIT, D12, F24M, F80, G57M, G79, J20, K10, K49M, K71

**Giant Viroflay:** (Monstrueux de Viroflay) 43 days. Very broad, smooth, dark-green leaves; 10 inches long and 8 inches wide at the base. Large, vigorous-growing plants, often measuring 2 to nearly 2 1/2 feet in diameter. Early and quick-growing as a spring-sown crop, susceptible to bolting. When sown in autumn it yields a considerable crop in spring. An old French cultivar. Introduced prior to 1866. VILMORIN; C28, DIT, D12, E5T, E63D, F73D, G68, G71M, K49T, P59M, Q11M, S17

**Giant Winter:** (Geant d'Hiver) 45 days. Large, smooth, semi-savoy, medium-green leaves. A special strain for late summer or fall seeding for a crop in early spring, also for normal seeding. Cold hardy, remains marketable past Christmas in mild-winter areas. A2, B8, C85M, G53M, G68, K49M, P59M, Q11M, R47, 527, S75M

**King of Denmark:** 45-55 days. Very thick, dark-green, arrow-shaped leaves, semi-savoy; of very good quality either raw or cooked. Very hardy and early maturing. A heavy yielder. Resistant to bolting, remaining in good condition 2 to 3 weeks longer than other cultivars before running to seed. Introduced in 1919. MAGRUDER 1938; D27

**Low Acid:**<sup>1</sup> A round-leaved cultivar with very little oxalic acid content, and hence said to be the sweetest of all spinach leaves. Very high in vitamins A, C, and E. An excess of oxalic acid can cause a loss of calcium in the blood. C95, N84

**Medania:** (Mediana) 45 days. Smooth, broad, dark-green leaves; semi-savoy. Vigorous, erect plant. Heat and cold tolerant, stands up to chilly springs and hot dry summers. Winters over well. Can be planted in spring, late summer or fall. Especially bred to resist bolting, allowing for a much longer harvest. Resistant to blue mold races 1 and 3. B49, C20M, D76, E97, F63, L11, N52, N81, N84, R32, S55

**Monnopa:**<sup>1</sup> 45 days. Unique spinach, with low oxalic acid (an agent that causes loss of calcium from the blood). Ideal for baby food. The oxalic acid is also related to the bitterness of spinach and

so this cultivar is particularly mild-flavored. Light-green, crinkled leaves. Bolt resistant under reasonable conditions and winter hardy. B49, L91M, Q34, R32, R47

**Norfolk:** 45-55 days. Small compact plants with small, well-crinkled leaves. An old Canadian cultivar from the 1880's. Sow seed in late spring or early summer. One of the hardiest spinaches; has the ability to tolerate -30° F. temperatures and still not succumb. A2, E24

**Resistoflay:** 45 days. Fast growing spinach recommended for short season areas. Large, smooth, thick, medium-green leaves. Suitable for fresh market or processing. Spreading type growth habit; very heavy yielding. Resistant to downy mildew races 1 and 2. Can be grown for fall and winter crops or overwintered. C28, DIT, E38, K5M

**Sigmaleaf:** (Suttons Sigmaleaf) 45 days. Moderately crinkled, medium-green leaves with an excellent flavor. Vigorous, erect plants. Can be sown in spring or autumn, and stands fit for use over a long period without running to seed. S61

**Steadfast:** 50 days. Extremely bolt-resistant type. Attractive, smooth, dark-green leaves; flavor and eating quality very good. Not as productive as some other cultivars, but will remain in a usable condition in the garden for up to 2 months or longer. Sown from late April to early summer. A2, L89

**Victoria:** (Victoria Long Standing) An heirloom cultivar from England where it is one of the standard summer spinaches. Forms an abundance of thick, dark-green leaves, and rarely runs to seed. Good for succession plantings. GENDERS 1975; U14

**Viking:** (Northland) 40 days. Thick, very large, bright-green leaves; rounded at the edges; twice as long as they are broad; moderately crinkled. Borne on long, stout stalks, well above the ground, staying clean and free of dirt. Very early and very hardy. Productive. Blight and wilt resistant. Excellent for early spring plantings. B8, C69, P59M

**Virginia Savoy:** (Virginia Blight Resistant Savoy, Old Dominion) 40 days. Erect-growing plant with medium to long, rather thick petioles that hold the leaf-blades well above the soil. Leaf-blades dark green, oval-shaped, heavily crinkled. Very cold hardy and resistant to blight, recommended for planting in the fall or early winter where blight may be present. Introduced in 1921 by the Virginia Truck Experiment Station. MAGRUDER 1938; C95, L13M, N84

**Winter Bloomsdale:** 45 days. Thick, dark-green, deeply-crinkled leaves. Long standing and slow growing, offering good production well into the season. Good for early summer production and overwintering. Cold tolerant, takes temperature extremes better than many hybrids. Resistant to cucumber mosaic virus and blue mold. A2, C2S, D68, E24, F13, F44, G57M, K10, K50, K73, L7M

#### CODES FOR SPECIAL TYPES

1. Low Oxalic Acid
2. Baby

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## SPROUTING SEEDS {SP}

### VARIOUS GENERA

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#### SINGLE SPROUTS

**Aduki Bean:** 2-4 days. Use jar method and grow out of direct sunlight; 1/2 cup of seed per quart jar. Soaking time 5 to 10 hours; rinse 3 to 5 times per day. Optimum temperature range 65 to 85° F. Best harvested when 1/2 to 1 1/2 inches long. Yields between 3 and 4 cups of sprouts per cup of seeds. Often used in mixtures. B31, C14, F91, E47M, H99J, L24G, L24M, L89, L91M, M67

Alaska Pea: (for sources see Pea, page 450)

Alfalfa: 4-7 days. The most popular sprouting seed and one of the easiest to grow. Use jar or tray method and grow out of direct sunlight; 2 1/2 tablespoons of seed per quart jar. Soaking time 8 hours; rinse 2 to 3 times per day. Optimum temperature range 60 to 85°F. Best harvested when 1 1/2 to 2 inches long. Should be placed near a window to turn green and develop chlorophyll. Excellent for salads, sandwiches and juicing. B31, F37T, F91, F97M, G16, G91, J20, J73, L24, L24M, M63M, M67

Alfalfa (Hardy): Preferred for sprouts in some instances because it is easier to grow. Generally less vigorous and lower yielding than either non-hardy or semi-hardy alfalfas. Yields will generally be about 20% less than those of non-hardy types. Sometimes known as dormant alfalfa. C14

Alfalfa (Non-Hardy): Generally considered more difficult to grow when used for sprouts. Much more vigorous and higher yielding than either hardy or semi-hardy types. Will produce yields approximately 20% greater than those of hardy alfalfas. Also known as non-dormant alfalfa. C14

Amaranth: 1-2 days. Use jar method; 2 to 4 tablespoons of seeds per quart jar. Soaking time 12 hours; rinse twice daily. Best harvested when 1/4 inch long and 2 days old for use in salads. For use in baked goods seeds that have sprouted for just 24 hours are best. The sprouts have a flavor that is reminiscent of curry and fenugreek and are excellent in Indian-type dishes. COLE, J.; C25M, L24G

Arugula: 4-6 days. One of the newest sprouting seeds available. Use jar or tray method; 3 tablespoons per quart jar. Soaking time 4 to 6 hours; rinse 2 to 3 times per day. Optimum temperature range 60 to 80° F. Best harvested when 1 to 1 1/2 inches long. "Green" near window for chlorophyll development. Sprouts have an excellent, nutty, spicy flavor. Q11M

Barley: 1-3 days. Use jar or bag method; 1 1/2 cups of seeds per quart jar. Soaking time 6 to 10 hours; rinse 2 to 3 times per day with cool water. Optimum temperature range 68 to 80° F. Best harvested when 0 to 1/4 inch long as soon as the first seeds sprout. Viable seed not readily available, hulled seed may be used even if no shoot appears. Freshly harvested seeds are essential for good results. Used in *essene bread* and for barleygrass. BAKER [Re]; E47M, F97M, L24G, L24M, M67

Black Beluga, Crimson, Eston, Lain!, Vert du Puy Lentils: (for sources see Lens culinaris, page 106)

Black Garbanzo Bean: (for sources see Cicer arietinum, page 103)

Anasazi, Black Turtle Soup, Cannellini, Flageolet, Great Northern, Navy, Rattlesnake, Snowcap, Soldier Beans: (for sources see Kidney Bean, page 391)

Broccoli: 3-5 days. One of the newest sprouting seeds available. In great demand due to recent nutritional findings. Use jar or tray method; 3 tablespoons per quart jar. Soaking time 4 to 8 hours; rinse 2 to 3 times per day. Optimum temperature range 65 to 80° F. Best harvested when 1 to 1 1/2 inches long. "Green" near window before first harvest. Sprouts have a pleasant, fresh flavor similar to cabbage sprouts. F91, G6, L24G, L24, L24M

Buckwheat (Unhulled): 8-15 days. Use soil or tray method; about 2 1/2 cups for an 11 by 21 inch tray. Soaking time 8 to 14 hours\* do not cover seeds with soil. Optimum temperature range 65 to 80° F. Mist the sprouting seeds once a day. Best harvested when 4 1/2 to 6 inches tall. Cut the stems about an inch above the soil. Yields succulent seedlings, called *buckwheat lettuce*, that are an excellent substitute for lettuce, B31, C14, C95M, E47M, E60P, F97M, G91, H99J, J73, L24G, L24, L24M

Cabbage: 3-5 days. Use jar or tray method and sprout in indirect sunlight; 3 tablespoons per quart jar. Soaking time 4 to 8 hours; rinse 2 to 3 times per day. Optimum temperature range 60 to 85° F. Best

harvested when 1 to 1 1/2 inches long. "Green" near window during last day for best chlorophyll development. Sprouts have a pleasant taste, fresh and aromatic. Excellent with a steamed potato or in salads and sandwiches. F97, L24M, L34

Canola: 3-5 days. Use jar or tray method; 2 to 3 tablespoons per quart jar. Soaking time 4 to 8 hours; rinse 2 to 3 times per day. Optimum temperature range 65 to 85° F. Best harvested when 1 to 1 1/2 inches long. "Green" near window during last day for best chlorophyll development. Sprouts have a mild, cabbage-like flavor. Often used in mixes. G6, H99J, L24G

Cauliflower: 3-5 days. One of the newest sprouting seeds available. Use jar or tray method; 3 tablespoons per quart jar. Soaking time 4 to 8 hours; rinse 2 to 3 times per day. Best harvested when 1 to 1 1/2 inches long. "Green" near window before first harvest. Sprouts have a pleasant, fresh flavor similar to cabbage sprouts. G6, L24M

Chia: 12-14 days. Use clay method. Soak equal amounts of seeds and water in an unglazed clay flower pot saucer. Place in water up to 1/2 inch from the rim and cover with a plate. Do not rinse. Or use a decorative chia sprouter or *chia pet* and spread the mucilaginous seeds over the surface. Optimum temperature range 65 to 85° F. Best harvested when 1 to 1 1/2 inches long. "Green" near window during last day for best chlorophyll development. The spicy sprouts are good in salads or eaten as a snack. M15M

China Rose Radish: (for sources see Radish, page 500)

Chinese Cabbage: 4-6 days. Use jar or tray method; 3 tablespoons per quart jar. Soak for 3 to 6 hours; rinse 2 to 3 times per day. Optimum temperature range 65 to 85° F. Best harvested when 1 to 1 1/2 inches long. "Green" near window during last day for best chlorophyll development. Sprouts have a rich cabbage-like flavor and are excellent in salads C14, DIT, E60P, F13, G16, G57M, J20, L24G, L24, L34

Clover: 4-7 days. Use jar or tray method; 2 tablespoons per quart jar. Soaking time 3 to 6 hours; rinse 2 to 3 times per day. Optimum temperature range 60 to 85° F. Best harvested when 1 1/2 to 2 inches long. "Green" near window during last day for best chlorophyll development. Sprouts are sweet and juicy, similar to alfalfa sprouts but larger and more flavorful. (for sources see Trifolium spp., page 111)

Cowpea: (Black Eye Pea, Chinese Red Bean, Red Pea) 2-4 days. Use jar method; 3/4 cup of seeds per quart jar. Soaking time 8 to 12 hours; rinse 3 to 4 times per day. Optimum temperature range 68 to 85° F. Best harvested when 1/2 to 1 inch long. Can be used in sprout mixtures with lentils and garbanzo beans, forming up to 10% of the mixture. Also grown as 4 to 6 inch tall seedling "lettuce" or *red pea greens*. MEYEROWITZ 1994a; C14, E60P, F91, L24G, L24

Cress: 4-7 days. Use clay method. Soak equal amounts of seeds and water in an unglazed clay flower pot saucer. Put in water up to 1/2 inch from the rim and cover with a plate. Do not rinse. Optimum temperature range 50 to 72° F. Best harvested when 1 to 1 1/2 inches long. "Green" near window during last day for best chlorophyll development. Sprouts have a spicy flavor and are good in sprout mixtures. One tablespoon of seed yields 3/4 cup of sprouts. H99J, J73, K2, L24G, S55

Curled Cress: (for sources see Lepidium sativum, page 59)

Dill: 4-6 days. One of the few herb seeds which sprouts easily without a high percentage of seed spoilage. Fresh seed is essential for satisfactory results. Use jar or bag method and sprout in indirect sunlight; 2 1/2 tablespoons per quart jar. Soaking time 6 to 10 hours; rinse 3 times per day. Sprouts have a very strong taste and are best used in breads, soups or salad dressings. C14

Dun Pea: (Field Pea) 2-3 days. Use jar or soil method; 2 cups of seed per quart jar. Soaking time 7 to 10 hours; rinse 2 to 3 times per day. Optimum temperature range 50 to 72° F. Makes an excellent

sprout, crisp and tender. Should be harvested very small, when sprout first begins to form. Sometimes sold as *porridge pea*. C14

Esparsette: (Giant Clover) 4-6 days. Use jar or tray method; 2 tablespoons per quart jar. Soaking time 3 to 6 hours; rinse 2 to 3 times per day. Optimum temperature range 60 to 85° F. Best harvested when 1 1/2 to 2 inches long. "Green" near window during last day for best chlorophyll development. H99J

Fennel: 7-10 days. Use bag or tray method; 2 1/2 tablespoons per quart jar. Fresh seed is essential for good results. Soaking time 6 to 10 hours; rinse 3 times per *dzy*. Optimum temperature 75° F. Best harvested when 1 to 2 inches long. Relatively strong-flavored sprouts, but milder than dill sprouts. Excellent in salads and grain dishes or added to sprout bread. MEYEROWITZ 1994a; C14

Fenugreek: 3-6 days. Use jar or tray method; 1/4 cup per quart jar. Soaking time 4 to 8 hours; rinse 2 times per day. Optimum temperature range 65 to 85° F. Best harvested when 1 to 2 inches long. "Green" near window during last day for best chlorophyll development. Sprouts have a unique spicy flavor, but become bitter if left to grow too long. Excellent in sprouting mixtures with alfalfa and clover, or mung beans and lentils. C14, E47M, E60P, H99J, L24, L24G, L24M, L91M, R32, S55

Flax: 2-5 days. Use clay method. Soak equal amounts of seeds and water in an unglazed clay flower pot saucer. Put in water up to 1/2 inch from the rim and cover with a plate. Do not rinse. Optimum temperature range 65-80° F. Best harvested when 1 to 1 1/2 inches long. "Green" near window during last day for best chlorophyll development. Two day old sprouts are used in drinks; older sprouts have a somewhat bitter flavor. G91, L24G, M15M

Garbanzo Bean: 2-4 days. Use jar or colander method and sprout in indirect sunlight; 1 cup per quart jar. Soaking time 8 to 12 hours; rinse 3 to 4 times per *dzy*. Optimum temperature range 68 to 85° F. Best harvested when 1/2 inch long. Usually cooked for about 10 minutes and eaten as a side-dish, or added to soups, stews, casseroles, rice or vegetables. Ideal for sprouted *hummus*. C14, E47M{PD}, F91, H99J, L24G, L24M, L89, R32

Garlic: 12-14 days. Use tray method; 2 tablespoons per quart jar. Soaking time 8 hours; rinse 2 times per *dzy*. Optimum temperature range 70 to 75° F. Transplant to a second tray when 1/4 inch long. Best harvested when 2 inches long. "Green" near window during last day for best chlorophyll development. The sprouts lack the strong odor typical of garlic. MEYEROWITZ 1994a; C14, L24G, L24M

Garlic Chives: 12-14 days. Use tray method; 2 tablespoons per quart jar. Soaking time 8 hours; rinse twice per day. Optimum temperature range 70 to 75° F. Best harvested when about 2 inches long. Place near a window before harvest to develop chlorophyll. E60P, L24, L34

Hullless Barley: 1-3 days. An excellent barley for sprouting, there being no hulls to rinse. Sprouts readily because the germ is intact. Use jar or bag method; 1 1/2 cups of seeds per quart jar. Optimum temperature range 65 to 80° F. Harvest when 1/4 to 1/2 inch long and chop or grind to use in baking. Will also grow barley grass when planted in soil. H99J, L24G

Hullless Oats: 1-3 days. An excellent oat for sprouting, there being no hulls to rinse. Sprouts readily because the germ is intact. Use jar or bag method; 1 1/2 cups of seeds per quart jar. Optimum temperature range 65 to 80° F. For making sprout breads, the sprouts are generally harvested when 1/4 to 1/2 inch long. Can also be grown in soil to produce oat grass. H99J

Jaba Radish: A rapid-growing radish used for sprouting. Similar to regular radishes, but more crispy. Good in salads, sandwiches, etc. Young leaves also make a tasty addition to salads, being ready in 25 to 35 days when broadcast from spring to autumn. N84, R32, S55

Jumbo Sunflower: (for sources see Sunflower, page 548)

Kaiware Daikon: (Sprouting Daikon) A Japanese radish developed specially for sprouting. Grows very quickly. The white stem reaches 8 to 9 inches in length in 7 to 10 days. Crisp and tender with a spicy radish flavor. SCHNEIDER 1986 [Cui, Re]; C14, D1T, D12, E13G{PR}, F91, G6, G20M{PR}, G33, G57M, H73{PR}, H99J, L24G, L24M, N40{PR}, S63M, etc.

Kale: 3-6 days. Use jar or tray method and sprout in indirect sunlight; 3 tablespoons per quart jar. Soaking time 4 to 8 hours; rinse 2 to 3 times per *dzy*. Optimum temperature range 60 to 85° F. Best harvested when 1 to 1 1/2 inches long. "Green" near window during last day for best chlorophyll development. Sprouts have a mild, cabbage-like flavor and are excellent in salads. G6, L24G

Kamut Wheat: (for sources see *Triticum polonicum*, page 182)

Kidney Bean: 2-4 days. Use jar method; 3/4 cup per quart jar. Soaking time 8 to 12 hours\* rinse 3 to 4 times per *dzy*. Optimum temperature range 68 to 85° F. Best harvested when 1/2 to 1 inch long. Generally not eaten raw due to a digestive inhibitor which is reduced, but not completely eliminated by sprouting. Can be steamed, stir-fried, or ground and fermented overnight. L24G, L24M

Leek: 12-14 days. Use tray method; 2 tablespoons per quart jar; rinse twice per *dzy*. Optimum temperature range for growth 70 to 75° F. Best harvested when sprouts reach 2 inches in length. Place near a window to develop chlorophyll before first harvest. D3M{PR}, F91

Lentil: 2-5 days. One of the most popular sprouts and also one of the easiest to grow. Use jar or bag method; 3/4 cup of seed per quart jar. Soaking time 5 to 8 hours; rinse 2 to 3 times per *dzy*. Optimum temperature range 60 to 85° F. Best harvested when 1/4 to 1 inch long. Sprouts have a sweet flavor and are excellent either raw or added to soups, stews or vegetable dishes. C14, C95M, F13, F91, J20, L24, L24M, L89, M67, R32

Millet: 1-3 days. Use jar or bag method; 1 1/2 cups per quart jar. Soaking time 5 to 7 hours\* rinse 2 to 3 times per *dzy*. Optimum temperature range 70 to 80° F. Best harvested when 0 to 1/8 inch long. Viable seed not readily available, hulled seed may be used even if no shoot appears. Sprouts have a mild, nutty flavor which blends well with most kinds of foods. Also used for dehydrating and juicing. F97M, G91, L24G

Mung Bean: 3-5 days. Use jar or tray method; 1/3 cup per quart jar. Soaking time 5 to 10 hours; rinse 3 to 5 times per day. Optimum temperature range 68 to 85° F. Best harvested when 1 to 3 inches long. One of the few sprouts which should be grown in darkness for best results. Straighter sprouts are produced by the tray method, and when the sprouts are disturbed as little as possible in the container. Unsprouted or "hard" seeds can be an annoyance, and should be eliminated with a mesh frame. CHANG, W. [Re], DAHLEN [Pre, Re], HAWKES [Re]; C14, D65, F37T, F91, G57M, G82, G91, J20, J73, L24, L24G, L24M, L89, S63M

Mustard: 4-6 days. Use jar or tray method; 3 tablespoons per quart jar. Soaking time 4 to 6 hours; rinse 2 to 3 times per day. Optimum temperature range 65 to 85° F. Best harvested when 1 to 1 1/2 inches long. "Green" near window during last day for best chlorophyll development. Sprouts have a hot, spicy flavor and can be added to sprouting mixes with alfalfa and clover, forming 10 to 15% of the mixture. Dried sprouts are used as a condiment. C14, E24, G6, J73, S55. (see also *Brassica juncea*, page 53, *Brassica nigra*, page 53 and *Sinapis alba*, page 60)

Oats: 1-3 days. Use jar or towel method; 1 1/2 cups per quart jar. Soaking time 3 to 5 hours; rinse 1 to 2 times per day with cool water. Best harvested when 0 to 1/4 inch long. Viable seed not readily available, hulled seed may be used even if no shoot appears. Excellent for sprouted grain bread and juicing. Also good in salads, soups and dressings, or dried and made into *sun granola*. F97M, L24G

Oilseed Radish: 4-5 days. Very popular and easy to sprout. Use jar method and 3 tablespoons of seeds. Optimum temperature range 60 to 80° F. Best harvested when 1 to 6 inches long. "Green" near window during last day. Spicy flavor similar to common radish, but slightly milder than kaiware daikon. Excellent alone or in mixes. H99J, L24G

Onion: 12-14 days. Use tray method; 2 tablespoons per quart jar. Soaking time 8 hours; rinse 2 times per d<sup>^</sup>. Optimum temperature range 70 to 75° F. Best harvested when 2 inches long. Should be placed near a window to turn green and develop chlorophyll. C14, G6, H99J, J20, L24G, L24M

Oregon Sugar Pod Pea: (for sources see Pea, page 450)

Pea: 2-5 days. Use jar or soil method; 2 cups of seed per quart jar. Soaking time 7 to 10 hours; rinse 2 to 3 times per day. Optimum temperature range 50 to 72° F. Best harvested when 1/4 to 1/2 inch long. Yields between 3 and 4 cups of sprouts. Can be used in sprout mixtures with lentil, wheat, sunflower and buckwheat, forming 25% to 70% of the mixture. Sprouts are very sweet and are excellent raw, as a cooked vegetable or added to soups. Both green and yellow types are available. B6, C14, DIT, E47M, F91, F97M, H99J, L24, L24G, L24M, L34, L89, M67

Peanut: 2-6 days. Use jar or bag method; 1 cup per quart jar. Soaking time 8 to 12 hours; rinse 2 to 3 times per day. Optimum temperature range 68 to 85° F. Best harvested when 1/4 to 3/4 inch long. Can be used in sprout mixtures with garbanzo beans, lentils, soybeans and mung beans, forming 10 to 25% of the mixture. Valencia types sprout best. Dry roasted sprouts make a flavorful, easy to digest snack. In India, a delicacy is prepared by seasoning sprouted peanuts with various spices. MEYEROWITZ 1994b, ROSENGARTEN; L24M

Popcorn: 2-3 days. Use jar method; 1 1/2 cups per quart jar. Soaking time 10 to 14 hours; rinse 2 to 3 times per d<sup>^</sup>. Optimum temperature range 68 to 85° F. Harvest when 1/4 to 1/2 inch long. Sprouts are somewhat less sweet than those from sweet corn. Best in soups, casseroles and breads. Usually ground or blended with water before use. L24G

Psyllium: 12-14 days. Use clay method. Soak equal amounts of seeds and water in an unglazed clay flower pot saucer. Put in water up to 1/2 inch from the rim and cover with a plate. Do not rinse. Optimum temperature range 65 to 80° F. Best harvested when 3/4 to 1 1/2 inches long. "Green" near window during last day for best chlorophyll development. Sprouts have a mild flavor and are eaten in salads or as a snack. M15M

Pumpkin: 0-2 days. Use jar method; 1 1/2 cups per quart jar. Soaking time 4 to 6 hours; rinse 2 times per day. Optimum temperature range 65 to 85° F. Best harvested when 0 to 1/8 inch long. Viable seed not readily available; hulled or hullless seed may be used even if no shoot appears. Sprouts have a mild, delicate flavor. Excellent in soups, salads, dressings and blended fruit drinks. Soaked seeds make a very good fermented *seed cheese*. L24G

Quinoa: 1-4 days. Use jar or bag method; 1/3 cup per quart jar. Soaking time 2 to 4 hours; rinse 2 to 3 times per day. Optimum temperature range 55 to 80° F. Best harvested when 1/4 to 1 1/4 inches long. "Green" near window during last day for best chlorophyll development. After 1 day of sprouting, sprouts have a mild flavor and can be used like sesame or sunflower seeds. At later stages they have a red tint and are very good in salads and sandwiches. Sprouts develop a slightly bitter taste if grown too long. WOOD, R.; H99J, J56, L24G, L24M, S55

Radish: 4-6 days. Use jar or soil method; 3 tablespoons per quart jar. Soaking time 4 to 8 hours; rinse 2 to 3 times per d<sup>^</sup>. Optimum temperature range 60 to 85° F. Best harvested when 1 to 2 inches long. "Green" near window during last day for best chlorophyll development. Sprouts have a hot, spicy flavor and are very popular in sprout mixtures with alfalfa and clover, forming about 10% of the mixture. Dried sprouts can be used as a condiment. SCHNEIDER

1986 [Cui, Re]; E47M, F37T, F91, F97M, G16, G91, J73, L24, L89, M15M, M46

Red Lentil: Use jar or bag method; 3/4 cup of seed per quart. Soaking time 5 to 8 hours; rinse 2 to 3 times per day. Optimum temperature range 60 to 80° F. Best harvested when 1/4 to 1 inch long. Both hulled and unhulled types are available. Sprouts have a sweet flavor and are excellent either raw or cooked. B6, C14, E24, F91, H99J

Rye: 2-3 days. Use jar or soil method; 1 cup per quart jar. Soaking time 6 to 10 hours; rinse 2 times per d<sup>^</sup>. Optimum temperature range 50 to 72° F. Best harvested when 1/4 to 1/2 inch long, when the roots are no longer than the seed. Roots become long and fibrous if allowed to continue sprouting. Should be refrigerated if not used immediately. Excellent for juicing and sprouted grain *essene bread*. BAKER [Re]; B31, C14, E24, E47M{ED}, G91, H99J, K74M{PD}, L24G, L24M

Sesame: 2-3 days. Use jar method; 2 cups of seed per quart jar. Soaking time 6 to 8 hours\* rinse 3 to 4 times per d<sup>^</sup>. Optimum temperature range 60 to 85° F. Best harvested when 1/8 inch long. Sprouts have a mild flavor after 1 day of sprouting. Can be used in sprout mixtures with sunflower and almond, forming 10 to 20% of the mixture. L24G

Snowbean: 3-4 days. First introduced by Thompson and Morgan in 1983 as Sweet Lupin Sprouts, the name was later changed to the current Snowbean Sprouts. It is said to have a particularly desirable sweet, nutty flavor, and to be much more wholesome or substantial compared with other sprouts. BISSELL; L24G

Soybean: 3-4 days. Use jar or colander method; 3/4 cup per quart jar. Soaking time 4 to 8 hours; rinse 3 to 4 times per d<sup>^</sup>. Optimum temperature range 65 to 85° F. Harvest when 1 1/2 to 2 inches long. Best results are obtained with sprouters that have holes in the bottom, so the sprouts are never agitated during rinsing. Generally not eaten raw due to digestive inhibitors, which are not completely destroyed during sprouting. Usually boiled for 10 to 15 minutes with salt and oil and eaten with rice or millet. DAHLEN [Pre, Re], PIPER [Cu, Re]; C14, C95M, F97, G91, L24G, M67

Spelt Wheat: (for sources see Triticum spelta, page 182)

Sundak Sunflower: (for sources see Sunflower page 548)

Sunflower (Hulled): 1-3 days. Use jar or bag method; 1 cup per quart jar. Soaking time 2 to 4 hours; rinse 2 times per day. Optimum temperature range 60 to 80° F. Unsprouted seeds should be removed after the second day as they will rot and may spoil the whole batch. Best harvested when 0 to 1 inch long. Excellent in salads, blended fruit drinks, salad dressings, or as an addition to sprouted wheat breads. Also used for making sprouted *seed cheese*. MEYEROWITZ 1994b [Re]; B31, F91, L24G

Sunflower (Unhulled): 8-15 days. Use soil or tray method. Soak 10 to 14 hours. Optimum temperature range 60 to 80° F. Best harvested when 3 1/2 to 6 inches long. Can be grown in any sunny window. Harvest by cutting 1 inch from the soil, or by pulling the entire plant from the soil. Succulent seedlings, called *sunflower lettuce*, have a rich flavor and are an excellent substitute for lettuce. Also used for juicing, as a snack, for drying, or as a garnish. Contains chlorophyll and many vitamins, minerals and enzymes. C14, E47M, E60P, F91, H99J, L24, L24G, L24M, N7D

Triticale: 2-3 days. Use jar or soil method; 1 cup of seeds per quart jar. Soaking time 6 to 10 hours; rinse with cool water 2 to 3 times per day. Optimum temperature range 60 to 80° F. Best harvested when 1/4 to 1/2 inch long, when roots are no longer than the seed. Excellent for sprouted grain bread. Also good in salads and soups. L24M, M67

Turnip: 3-5 days. Use jar or soil method; 3 tablespoons of seed per quart jar. Soaking time 4 to 8 hours; rinse 2 to 3 times per d<sup>^</sup>. Optimum temperature range 65 to 85° F. Best harvested when 1 to 1 1/2 inches long. "Green" near window during last day for best



chlorophyll development. Yields between 3 and 4 cups of sprouts. Has an excellent cabbage-like flavor and is eaten in salads. L24G

Watercress: 4-5 days. Use jar or tray method; 3 to 4 tablespoons per quart jar. Soaking time 4 to 8 hours; rinse 2 to 3 times per day. Optimum temperature range 60 to 80° F. Best harvested when 1 to 3 inches long. "Green" near window during last day for best chlorophyll development. Excellent in soups, salads and sandwiches. L24G

Wheat: 2-3 days. Use jar or soil method; 1 cup hard red wheat per quart jar. Soaking time 6 to 10 hours; rinse 2 times per d<sup>^</sup>. Optimum temperature range 55 to 80° F. Best harvested when 1/4 to 1/2 inch long. Excellent for making sweet, rich, moist sprouted wheat or *essene bread*, which is not baked, merely dried in the sun or a low oven. Also used for *wheatgrass*, harvested after 7 to 10 days, at 5 to 6 inches tall—which is primarily used for juicing. Soft white wheat is preferred for snacking or making *rejuvelac*, sprouted pastries, and *sprout nuts*. BAKER [Re], MEYEROWITZ 1994a, MEYEROWITZ 1994b [Re]; A33M{PD}, B31, C95M, E22{PD}, E47M{PD}, F9I, F97M, G6, G91, J73, K74M{PD}, L24, L24{PD}, L24M, R32, etc.

#### SPROUT MIXES

Christmas Present: 3 to 4 days. Unique, gourmet blend of mung and aduki beans, and green peas. Requires a 2-step process. Use jar or tray method and soak 1/4 cup of mung beans and adukis for 8 to 12 hours. Rinse 2 to 3 times per d<sup>^</sup>. After 2 days, add the peas to a different container and repeat procedure. Will keep 7 to 21 days refrigerated. Excellent for snacking or sauteed in garlic butter. L24M

French Garden: 3-5 days. Gourmet sprouting mix. Combines clover, alfalfa, arugula, cress, radish, broccoli and fenugreek. Use jar or tray method; 2 tablespoons per jar. Soak 8 to 12 hours; rinse 2 to 3 times per d<sup>^</sup>. "Green" in indirect sunlight on the fourth d<sup>^</sup>. De-hull in a bowl of water. Excellent raw in salads and sandwiches. L24M

Halloween Treat: 2-3 days. Gourmet sprouting blend of black garbanzo beans, and red and black lentils. Will grow to approximately twice their original weight. Use jar or tray method; 1/2 cup of seeds and 2 cups of water. Soak 8 to 12 hours; rinse 2 to 3 times per d<sup>^</sup>. Refrigerate when no longer damp. Excellent in sprouted fried rice or with mustard sauce and spices. L24M

Hot and Sweet: 3-4 days. Distinctive, gourmet mixture of radish, wheat, 2 types of peas, and 2 types of lentils. Requires a 2-step process. Use jar or tray method and soak 3 tablespoons of radish seeds for 8 hours. Rinse 2 to 3 times per d<sup>^</sup>. After 2 days, soak 1/3 cup of the remaining seeds for 8 to 12 hours. Rinse once and again after 8 to 12 hours. De-hull and refrigerate when no longer damp. Excellent raw. L24M

Italian Blend: 3 to 5 days. Gourmet mix of garlic, alfalfa, clover, broccoli and cress. Use jar or tray method; 2 tablespoons per jar. Soak 8 to 12 hours; rinse 2 to 3 times per day. "Green" in indirect sunlight on the fourth day. De-hull in a bowl of water. Excellent in salads, sandwiches, tacos, pizzas, etc. L24M

Long Life Mix: 3-5 days. Gourmet mixture of broccoli, cabbage, cauliflower, arugula, cress, mustard and radish. Use jar or tray method; 2 tablespoons per jar. Soak 8 to 12 hours; rinse 2 to 3 times per day. "Green" in indirect sunlight on the fourth day. De-hull in a bowl of water. Excellent in salads, sandwiches, tacos, burritos, etc. L24M

Nick's Hot Sprout Salad: 3-5 days. Gourmet mix of clover, radish, mustard, dill, celery and cress. Use jar or tray method; 2 tablespoons per jar. Soak 8 to 12 hours; rinse 2 to 3 times per d<sup>^</sup>. "Green" in indirect sunlight on the fourth day. De-hull in a bowl of water. Excellent in salads, sandwiches, tacos, quesadillas, etc. L24M

Oriental Greens: 3 to 5 days. Unique, gourmet blend of alfalfa, mizuna, tatsoi and oriental mustard. Use jar or tray method; 2 tablespoons per jar. Soak 8 to 12 hours; rinse 2 to 3 times per day. "Green" in indirect sunlight on the fourth day. De-hull in a bowl of water. Excellent in salads and sandwiches, blended with juices, etc. L24M

Pea Carnival: 2 to 3 days. Gourmet mixture of green, yellow and speckled peas. Use jar or tray method; 1/2 cup of seeds and 2 cups of water. Soak 8 to 12 hours; rinse 2 to 3 times per d<sup>^</sup>. Refrigerate when no longer damp, 8 to 12 hours after final rinse. Excellent for snacking, spreads, or adding to a rice pot. L24M

Peasant Mix: 2 to 3 days. Gourmet mix of green, red, French, chocolate and black lentils. Use jar or tray method; 1/2 cup of seeds and 2 cups of water. Soak 8 to 12 hours; rinse 2 to 3 times per d<sup>^</sup>. Best harvested when "tails" first appear. Refrigerate when no longer damp. Excellent for snacking or in stir fries, curried salads, and soups. L24M

Rainbow Bean Mix: A mixture of 5 different colorful beans. Includes green lentils, Fiench Verte du Puy lentil, sweet green pea, yellow pea and adzuki bean. Use a bag or vertical sprouter and grow as for individual beans and peas. Harvest when small for best flavor. Good either raw or cooked. L24, L34

Russian Mix: 3 to 5 days. Unique, gourmet mix of clover, mustard, onion, dill, broccoli and fenugreek. Use jar or tray method; 2 tablespoons per jar. Soak 8 to 12 hours; rinse 2 to 3 times per day. "Green" in indirect sunlight on the fourth d<sup>^</sup>. De-hull in a bowl of water. Excellent in salads and sandwiches, as a topping for pizza, etc. L24M

San Francisco Mix: 3 to 4 days. Gourmet blend of mung beans, peanuts, 3 types of garbanzos, adukis, 4 types of lentils, and 3 types of peas. Requires a 2-step process. Use jar or tray method and soak 1/4 cup of mung beans and adukis for 8 to 12 hours. Rinse 2 to 3 times per day. After 2 days, add the remaining seeds to a different container and repeat procedure. Excellent for snacking, hummus, or making sprouted bean burgers. L24M

Smoothie Mix: 4-6 days. Selected mixture of lentils, canola, clover and alfalfa. Optimum temperature range 60 to 80°. Harvest when 1 to 4 inches tall. "Green" near window to develop chlorophyll. Excellent for blending into smoothies. L24G

Spicy Lentil Crunch: (Zesty Lentil Crunch) 4-6 days. Delicious blend of Eston lentils, alfalfa, red clover, radish, canola, and a trace of black mustard. Optimum temperature range 60 to 80°. Harvest green sprouts when 1 to 4 inches tall. Mildly spicy flavor. Very popular and easy to grow. H99J, L24G, L89C

Spicy Sprout Mix: A classic, zesty sprout mixture that usually consists of alfalfa, red clover and radish seeds, chosen because they compliment one another and mature at about the same time To mix your own, use 1 tablespoon of radish, 1 tablespoon of red clover and 4 tablespoons of alfalfa. D3M{PR}, E13G{PR}, L24M, L89, N40{PR}

## SQUASH {S}

CUCURBITA MAXIMA  
CUCURBITA MOSCHATA

CUCURBITA MIXTA  
CUCURBITA PEPO

### SUMMER SQUASH

These are usually harvested when about half-grown, before the seeds have become hard. They can be eaten raw or cooked, but are generally not canned or frozen. Some cultivars, such as Jersey Golden Acorn, can be harvested as summer squash when small or used as winter squash if left to mature. C. pepo unless otherwise noted.

**SCALLOP SQUASH***Hybrid*

Peter Pan: 50 days. Uniform, well-scalloped fruit, 2 1/2 to 3 inches in diameter at harvest size; small blossom end scar; tender, light green skin; pale green flesh, meaty, of excellent quality. Vigorous, bush-like vine; very productive, produces over a long period; widely adapted. All America Selections winner in 1982. A16, B75, C85M, F13, G82, G93M, H95, 139, 191, K50, K73, M46, N16

Scallopini: 52 days. Deep scalloped-shaped fruit, with medium fluting, 2 1/2 to 3 inches in diameter at harvest size; skin dark green; flesh pale green, meaty, sweet and nut-like, reminiscent of zucchini. Compact vines; extremely productive over a long season. Excellent for home gardens and local markets. All America Selections winner in 1977. B73M, C92, G27M, G82, G93M, 164,167M, K49Z, K50, L42, L89C, N40{PR}

Sunburst:<sup>1</sup> 52 days. First hybrid yellow scallop squash. Deep scallop-shaped fruit, with medium fluting; skin soft, bright deep-yellow, with a dark green "sunburst" pattern; tender, creamy white flesh, flavor delicate and buttery. Very attractive when picked as "baby" squash, with the blossom still attached. Compact vine; spreads to 2 1/2 feet. All America Selections winner in 1985. C44, C53, E13G{PR}, G6, H73{PR}, 139, K66, K73, L89, N40{PR}

*Open-Pollinated*

Benning's Green Tint: 55 days. Scallop-shaped fruit; 2 to 2 1/2 inches deep, 3 to 4 inches in diameter at harvest size; skin pale green; flesh pale green, thick, tender, fine-textured. Medium-sized bush; semi-open; very productive over a long period. Popular for home gardens, fresh market and shipping. *DIT*, E5T, E97, G6, G13M, G71M, G93M, L7M, L89, M32, M95M, N52, Q34

Golden Scallopini: 55 days. Saucer-shaped, golden fruits with scalloped edges, 3 to 5 inches wide Very good flavor, especially when picked small. Bush-type plant, early and productive, remains productive throughout the growing season if picked regularly. Italian heirloom from the 19th Century. 199M, K23{PL}, K49T, L13M

White Bush: (Early White Bush, White Patty Pan) 55 days. Deep scallop-shaped fruit; 2 1/2 to 3 inches deep, 5 to 7 inches in diameter; skin pale green, nearly white when ripe; flesh milky white, tender, succulent. Compact, bush-like vine; very productive Very popular home garden cultivar. Of ancient and unknown origin. BURR, TAPLEY 1937; A75, A87M, B75, F80, F92, G79, H33M, K49M, K71, L7M, N16, R47

Wood's Earliest Prolific: 50 days. Slightly scalloped fruit; 2 to 2 1/2 inches deep, 3 to 3 3/4 inches in diameter; skin heavily and uniformly tinted with pale green, pale greenish-white when mature. Bush-like vine; very productive, will produce fruits throughout the season when continuously harvested. Introduced in 1899 by T.W. Woods & Sons, Richmond, Virginia. TAPLEY 1937; F46, K49M, L13M, N84

Yellow Bush: (Golden Bush, Early Yellav Bush, Yellow Custard) 60 days. Deeply scalloped fruit; 3 inches deep, about 5 inches in diameter at harvest size; skin deep yellow, irregularly mottled with pale yellow; flesh yellowish-white, firm, fine-grained, flavorful. Bush-like plant, spreading to about 3 feet; very productive. Introduced prior to 1860. BURR, TAPLEY 1937; B8M, C95, G57M, K10, K49M, K71, L7M, L13M

**ZUCCHINI***Hybrid*

Arlesa:<sup>1</sup> 48 days. High quality French *courgette* type. Cylindrical fruit; skin glossy green, flecked with lighter green, thin; flesh firm, very flavorful; stays firm and fresh in storage. Best picked at "baby" size, but stays tender when larger. Vigorous, highly prolific plant.

Upright bearing habit and relatively spineless leaves and stems makes for easy harvesting. J97M, K66

Butterblossom:<sup>2</sup> 45 days. Developed to produce more prolific yields of extra large, firm golden-yellow male blossoms over a longer season. In Europe the male blossoms, which do not bear fruit, are sold as *squash bouquets* and used for stuffing. Female blossoms will produce fruit if not removed, and are most often sold attached to tiny zucchinis, the size of a little finger. BRENNAN [Cul, Re], SCHNEIDER 1986 [Cul, Re]; C44, D26D, D68, E63D, F63,177, M49

Cousa: (Lebanese Zucchini, Egyptian White Zucchini) 51 days. Short, cylindrical fruit, 3 to 5 inches long; skin pale greenish-white when young, turning buff colored when ripe; flesh fine-textured, of excellent quality, flavor unique. Easy to find and pick. Widely used in Lebanese and Middle Eastern cuisine. Vigorous, compact, bushy vine; very high yielding. MALLOS [Re]; D68, K49M, K49T, K73, L42, L77D, R11M

Ghada: 48 days. Cylindrical fruit, slightly tapered at the stem end, 5 to 6 inches in length at harvest size; skin light greenish-yellow, very smooth; flavor excellent. Fairly compact, very productive plant. Very early. A standard cultivar in the Middle East where it is popular for stuffing. C53, L42

Gold Rush: 52 days. Uniform, straight fruit, 7 to 8 inches long; skin deep golden-yellow, glossy with contrasting rich green stems; flesh creamy white, flavorful. Vigorous, open, single-stemmed plant; highly productive; easy to pick. Excellent for home gardens and specialty markets. All America Selections winner in 1980. A16, B75M, C44, C53, D11M, E63D, F70, F82, G6, G71, H61, 139, J97M, K73, L89, M46, N16, etc.

Gourmet Globe:<sup>1</sup> (Apple Squash) 50 days. Globe-shaped fruit, 3 to 4 inches in diameter; skin dark green, with light green stripes; flesh creamy white, firm but tender, very flavorful. Excellent eaten raw in salads; also good for stuffing and sauteing. Specialty market item when picked young as "baby" squash. Upright, open-bush type plant; very prolific. C20M, 191, N52

Roly Poly: 50 days. Unique, round, Middle-Eastern type zucchini. Very attractive, small, globe-shaped fruits; thin, light-green skin; very good, creamy, nutty flavor. Ideal for stuffing, each one making a single portion. Single-stemmed, prolific plants. Introduced by W. Atlee Burpee & Co. B75

Sardane:<sup>2</sup> 48 days. The large blossoms are excellent for sauteing, or for stuffing and baking still attached to the young fruit. Long, cylindrical fruit; skin deep dark-green, glossy; flesh firm, solid, flavorful. Bush-type, high yielding vine; relatively free of irritating spines. Can be succession sown for a fall crop in mild-winter climates. L91M

Spineless Beauty:<sup>3</sup> 50 days. Unique spineless type, free of leaf or stem spines. Uniform, cylindrical fruit, 7 1/2 to 8 1/2 inches long; skin medium green, very smooth, waxy; flesh crisp, white. Vigorous, medium open plant; sets continuously and produces high yields. Easy to harvest, with minimal fruit damage. AI, D26D, D76, F63, G13M, G16, G82, H61, /50G, J84, K10, K50, K73, L42, M29, etc.

*Open-Pollinated*

Black Zucchini: (Black Beauty) 50 days. Straight, cylindrical fruit, slightly ridged; grows to 9 inches long, but best quality is obtained when picked at 6 inches; skin dark blackish-green, glossy; flesh greenish-white, firm but tender, flavorful; small seed cavity. Semi-upright, prolific plant; has an open growth habit for easy picking. A25,y4Z5, B75M, C44, F60, G57M, H33M, H61,J97M, K50, K73, L7M, N16, R47

Burpee's Fordhook:<sup>2</sup> 57 days. Produced more male blossoms than most other summer squash in trials conducted by Burpee Seed Company. Long, cylindrical fruit; straight to slightly curved; skin smooth, deep blackish-green; flesh creamy white, tender, freezes

well; best when 8 to 12 inches long. Vigorous, bush-like plant. All America Selections winner in 1942. B8M, B75, G57M, N52, PIG

Caserta: 55 days. Cylindrical fruit, slightly tapered towards the stem end, 6 to 8 inches in length; skin grayish-green, streaked and mottled with darker green; flesh creamy white. Bush medium large, vigorous, open; very productive. For home gardens, local markets and shipping. All America Selections winner for 1949. C20M, C97, DIT, G57M, G79, G93M, J97M, K49T, N52

Cocozelle: (Italian Vegetable Marrow, Cocozella di Napoli) 55 days. Long, slender, nearly cylindrical fruit; slightly enlarged at the blossom end; ribbed; skin pale greenish-yellow, prominently striped with very dark green; flesh firm, greenish-white, very flavorful. Best harvested when 6 to 8 inches long. Moderately vigorous, bush-type plant. TAPLEY 1937; C44, D68, E24, E59Z, E63D, F44, G27M, I39, I59M, J25M, K23{PL}, K27M, L13M

Costata Romanesca: (Roman Ribbed) Very distinct strain of zucchini with long, fluted or ribbed fruit. Medium green-striped skin, with white flecks. Rich flavor. Will grow to 2 feet long and still remain tender. Develops a very long ovary at the blossom stage. Usually picked when less than 8 inches long and fried whole, with the flower. When cut, the slices are scalloped on the edges. Very large, vining plant. D29P, D68, G6, J73, L11, L94, M27, Q34

Dark Green Zucchini: 55 days. Cylindrical fruit, slightly tapered towards the stem end; 6 to 8 inches long at harvest size; very dark green skin; flesh greenish-white, fine-textured, of strong flavor. Popular for home gardens and fresh markets. Medium-large, bush-type plant. A2, A16, A75, C85M, E24, F80, G27M, G71M, G79, G93M, H42, K10, K71, L7M

French White: (French White Bush Zucchini) 50 days. Vigorous white bush zucchini from France. Firm flesh, mild but flavorful; seed cavity small. At its peak of flavor when 3 to 5 inches long. Very popular and versatile. Semi-bush type plant. F73D, I39, K20M

Golden Zucchini: (Burpee's Golden Zucchini) 55 days. Medium-long, slender, cylindrical fruit; attractive, glossy, bright golden-yellow skin; distinctive flavor. Excellent raw or cooked. Compact, bush-type vine. Developed by W. Atlee Burpee Company, from genetic material supplied by Dr. Oved Shifriss, Rutgers University. B75, C20M, G57M, J73, K10, K49M, PIG

Grey Zucchini: 50 days. Small to medium-sized fruit; straight when young, becoming slightly tapered toward the blossom end; skin smooth, medium-green, mottled with attractive grey specks, very attractive; high quality flesh, small seed cavity; ships and stores well. Bush-type vine; highly productive over a long period. A75, A87M, B75M, DIT, D12, F44, F60, G13M, G27M, G57M, G79, K5M, K71, L7M, N16, etc.

Lebanese Light Green: 40-50 days. Slightly bulbous fruit, tapered at the stem end; lime green exterior, cream interior; excellent, sweet flavor. Weight 1 to 2 pounds but better picked when small. Capable of withstanding variable climatic conditions. Very popular in the Middle East. B49

Long Cocozelle: (Long Dark Cocozelle) 50 days. Long, narrow, straight fruit; skin smooth, dark green, with light green stripes; flesh greenish-white, firm, very flavorful, of excellent quality. Best harvested when 6 to 10 inches long. Vigorous, bush-type plant. Popular home garden and local market cultivar. B8M, C20M, C69, D74B, G57M, G71, G79, I84, K49M

Long Green Trailing: (Long Green Striped Vegetable Marrow, Green Striped) 58 days. Nearly cylindrical fruit, slightly tapered towards the base; skin irregularly striped with dark and light green; flesh pale greenish-white. Moderately vigorous, trailing vine, 12 to 15 feet long; best grown on a fence or trellis. An old-fashioned English cultivar. TAPLEY 1937; B49{OR}, K20M, N84, R32, S55, S61

Long White Bush: (White Bush Vegetable Marrow) 55 days. Nearly cylindrical fruit; 10 to 12 inches long, 3 to 3 1/2 inches in

diameter; skin creamy white; flesh greenish-white, fine-textured, delicately flavored. Very prolific, bush-type plant. An old English cultivar, introduced into the United States prior to 1824. TAPLEY 1937; A16, C85M, D11M, D27, E38, FI, F70, G71, I67M, L42, M49, PIG

Rondede Nice: (Tonda di Nizza) 45 days. Unique, globe-shaped zucchini. Skin very fine and delicate, bruises easily, pale green. Very flavorful, greenish-white flesh. Can be harvested up to 5 inches in diameter without loss of quality or flavor. Saute whole when 1 inch in diameter. Ideal for stuffing when tennis ball size. Very vigorous, quick-growing plant. For home gardens and specialty growers. B49, B75, C53, C92, E63D, G68, G93M, K23{PL}, K49T, K66, L91M, M46, PIG, Q11M, R32, R47, S55, etc.

Round Zucchini: 45 days. Small, globe-shaped fruit, 2 1/2 inches in diameter; with slight ridges; skin grey-green; flesh creamy white, firm but tender, flavorful. Ideal for stuffing. Very productive, bush-type plant, produces fruit throughout the summer. B75M, C20M, DIT, D12, F60, F82, G57M, PIG

Striata d'Italia: 50 days. Medium-long, cylindrical fruit, 8 to 9 inches in length; somewhat bulbous at the blossom end, faintly ribbed; thin skin, striped and mottled with light and dark green; excellent texture and flavor. Bushy but open plants, easy to harvest. Highly regarded in Italy for its earliness and flavor. B8, J20, Q11M, S17

Table Dainty: 60 days. English marrow type. Medium-sized, cylindrical fruit; skin striped with dark and pale green; flesh very firm, retains firmness when cooked. Good for stuffing; excellent when fried; also makes good wine and marrow jam; keeps well. Vigorous, trailing vine, 18 to 20 feet long; very productive. Introduced by Suttons & Sons of Reading, England, in 1909. TAPLEY 1937; K20M, S61

Tatume: 50 days. Oval to slightly elongated fruit; 7 inches long, 5 inches in diameter at maturity; skin medium to dark green, faintly striped with lighter green; flesh firm, flavorful; keeps well. Very vigorous, trailing vine. Popular in Texas and parts of Mexico. Used to prepare a famous Mexican chicken soup. A1, A87M, D68, F71M, H61, K20M, L77D, L88J

Tender and True: English marrow type. Nearly round fruit, distinctly flattened at top and bottom; 5 to 6 inches in diameter; skin mottled with light and dark green; flesh firm but tender, flavorful. Best harvested when young. Semi-trailing, moderately vigorous vine. Introduced as a novelty in 1907 by Sutton & Sons, Reading, England. TAPLEY 1937; K20M, S59M, S61

Winter Zucchini: 65 days. Long, dark-green fruit; usually picked at 6 to 8 inches long when the skin is glossy. Firmer and sweeter than other zucchinis, but less productive. Large, bush-like plant with large leaves that provide cover for cold protection. Adapted to frost-free, coastal areas of southern California. Should be planted between September 15th and October 15th. Hand pollination may be required in weather too cold for bee activity. Developed by Charles B. Ledgerwood of Carlsbad, California. G71M

## OTHERS

### *Hybrid*

Goldbar: 60 days. Hybrid straightneck type for commercial and home garden use. Uniform, cylindrical fruits; 5 to 6 inches long at harvest size; smooth, golden-yellow skin; creamy yellow, smooth textured flesh. Compact, bush-type vine; has an upright, open growth habit for easier harvesting; highly productive over a long season. G27M, G79, H54, H61, J20, K10, K50, K73, M46, N16

Multipik: 50 days. Straightneck type fruit, 7 to 8 inches long; skin creamy yellow, glossy; flesh light and sweet with a true squash flavor. Strong, bush-type plant; very productive. Resistant to fruit-greening caused by cucumber mosaic virus. Contains a "precocious yellow gene" which causes increased production of female flowers,

resulting in early and continuous bearing. *A87M, C20M, F13, G1M, G13M, N16*

**Pic-N-Pic:** 50 days. Crookneck type, more attractive than standard Yellow Crookneck strains. Bright golden-yellow fruit with small blossom scars; smooth, unwarded skin and tender flesh. Best when picked small. Heavy yielding plant with an open growth habit; bears over a long period. Fruits are easy to see and harvest from a single stem. *B75, F63, K50*

**Seneca Prolific:** 51 days. Productive straightneck type. Long, cylindrical fruit, tapered towards the stem end; smooth, attractive bright yellow skin; light green stems; firm flesh. Erect, bush-type plant allows closer spacing for maximum yields; has an open growth habit for easier harvesting; highly productive throughout the growing season. *B75M, D68, G1M, G6, G71, G79, H61, K10, K73, M95M, N16*

**Sun Drops:**<sup>1</sup> 50-55 days. Unique, oval-shaped light yellow fruit with a mild, nutty flavor. Perfect for stuffing. Harvest when immature as "baby" squash with the blossom attached, or when fruit is 3 to 4 inches in diameter. Compact, bush-type plant; suitable for the small garden. All America Selections winner for 1990. GORMAN [Re]; *C20M, E91G, F63, G27M, G71, G93M, H57M, I50G, 191, K10, K73, L91M, M95M, N52*

**Sundance:** 52 days. Early hybrid crookneck type. Curved, club-shaped fruit; medium thick neck with a full crook, making for less breakage; very smooth, bright yellow skin; firm, creamy white flesh; small blossom scar. Very compact, bush-like plant; widely adapted. Good for home gardens and commercial production. *B6, B73M, E53M, G27M, G79, G82, G93M, 139, J20, L42, M29, N16*

#### *Open-Pollinated*

**Early Prolific Straightneck:** 50 days. Cylindrical, club-shaped fruit; 5 to 7 inches long at harvest size; skin light yellow, sparsely warted; flesh creamy yellow, firm but tender, succulent. Large, semi-open bush; very productive. Standard straightneck type for home gardens, local markets and shipping. All America Selections winner in 1938. *A25, A75, B75M, B78, C44, D82, G71, H61, H95, I64, K73, L7M, M46, N16*

**Maltese Marrow:** Elongated, pear-shaped fruit with aromatic, orange-yellow flesh that is fine-textured and delicious. Used immature as a pale yellow zucchini. Mature fruit is traditionally cut in two lengthwise, stuffed, and baked whole. The fruit stores well. Short, vining plant. *PIG, R47*

**Royal Knight:** 50 days. Unique summer squash in the crookneck class. Bottle-shaped fruit with a slightly crooked neck, resembles Yellow Crookneck in size and shape; skin light green with a slight tint of yellow; excellent flavor. Should be harvested before the fruit turns very dark ebony green. Can be eaten fresh or cooked. Introduced in 1982 by Hollar and Co. *U14*

**Tromboncino:** (*Zuccheta Rampicante d'Albenga*) (*C. moschata*) Very long, slender fruit; curved at the stem end, bulbous at the blossom end; skin light yellow-green; flesh very firm, flavor mild, sweet, delicious. Best harvested when 8 to 18 inches long. Very vigorous, vining plant, grows 30 to 40 feet in a season; requires a strong trellis. *C53, 177, J20, K66, L79, N84, 089, Q11M, Q34, R32, S55*

**Yellow Crookneck:** (Early Golden Summer Crookneck, Dwarf Summer Crookneck) 55 days. Distinct, curved, club-shaped fruit, bulbous at the blossom end; 8 to 9 inches long; skin golden-yellow, warted; flesh pale yellowish-white. Freezes well. Moderately vigorous, bush-like plant; very productive. Popular home garden cultivar. Introduced prior to 1828. *BURR, TAPLEY 1937; A25, A75, B78, C44, E24, E38, F82, G6, H33M, H61, J97M, K23{PL}, L7M, N16, R47, etc.*

**Zapallo del Tronco:** (Redondo di Tronco) 85 days. Round, medium-green fruit, 2 1/2 to 3 1/2 inches in diameter. Can also be

left to mature to a winter squash which keeps and ships extremely well. Excellent, characteristic flavor picked young or old. Busty, upright plant. Very popular in South America as a fresh market and home garden cultivar. *B49, K10*

#### WINTER SQUASH

Slower growing than summer squash, most require a long season and grow on long, trailing vines. They have shells that are hard enough to permit them to be stored during the winter. Many are canned for use in pumpkin pies.

#### ACORN SQUASH (*C. pepo*)

##### *Hybrid*

**Carnival:** 85 days. Very unusual and attractive variegated squash. Uniform, acorn-shaped fruit, 5 inches high and 4 inches wide; striped, splashed and mottled with various shades of green, yellow and orange. Delicious, golden-yellow flesh, improves in flavor with storage. Vigorous, semi-bush plant, very high yielding. Popular specialty market item. *C20M, D11M, E13G{PR}, E75{PL}, F13, F70, G13M, K57{PL}, N40{PR}*

**Cream of the Crop:** 82 days. Unique creamy-white skinned acorn squash. Uniform fruits weigh 2 to 3 pounds. Golden-cream colored flesh with a mild, nutty flavor. Very good for baking and stuffing; can also be used as a delicious summer squash when immature. Stores well. Compact, bush-type plant spreads 3 to 4 feet. Yields are comparable to the best acorn types. All America Selections winner for 1990. GORMAN [Re]; *A1, B73M, D65, F13, G16, G27M, G82, G93M, /50G, 191, J97M, K10, K50, K73, L91M, M29, M49, etc.*

**Heart erf Gold:** 90 days. Distinctive type, intermediate in shape between an acorn squash and Sweet Dumpling. Blunt, heart-shaped fruit, 4 1/2 inches by 5 1/2 inches; creamy white, striped and mottled with dark green; flesh yellowish-orange, dry, very sweet, fine-grained. Excellent as table fare or decoration. Vigorous, semi-bush plant. *B73M, B75, C85M, D26D, D65, F63, G13M, G71M, G82, H61, 191, J84, K10, K50, K73*

##### *Open-Pollinated*

**Bush Table Queen:**<sup>4</sup> 85 days. Very similar in color, size, shape and keeping qualities to the regular Table Queen. High quality, orange flesh; cooks dry and sweet. Bush-type vine, spreads to only 3 feet in diameter; sets the same number of fruit per plant as trailing types; widely adapted. *A25, A75, B75, B75M, C20M, C92, F60, G13M, G79, K10, L7M, N52*

**Ebony Acorn:** (Table Queen Ebony) 100 days. Improved Table Queen type. Uniform, acorn-shaped fruit, prominently ribbed; skin deep green, attractive; flesh thick, deep-orange, fine-textured, dry, sweet. Has good keeping qualities. Vigorous, highly prolific vine. Developed by Dr. Henry Munger, Cornell Univeisity. *A2, B49, B78, F44, G6, G71, K73, N84, R47*

**Gill's Golden Pippin:** 100 days. Very small, deeply ribbed fruit, 1/2 to 3/4 inch in diameter; weight 1 to 2 pounds; golden-yellow skin, slightly streaked with pale yellow; flesh more orange and drier than most acorns. Vigorous, semi-running vines; highly prolific. Old Native American cultivar. *A2, C95*

**Jersey Golden Acorn:** 50-85 days. Dual-purpose squash. Can be harvested as summer squash when small, or left to mature for winter squash. Skin light yellow, becoming bright golden-orange when ripe; flesh pale golden-yellow, thick, fine-grained, sweet and tender; has a nutty flavor when mature. Contains 3 times more vitamin A than green acorn types. All America Selections winner in 1982. *C20M, C95, G57M, N40{PR}*

**Royal Acorn:** (Royal Table Queen, Mammoth Table Queen) 85 days. Similar to Table Queen, but larger and more prolific. Small fruit; 5 1/2 inches in diameter; weight 2 to 4 pounds; medium dark-green skin, sometimes turning yellow to orange at full maturity; flesh pale orange, medium thick, very tender, dry, sweet, flavorful.

B6, C69, F60, F63, G13M, G57M, H21,164, I67M, K10, K49T, M29, N16

Snow White:<sup>4</sup> Well-shaped fruit with smooth, pure-white skin. Bush-type plant; produces and abundance of early maturing fruits. Superior to other white acorn types in spite of the fact that it will occasionally produce plants with green fruits and white flesh. Primary breeding work done by Glenn Drowns of the Seed Savers Exchange. J9M

Swan White: (White Acorn) 90 days. Similar in shape to other acorn squash, but with more pronounced ribbing; weight 2 1/2 pounds. Skin snow-white, turning creamy yellow; flesh pale yellow, smooth; flavor delicate and sweet. High in calcium. Can also be harvested when 3 inches long and used like zucchini. High yielding. Good specialty market item. Developed by Mrs. G. Swan, a customer of Stokes Seeds. C20M, L42

Table Gold:<sup>4</sup> 80-90 days. Improved Jersey Golden Acorn type. Deeply ribbed, heart-shaped fruit, about 4 inches tall and 4 1/2 inches across; weight 1 1/2 pounds; flavorful, orange-yellow, medium-grained flesh. Can be harvested after 65 days when fruits are bright yellow, or after maturing to dark orange. Compact, bush type plant. A1, B8M, C85M, D26D, F13, F63, G13M, G16, G82, G93M, H61, J9M, K10, K73, L42, M49, etc.

Table King:<sup>4</sup> (Table King Bush) 80 days. Small, ribbed fruit, pointed at the blossom end; 5 inches in diameter; weight 1 to 1 1/2 pounds; skin smooth, dark grayish-green; flesh yellow-orange, thick, tender; flavor excellent, improving in storage. Short-vined plant; widely adapted. Ideal for small gardens. All America Selections Winner in 1974. D11M, D65, E24, F70, G71, G83M, G93M, H33M, H61, K71, K73, L79, L89, M46, M49, etc.

Table Queen: (Acorn, Des Moines) 85 days. Small turbinate fruit; 5 to 6 inches long; deeply furrowed; skin deep dark green, changing to dull orange in storage; flesh pale orange, firm, tender, moderately dry, moderately sweet, of good flavor; quality good. Moderately vigorous vine, 12 to 15 feet long. The original acorn squash, introduced in 1913. TAPLEY 1937; A16, A25, A75, B75M, C85M, C92, D11M, D65, D68, FI, F60, F70, G79, H33M, L7M, N16, etc.

#### BUTTERCUP SQUASH (*C. maxima*)

##### *Hybrid*

All Season:<sup>4</sup> 90 days. Attractive, oval, bright-orange fruit; weight approximately 3 1/4 pounds; has a delicious nutty flavor typical of Buttercup squash. Excellent for baking and winter storage. Bright yellow immature fruits may be eaten as a summer squash in as little as 65 days. Compact plant, spreads only 3 feet, produces 5 to 8 squash. G13M, G82,191, K10, M95M

Sweet Mama:<sup>4</sup> 100 days. High quality "cupless" Buttercup type. Flattened globe-shaped fruit; weight 2 1/2 pounds; skin deep green, with light green stripes and blotches; flesh very thick, deep yellow, very sweet, has a nutty flavor; stores well. Compact, semi-bush type vine, to 4 feet long; somewhat tolerant to wilt and vine borer. Good for home gardens and specialty markets. All America Selections winner in 1979. SCHNEIDER 1986 [Cui, Re]; D11M, D65, FI, F70, G13M, H95,139,191, K10, K73, L42, M46, M49, S63M

##### *Open-Pollinated*

Burgess Strain: 100 days. Relatively uniform, blocky, turban-shaped fruits with a small blossom end "button"; 8 inches in diameter; weight 3 to 3 1/2 pounds; skin deep green, furrowed with light green stripes; flesh medium-orange, fine-grained, fiberless, rich and sweet. Released by the North Dakota Agricultural Experiment Station. A2, D82, FI, F60, G6, H61, H95,139, K71, K50, K73, L7M, L42, M46, M49, etc.

Buttercup: 105 days. Unique turban-shaped fruit, with a distinctive protruding "button" at the blossom end; weight 3 to 4 pounds; skin deep green, flecked and striped with grey; flesh deep orange, texture

very fine, sweet, of excellent quality and flavor. Moderately vigorous vine, 10 to 12 feet long. Introduced in 1931 by Oscar H. Will & Company, Bismark, North Dakota. SCHNEIDER 1986 [Cul, Re], TAPLEY 1937; A16, A25, B75M, C85M, E59Z, E75{PL}, F82, F92, H33M, N24M

Emerald:<sup>4</sup> (Emerald Bush Buttercup) 80 days. An improved strain of bush buttercup. Uniform, turban-shaped fruit; 4 1/2 inches deep, 6 1/2 inches in diameter; medium dark-green skin; thick, orange-yellow, sweet flesh. Short-vine plant, grows 3 to 4 feet across. Ideal for limited space gardens. C20M, C44, D68, D74B, FI, F60, G13M, G16, G82, K73, M49, N24M, N52

#### BUTTERNUT SQUASH (*C. moschata*)

##### *Hybrid*

Early Butternut: 80 days. Uniform, blocky fruit, bulbous at the blossom end; 10 to 12 inches long; skin smooth, thin and hard, evenly tan; flesh deep orange, medium dry, fine-textured, of very good flavor and quality. Compact, semi-bush vine. Excellent for home gardens and commercial production. All America Selections winner in 1979. A87M, C85M, D11M, D65, E91G, F13, F70, G79, G93M, H61,164, K49Z, K73, N16

Zenith: 88 days. Exceptionally uniform fruit, averages 2 1/2 pounds in weight; thick, cylindrical neck; smooth, tan skin; flesh deep orange, fine-textured, sweet, of very high quality. High yielding. For home gardens, local markets and commercial growers. A1, D65, F60, F63, G1M, G13M, G82, H61,164, J84, K10, K50, K73, L42, L89, M29, N16, etc.

##### *Open-Pollinated*

Butterbush:<sup>4</sup> (Burpee's Butterbush) 75 days. The first bush-type butternut, introduced in 1978. Short, compact vine; only 3 to 4 feet long; bears 4 or 5 fruit. Small, blocky fruit; weight 1 1/2 to 1 3/4 pounds; smooth, tan skin; deep reddish-orange flesh. Excellent storage qualities. Ideal for gardeners with limited space. B6, B75, C85M, D76, F63, J9M, J20, L79, L88J

Butternut: 95 days. Bottle-shaped fruit; 8 inches long, 3 to 4 inches in diameter at the blossom end; weight 3 to 5 pounds; skin smooth, buff-colored, thin and hard; flesh bright-orange, firm, fine-grained, dry, sweet, of very good quality; keeps very well. Excellent for baking. A16, A25, B78, E59Z, F82, F92, H49, M95M, N24M

Hercules: 95 days. Large, straight, blocky fruit; 12 to 15 inches long, 4 1/2 inches in diameter; weight 4 1/2 to 5 pounds; skin buff-colored, thin and hard; flesh rich orange, firm, dry, fine-textured, sweet, of very good flavor and quality; has a very small seed cavity; keeps very well. Vigorous, highly productive vine. All America Selections winner in 1963. C20M, G79

Ponca: 90 days. Similar to Waltham butternut, but more uniform in size and shape and slightly smaller. Blocky, cylindrical fruit; 6 to 8 inches long; weight 1 1/2 to 2 1/2 pounds; skin smooth, hard, evenly tan; flesh light orange, fine-textured, sweet, of very good quality; has a small seed cavity; keeps well. Highly productive, compact vine. Developed at the University of Nebraska. C95, F63, G13M, K10, K49M, K73, M32, M46, N52, S75M

Puritan: 100 days. Smaller strain of Waltham butternut. Uniform, blocky fruit; 7 inches long, 4 inches in diameter; smooth, cylindrical neck free of crooknecks; weight 2 to 3 pounds; smooth, tan skin; rich orange flesh, dry, of very good flavor. Released by the Massachusetts Agricultural Experiment Station. J84, K50

Waltham: 95 days. Uniform, blocky fruit; 8 to 10 inches long, 4 1/2 to 5 1/2 inches in diameter at the blossom end; weight 3 to 4 pounds; skin light tan to buff, thin and hard; flesh dark-orange, fine-textured, medium dry, sweet, of excellent quality and flavor; has a very small seed cavity; stores well. Very popular. All America Selections winner in 1970. A75, B49, B75M, C44, G6, G16, H33M, H61, K73, L7M, M46, N16, R47

HUBBARD SQUASH (*C. maxima*)

Baby Blue: 90 days. Small, flattened to round fruit, 5 to 6 inches in diameter; weight 5 to 7 pounds; skin grayish-blue, warted; flesh yellow-orange, thick, sweet, dry, flavor very good; stores well. Excellent for baking. Ideal size for the average family. Also popular with market gardeners. Semi-bush type. Blue Hubbard x Buttercup. Developed by Professor E.M. Meader. A2, C20M, D26D, D68, E13G{PR}, F63, K10, K71, L13M, N40{PR}

Blue Hubbard: 110 days. Large, nearly globular fruit, with a neck at both ends; 15 to 18 inches long, 9 to 12 inches in diameter; weight 12 to 15 pounds; skin blue-grey, hard and thick, coarsely warted; flesh bright yellow-orange, thick, dry, fine-textured, very sweet; stores extremely well. Highly productive. Standard winter storage type. Introduced in 1909. TAPLEY 1937; A25, C44, D65, E13G{PR}, F60, F80, G6, G71, G79, K73, L13M, L89, M46, N40{PR}, R47, etc.

Chicago Warted: (Green Chicago Warted Hubbard, Warted Green Hubbard) 110 days. Largest of the Green Hubbard types. Nearly globular fruit; pointed at the blossom end, rounded at the stem end; 13 to 15 inches long; weight 12 to 14 pounds; skin deep dark-green, heavily warted, thick, very hard; flesh rich golden-yellow, thick, fine-textured, dry, sweet. Good for shipping and storage. Introduced in 1894. TAPLEY 1937; B75M, C20M, F73D, G13M, G16, G79, G82, G93M, H61, J84, K10, K71, K73, L42, M49, etc.

Gold Mountain:<sup>4</sup> 95 days. Space-saving orange Hubbard type. Large orange fruits weighing 10 to 20 pounds each; thick, sweet flesh. Relatively easy to cut. Runnerless plants can be spaced 2 feet by 4 or 5 feet apart for high yields. Produces 1 to 3 fruits per vine. Developed by Tim Peters of Peters Seed & Research. J9M

Golden Hubbard: (Red Hubbard) 100 days. Relatively small fruit; 10 to 12 inches long, 8 to 9 inches in diameter; skin slightly warted, orange to orange-red, striped with tan toward the blossom end, attractive; flesh deep orange-yellow, moderately dry and sweet, firm, of good flavor and quality. Keeps very well. Introduced in 1898. TAPLEY 1937; A16, A25, G57M, G79, G93M, J20, K10, K49M, K50, K71, K73, L42

Green Hubbard: (True Hubbard, True Green Hubbard) 110 days. Medium-large fruit; nearly globular, tapered at both ends; 12 to 15 inches long; weight 9 to 12 pounds; skin dull bronze green when mature, thick, very hard, slightly warted; flesh orange-yellow, thick, fine-grained, firm, dry, moderately sweet; keeps very well. Introduced about 1798. BURR, TAPLEY 1937, VILMORIN; A16, A25, D27, E38, FI, F60, F92, G79, H54, I64, K10, K50, K71, L13M, N40{PR}, etc.

Kitchenette: (Baby Green Hubbard) 105 days. Small, slightly curved fruit, tapered abruptly to a short constricted neck; 8 to 9 inches long; weight 5 to 7 pounds; skin deep green, moderately warted; flesh deep yellow, very fine; dry, sweet, well flavored. Excellent for baking. Ideal for family use. Developed by Richard Wellington. Introduced in 1919. TAPLEY 1937; C20M, D26D, D82, K10, N34{PR}, N52

Little Gem: 80 days. Miniature Golden Hubbard type. Small, bright-orange fruit; weight 3 to 5 pounds; flesh deep orange, thick, dry, fine-grained, sweet and flavorful. Excellent for pies or baking whole. Good storage capabilities. Vigorous, highly productive vine. A2, C95, E5T, F73D, G68, L77D, L88J, M49, S55

New England Blue: 110 days. Largest strain of Hubbard squash, typically about 1/3 larger than regular Hubbard squash but may reach 30 to 45 pounds. Also higher yielding. Very large, necked fruit; roughly warted, bluish-gray rind; orange flesh of fine flavor and texture. Keeps very well. Vigorous and quick-maturing for its size. D11M, E24, F60, F70, G13M, G57M, G93M, H21, K10, L42, N52

KABOCHA SQUASH Japanese squash notable for their superior flavor, rich sweetness and nearly fiberless flesh. When baked or steamed they have a balanced flavor of sweet potato and pumpkin. They are also braised, added to salads or pumpkin *risotto*, deep-fried in tempura batter, or simmered in *oden* stew or *dashi* stock. COST 1988 [Cul], CUSUMANO [Cul, Re], SCHNEIDER 1986 [Cul, Re]. (*C. maxima*, *C. moschata*). N40{PR}

*Hybrid*

Delica: (Ebisu) 75-85 days. High quality kabocha squash, one of the top sellers in Japanese markets. Flattened, globe-shaped fruits weighing about 21/2 pounds; striped and mottled with light and dark green; thick, yellow-orange flesh, dry, very sweet and nutty. Good storage capabilities. Very uniform and vigorous; highly productive. A16, C20M, D55, E24, G13M, G33, G93M, K10, K73, M49, N52, S63M, TIM

Golden Debut: 105 days. Unique orange-skinned type with skin that is edible after cooking. Medium-sized, oblate fruit; skin attractive, green, turning bright scarlet orange at maturity, with slightly mottled vertical stripes; flesh yellow, very sweet, moist, less starchy than Home Delite. Excellent boiled or baked; ideal for squash pies. C20M, M46, N52

Honey Delite: 95 days. Medium-small, flattened globe-shaped fruit; weight 2 to 4 pounds; skin dark forest-green, striped with moss-green; flesh bright rich-orange, very sweet and flavorful, cooks up dry and flaky; quality excellent; stores well. Good specialty market item. C20M, C92, G6, G13M, G33, J20, K10, K16M, L42, L79G, N52

Shintosa: (*C. maxima* x *C. moschata*) 100 days. Slightly flattened, globe-shaped fruit with shallow ribbing; rind dark green, waxy, somewhat bumpy; weight 4 to 5 pounds. Used by Japanese and Chinese in rice cakes, or steamed or baked like a sweet potato. Very vigorous, productive plant; resistant to disease and insects; does well under dry or wet conditions. E83T, Q3, Q28, S70

Tetsukabuto: (*C. maxima* x *C. moschata*) Nearly round fruit, 8 inches in diameter; glossy dark green rind, lightly mottled and ribbed; thick, deep orange flesh with a very sweet yam-like flavor; stores very well. High yielding. Good specialty market item. Very popular in Japan. Also used as a disease-resistant rootstock for watermelons, melons and cucumbers. C20M, L59, J20, L79G, Q3, Q28, S63M, S70

SPAGHETTI SQUASH (*C. pepo*)*Hybrid*

Hasta-La-Pasta: 75-80 days. Colorful new orange spaghetti squash. Small, elongated fruits, 6 to 8 inches long and 4 or 5 inches across. The perfect size for a family meal. Deep orange inside and out; high in beta carotene; mild, pleasant flavor. Compact plants, suitable for dense plantings, very heavy yielding. B75, K50

Qrangetti: 85 days. An attractive orange spaghetti squash. Small, oblong fruit; 8 inches long, 6 inches in diameter; weight 2 to 2 1/2 pounds; skin golden-orange, smooth; flesh bright orange. Higher in vitamins A and C than other types of spaghetti squash. Semi-bush type plant; bears numerous fruit close to the crown. C20M, P75M, M95M

Pasta: 85-90 days. Improved type with better flavor and texture. Long, cylindrical fruit, 10 to 12 inches in length and weighing about 4 pounds; creamy yellow skin; butter yellow strands of delicate flavor and texture. Excellent served with pasta sauce or chili. Medium-sized vine, very productive, yields concentrated sets of uniform fruits. B75, D26D, D68, F63, G13M, G16, G57M, G71, G82, G87, H57M, H61, 139, 191, K10, K50, K73, etc.

Stripetti: 95 days. Unique hybrid of Spaghetti Squash and Delicata. Attractive, elongated fruit, 8 inches long and 4 inches in diameter; weight about 4 pounds; cream-colored skin, striped and mottled with green, turning orange when well ripened; creamy-yellow flesh,

sweeter and better flavored than other types. Very uniform. Suitable for long term storage or shipping. *F60, F63, G13M, K10, K50, L42*

Tivoli:<sup>4</sup> 98 days. Unique bush spaghetti squash. Medium-large, oval fruit, 9 1/2 inches long and 6 inches in diameter; rind smooth, pale creamy yellow; flesh separates into noodle-like strands when cooked. Vigorous, space-saving bush, may have a few short vines. All America Selections winner for 1991. *AI, C92, E24, E97, G13M, G27M, G71, G82, H61, J20, J84, K10, K16M, K57{PL}, L91M, M29, etc.*

White Fall: Oblong, creamy-white fruit; 9 inches long, 6 inches in diameter; weight 5 1/2 pounds; flesh crisp, tender, creamy-white when fresh, turning yellow after cooking (steaming). Fruits reach maturity 40 days after flowering. May be stored for months. Well adapted to mild, cool climates. *Q39*

#### *Open-Pollinated*

Spaghetti Squash: (Vegetable Spaghetti) 100 days. Unique squash with spaghetti-like strands of flesh. Small, oval fruit; 8 to 10 inches long, 6 to 8 inches in diameter; weight 1 1/2 pounds; skin yellow, changing to buff-colored when ripe, smooth; flesh golden-yellow; stores well. Usually boiled or baked whole. Can also be used in breads, muffins, pancakes, puddings, etc. Introduced in 1934 by Sakata Seed Company, Yokohama, Japan. *FELL 1982a [Pre, Re], SCHNEIDER 1986 [Cui, Re]; A16, E63D, F60, G6, J73, K10, K16M, L13M, L59, M46, M49, N16, 053M, R47*

#### OTHERS

##### *Cucurbita maxima*

Arikara: 72 days. Small, oval-tapered fruit; 9 to 10 inches long; widely ribbed; weight 6 to 8 pounds; skin pale salmon pink; flesh deep yellow, tender, moderately moist and soft, flavor lacking, faintly sweet; quality poor. Extremely dependable producer under drought conditions. Originated with the Arikara Indians of the Fort Berthold reservation, North Dakota. Named and introduced by Oscar H. Will & Company, Bismark, in 1920. *TAPLEY 1937; L13M*

Ambercup: (F<sub>1</sub>) 100 days. Attractive, slightly flattened, globe-shaped fruits; 5 to 6 inches in diameter and weighing 2 or 3 pounds; smooth, bright orange rind, faintly ribbed; firm, deep orange flesh, dry, nutty, very sweet and rich; quality excellent. Good storage qualities. Vigorous, high yielding vine. *B75, E24, F13, G13M, G16, G82, G83M, H61, 139, K10, K50, K73, L42, L89, L91M, M29, M49, etc.*

Atlantic Giant: (Dill's Atlantic Giant) 125 days. Developed by Howard Dill of Nova Scotia for producing extremely large fruits, consistently weighing 400 to 500 pounds or more. A yearly world record holder since 1979. An all-time world record of 1,061 pounds was obtained from this cultivar in 1996. Yearly international competition was established in 1983 under the rules of the World Pumpkin Federation. *B73M, C92, D6, D65, E5T, F1, G16, G71, H42, H95, 181, J97M, K50, L79, M46, M49, N16, etc.*

Blue Kuri: 100 days. Japanese squash derived from Hubbard. Small, globular fruit, weight 4 to 5 pounds; skin blue-green, fairly smooth; flesh yellow-orange, thick, dry, fine-grained, very sweet, of good quality. Heavy yielding vine. Does well in short season areas. For roadside stands and specialty markets. *A2, B49, C20M, D55, G13M, G33, G93M, 177, K10, N52, R32, S63M*

Boston Marrow: 100 days. Nearly globular fruit, abruptly tapered at the stem end; 12 to 14 inches long, 10 to 11 inches in diameter; widely ribbed; weight 12 to 16 pounds; skin apricot-orange; flesh orange-yellow, moderately fine-grained, tender, fairly sweet and rich, moderately moist; quality *ikir*. Introduced in 1831. *BURR, TAPLEY 1937; A75, C95, E5T, G57M, G71, 163Z, K49M, K73*

Chestnut: 105 days. Medium-small, flattened globe-shaped fruit; weight 2 to 4 pounds; skin dark slate-green; flesh deep orange, thick, very sweet and dry. Good for storage, with sweetness increasing during the first few weeks after harvest. Moderate yields. The result

of "target breeding" for high sugar and dry matter. Very popular in natural foods and macrobiotic markets. *C95, D3M{PR}, G6, N84, R47*

Flat White: (Flat White Boer) 100 days Very flattened, ridged, white-skinned fruit; sweet, orange-colored flesh; leaves no fiber when passed through a sieve. Makes a pie that is lighter in color. Keeps well. Imported from South Africa. *A2, G68, K49M*

Gold Nugget:<sup>4</sup> (Golden Nugget) 85 days. Small, round to slightly flattened fruit; 5 inches in diameter; weight 1 1/2 to 2 pounds; skin bright orange, hard; flesh yellow-orange, thick, fine-grained, of good quality and flavor; keeps well. Short-vined plant; produces 5 to 8 fruit. All America Selections winner in 1966. *SCHNEIDER 1986 [Cui, Re]; B1M, D3M{PR}, E13G{PR}, F44, K49M, L89, M49, N40{PR}, R32, R47, TIM*

Golden Delicious: 105 days. Small, heart-shaped fruit; 10 to 12 inches long, 8 to 10 inches in diameter; weight 8 to 10 pounds; skin reddish-orange, striped with pinkish-buff; flesh orange-yellow, thick, dry, medium-textured, of good quality. Widely used for commercial canning and freezing. Boston Marrow x Delicious. Introduced in 1926. *TAPLEY 1937; C20M, D26D, E75{PL}, F13, F60, F63, G13M, G57M, G82, K10, K71, L42, M46, N52*

Jarrahdale: 95-100 days. Highly decorative and useful. Medium to large, flattened fruit with heavy, rounded ribs; average weight 6 to 10 pounds; striking, slate gray skin; thick, orange flesh, moderately sweet, quality good to very good. Stores well. Very popular in Australia. Once carried by Yates Co., now maintained by amateur seed savers. *B49, G6, G68, 118M, K10, K20M, PIG, Q34*

Lakota: 85 days. Very unique and decorative. Similar to a type once prized by the Lakota Sioux, hence the name. Teardrop-shaped fruits, 8 inches by 9 inches and weighing 5 to 7 pounds; rind bright orange, mottled with dark green; yellow-orange flesh, fine-grained, sweet and nutty. Excellent for baking and pies. Will occasionally produce solid green or orange fruits. *B75, K50, Q34*

Marina di Chioggia: (Chioggia, Sea Squash) Small, flattened fruit; weight 5 to 7 pounds; skin dark grayish-green, coarsely wrinkled with large protuberances; flesh bright orange, very firm, very mealy. In Italy, the fruit is boiled, baked or pureed, and also used in minestrone soup, and an unusual *risotto*. Unripe fruit can be used in relishes and preserves. Widely grown around Venice. *BIANCHINI; C53, N84, Q11M, S17, S55*

Mayo Blusher: 120 days. Large, round to elongated fruit; skin light green to white, blushed with pink when fully ripe; flesh apricot-colored, sweet, excellent for "pumpkin" pie; stores well. Adapted to the low hot desert, where it is planted in early spring. *A2, 116, K46T, N84*

Mooregold: 90-95 days. Blocky, flattened, globe-shaped fruit; 6 inches tall by 4 inches deep; weight 3 to 4 pounds; skin bright orange, faintly striped with salmon; thick, smooth-textured, bright orange flesh, flavor very good. Stores and freezes well. Developed at the University of Wisconsin by Professor J.G. Moore, in the 1940's. Still popular in the Midwest. *E24, G16, J9M*

Pink Banana Jumbo: 105 days Very large, cylindrical fruit, slightly curved towards the stem end; 48 inches long; weight up to 75 pounds; skin grayish-green, turning bright pink at maturity, thin, very hard; flesh light orange, thick, fine-textured, sweet, of high quality. Good for pies or baking. Very popular in California. Usually cut in sections for fresh market or used for processing. *B75M, C92, D76, G82, G93M, H61, H85M, H95, 164, K71, N16*

Queensland Blue: 150 days. Small, drum-shaped fruit; 8 to 9 inches in diameter; weight 6 to 9 pounds; skin blue-grey, hard and thin; flesh deep orange, very fine-textured, firm and solid, dry, moderately sweet, of good flavor; quality very good. An old popular Australian cultivar. Introduced into the United States in 1932. *TAPLEY 1937; E13G{PR}, G68, 177, J39, K20M, K49M, N40{PR}, N84, PIG, R47, TIM*

Red Kuri: (Orange Hokkaido, Uchiki Kuri, Baby Red Hubbard) 92 days. Nearly globular fruit, tapered at both ends; weight 5 to 8 pounds; skin smooth, bright reddish-orange; flesh yellow-orange, thick, fine-grained, dry, sweet and rich; keeps very well. Good for pies. High yielding. Of Japanese origin. BELLEME 1993; B49, D68, G6, G93M, 177, K49M, L13M, N40{PR}, N52, N84, S55, S63M

Rouge Vif d'Etampes: (Bright Red Etampes) (Cinderella) 125 days. Medium-large, flattened fruit; 9 to 10 inches deep, 16 to 18 inches in diameter; weight 30 to 35 pounds; prominently ribbed; skin bright orange-red, glossy, attractive; flesh coarse, fibrous, moderately moist and tender, quality fair to poor. Originated in France in the middle of the 19th century. Reportedly the model for Cinderella's fairy-tale coach. TAPLEY 1937, VILMORIN; A2, B49, C53, C92, C95, D3M{PR}, D26G, D65, E63D, F80, G6, G16, G68,177, K23{PL}, K49M, K49T, K66, K73, P59M, etc.

Sibley: (Pike's Peak) 120 days. Relatively small fruit; oblong-pyriform; 10 to 12 inches long; weight 8 to 10 pounds; skin bluish gray; flesh pale orange, very fine-textured, tender, slightly moist, somewhat sweet, of fair flavor and quality. Probably of American Indian origin. Introduced in 1887. TAPLEY 1937; K49M, N84

Spanish Valencia: Large, flattened fruit, hollowed on both ends; weight 15 to 20 pounds; skin grey-green blotched with pink when ripe, often with a light bloom, very hard; flesh yellowish-orange, thick, extremely sweet. Keeps for an exceptionally long time, up to 2 years. Long, trailing vine; tends to be a shy bearer; requires a long, warm growing season. One of the sweetest of all squashes, reminiscent of a high quality, moist-fleshed sweet potato. LI 1

Sweet Meat: (Oregon Sweet Meat) 110 days. Large, flattened globe-shaped fruit; weight 10 to 15 pounds; skin thick, very hard, slate gray; flesh golden-yellow, thick, fine-grained, very sweet and rich. Has excellent keeping qualities. Local favorite in the Pacific Northwest. Originated in Portland, Oregon by Gill Brothers Seed Co. A2, D82, E24, F13, F82, G57M, G83M, H95,139,177, K10, L89, N52

Triamble: (Triangle) 135 days. Small, trilobular fruit, arranged in a triangle; 4 to 5 inches deep, 10 to 12 inches in diameter; weight 10 to 15 pounds; deeply furrowed; skin bluish-grey, smooth; flesh pale orange, thick, slightly fibrous and granular, somewhat sweet, of fair flavor and quality. Introduced into the United States from Australia, in 1932. TAPLEY 1937; N84, R47

Turk's Turban: (Turk's Cap) 115 days. Distinct turban-shaped fruit; 10 to 12 inches in diameter; weight 8 to 10 pounds; skin variously striped with red to green to white and orange; flesh light orange, fine-grained, rather juicy, tender; quality poor. Mostly used for ornament. Introduced at the beginning of the 19th century or earlier. BURR, TAPLEY 1937, VILMORIN; B75M, C92, D11M, E24, F60, F70, G71, G79, G93M, H61, K73, N16, N40{PR}

Umatilla Marblehead: 115 days. Large, uniform, oval fruits, often weighing up to 40 pounds; rind grayish-green, slightly ribbed, free of warts; flesh pale orange, very thick (1 1/2 to 2 1/2 inches), fine-grained, quite sweet; flavor and quality very good; keeps well. Vine vigorous, trailing, highly productive; resistant to curly top virus. An old local favorite in Oregon. L3J, L77D

Whangaparoa Crown: (Crown) 140 days. Small, drum-shaped fruit; blossom scar with a button, giving a crown-like appearance; weight 10 to 12 pounds; skin grey, hard; flesh deep yellow, very firm and hard, slightly stringy, moderately dry and sweet, quality fair to good. Popular in New Zealand and Australia, where it is used for pies and as a cooked vegetable. Introduced into the United States in 1932. TAPLEY 1937; C95, N84, TIM

#### *Cucurbita mixta*

Chompa:<sup>5</sup> Medium-sized winter squash, usually eaten when young or grown for its edible seed. Grows well in poor soil. From the

Zapotec Indians of Oaxaca, Mexico. THEODOROPOULOS; F80, N84

Golden Striped Cushaw: 110 days. Strain of Green Striped Cushaw. Large, pear-shaped fruit; long neck, may be straight or crooked; weight 25 to 30 pounds; attractive golden-yellow skin, striped with white; flesh gold-colored, thick, smooth, sweet; keeps well. F73D, K10, K71

Green Striped Cushaw: Medium-large fruit; pear-shaped, with long, slightly curved neck; 16 to 20 inches long; weight 12 to 16 pounds; skin cream-white, mottled with green; flesh pale yellow, coarse and fibrous, moist, slightly sweet, quality poor. Used for pies and baking or for livestock feed. Very popular home garden cultivar. Introduced prior to 1893. KAVENA [Pre, Re], TAPLEY 1937; A87M, E97, F60, G71, H61,163Z, J20, J97M, K49M, K71, L7M, N16

Santo Domingo: 90 days. Medium-large, pear-shaped fruit; weight 15 to 20 pounds; skin striped with light and dark green; sweet, pale yellow flesh; stores well when not bruised. Can be used as a summer squash when picked young. The tasty seeds are also edible. Drought tolerant. F73D, K46T, N84

Silver Edged:<sup>5</sup> Grown for the large, tasty spectacular seeds, white with silver edging. Seeds are roasted for *pepitas* or used in *pipian sauce*. A Mesoamerican land race. Adapted to the high semi-desert where it is planted in early spring or with the summer rains. 116, N84

Tamala de Game:<sup>5</sup> (Meat Tamala) Large, buff-colored fruit, variable in shape. Has skin that remains soft even when fruit is ripe and that can be cooked and eaten along with the bright orange, juicy flesh. Seeds are edible. Grows best in hot weather. THEODOROPOULOS; F80, N84

Tennessee Sweet Potato: 105 days. Medium-large, pear-shaped fruit; 12 to 15 inches long; weight 12 to 15 pounds; skin pale yellow, striped with greenish-yellow; flesh light yellow, thick, coarse and granular, dry, fine-grained, moderately sweet, quality poor to good. Popular in the South. Originated prior to 1883. TAPLEY 1937; K20M, K46T

White Cushaw: 120 days. Medium-large, crookneck fruit, 18 to 20 inches long and 8 to 9 inches in diameter; weight 12 to 16 pounds; skin pure white, sometimes with faint green stripes; flesh coarse, rather stringy, moist, moderately tender, quality poor. Resembles Green Striped Cushaw. Introduced in 1891. TAPLEY 1937; D26D, F73D, K10, K71

#### *Cucurbita moschata*

Cheese: (White Cheesequake, Big Cheese, White Cheese) 110 days. Flattened globe-shaped fruit; 12 to 14 inches in diameter; weight 10 to 14 pounds; skin cream-colored; flesh coarse, fibrous, soft, juicy, distinctly sweet; quality poor. Largely grown for canning and stock feed. Named for its resemblance to the standard cheesebox of the 1800's. Originated prior to 1824. TAPLEY 1937; F13, K50

Chirimén: 135 days. Small, flattened globe-shaped fruit; 8 to 10 inches in diameter; weight 8 to 10 pounds; narrowly ribbed; skin dark-green, turning dull bronze-orange in storage, profusely warted; flesh yellow-orange, thick, coarse, slightly moist, moderately sweet. Of Japanese origin. Introduced into the United States about 1922. TAPLEY 1937; C20M, C92, G13M, G33

Futtsu Black: 110 days. Flattened globe-shaped fruit, with deep, high ribs; 4 inches long, 7 inches in diameter; heavily warted; skin dark blackish-green; flesh orange-yellow, fine-grained, sweet and nutty. Old-fashioned Japanese cultivar. Very popular for forcing. A2, J73, N84

Golden Cushaw: (Mammoth Golden Cushaw) 120 days. Medium-large, curved fruit, bulbous at the blossom end; 18 to 24 inches long; weight 10 to 14 pounds; widely ribbed; skin deep cream-colored, smooth; flesh pale salmon, coarse and granular, fibrous; quality



poor. Used for canning and stock food. Originated prior to 1884. TAPLEY 1937; D29P, G57M, K20M, K71

Kentucky Field: 125 days. Similar if not identical to Cheese. Flattened globe-shaped fruit; 12 to 15 inches in diameter; weight 12 to 16 pounds; widely ribbed; skin green, turning cream-colored in storage; flesh dull salmon orange, very coarse and fibrous, juicy, slightly sweet; quality poor. Used for canning and stock feed. TAPLEY 1937; K27M

La Primera Calabaza: Improved cultivar of Calabaza or Cuban squash, a long-time favorite in Central and South America and the Caribbean. Round fruit; skin hard, green when ripe; flesh rich orange, thick, fine-grained, very sweet, moist but not watery. Considered mature when the flesh is yellow just beneath the skin. HAWKES [Re], ORTIZ 1973 [Re], SCHNEIDER 1986 [Cul, Re]; B60M(PR), D33

Long Island Cheese: Long Island heirloom, long popular for pies. Medium-large, flattened, lightly ribbed fruits suggesting a wheel of cheese; average weight 6 to 10 pounds; smooth, tan skin; slender, woody stem; deep orange, moderately sweet flesh. Excellent quality for making pies. Long storage capabilities. A local favorite in New York and New Jersey. G6, G68

Mediterranean Giant: 100 days. Butternut-shaped fruit; resembles a short, straight Tahitian squash; weight 8 to 10 pounds; smooth, thin, golden-tan skin; very sweet, golden-orange flesh; keeps very well. Can be harvested as a summer squash when 6 to 8 inches long. Large, vigorous vine; does best on a trellis. Local market favorite in southern California. C20M

Musquee' de Provence: A regional squash from southern France. Flattened cheese-box shape, deeply ribbed; skin dark orange, smooth, glossy; flesh of good flavor; keeps well into the New Year when properly stored. Fast disappearing from the marketplaces. N84, Q34

Neck Pumpkin: 120 days. Similar to Tahitian squash. Large, curved fruit; 18 to 24 inches in length, 4 to 5 inches in diameter at the neck, 9 inches at the blossom end; skin light brown, smooth and hard; flesh orange, thick, solid, dry, sweet. Excellent for pies. Introduced prior to 1850. B75, F13, F73D, G57M, H85M, I63Z, J97M, K10, K50, K73

Papaya Pumpkin: (Papaya Golden, Paw Paw) 90 days. Small, ribbed fruit; round-oval, slightly tapered and flattened on top; weight 2 to 2 1/2 pounds; skin dark-green, mottled with yellow, smooth, thin; flesh deep-yellow, thick, tender, flavor very sweet and nutty; strongly resembles a papaya. Vigorous vine; virus and disease tolerant. Very common in Taiwan. D55, D56M, H49, K20M, N40M, PIG

Piena di Napoli: (Neapolitan, Carpet Bag Squash, Bedouin Squash) Large, violin-shaped fruit; 16 to 20 inches long; 5 to 8 inches in diameter at the blossom end; weight 30 to 40 pounds; broadly ribbed; skin dark-green, turning dull yellow when ripe, smooth; flesh yellow-orange, thick, very sweet and fragrant. Very productive. BURR, TAPLEY 1937, VILMORIN; J73, K20M, N84, Q11M, S17

Seminole Pumpkin: Small, globular fruit, 6 to 8 inches in diameter; slightly furrowed; skin hard, light buff-colored; flesh orange-red, fine-grained, sweet. Good boiled or steamed, excellent when baked. Stores extremely well, a waxy covering forming over the fruit. Highly productive vine; resistant to insects, drought and heavy tropical rains. Adapted to Deep South growing conditions. Found growing wild in Florida by early explorers and settlers. Now confined to the remote Everglades. ERWIN, YOUNG, J. [Re]; D33, F80

Tahitian: (Melon Squash) 150 days. Large, curved fruit, with bulbous blossom end; weight 15 to 40 pounds; skin buff-colored, smooth and hard; flesh deep orange, very sweet and rich, of good quality raw or cooked; keeps extremely well, becoming sweeter in

storage. Can also be dried or pickled. Vigorous vine; resistant to mildew. Believed to be an old cultivar dropped by the seed companies many years ago. A2, B73M, B78, D56M, E97, F73D, K46T, K49T, L3J, L11, L55J, R47

### *Cucurbita pepo*

Delicata: (Sweet Potato Squash) 95 days. Small, cylindrical, narrowly ribbed fruit; 8 to 10 inches long; weight 2 to 3 pounds; skin light cream-colored, striped with dark green; flesh deep orange-yellow, very fine-grained, dry, sweet and rich, quality good. Good specialty market item. Highly prolific vine, 8 to 10 feet long. Introduced in 1894. SCHNEIDER 1986 [Cul, Re], TAPLEY 1937; A2, D3M{PR}, D11M, D76, E24, E59Z, E97, F70, G6, H61, I64, J25M, L42, L89, N34{PR}, R47, etc.

Eat-All:<sup>4 5</sup> Unique, dual-purpose squash. Small, cylindrical fruit; skin cream-colored, striped with dark green; resembles Delicata. Hullless seeds of high nutritional value (35% protein, 40% oil). Can be cut in half and baked as is, the seeds adding a nut-like flavor to the sweet, dry, golden flesh. Or the seeds may be roasted separately as a confection. Developed by E.M. Meader at the University of New Hampshire. L88J

Gem: 70 days. Dual-purpose squash. Grapefruit-sized fruits can be harvested as summer squash, when seed development has just begun, and cooked whole by boiling or steaming until the interior is soft, then served with the top removed and topped with a pat of butter. Also used as a very early winter squash when mature, with rich orange flesh. Semi-bush vine, 6 feet in diameter. L89C, O89

Huicha:<sup>5</sup> 90 days. Light green, fragrant fruit; orange flesh; delicate flavor; harvested at 8 inches long or less, when sweet and tender. Also preferred for producing edible seed. Very large vine, to 40 feet long; leaves 2 feet across. Makes an excellent shade against summer heat if grown along the sunny side of a house. An old cultivar grown by the Indians of Mexico. THEODOROPoulos; F80, N84

Kuta: (F.) 48 days. Unique, gpurmet squash. Young, light green fruit, under 6 inches in length is eaten raw in salads or with dips, being crisp and smooth with a sweet, nutty flavor. Fruits of intermediate maturity may be used like eggplants. Fully mature fruit turns dark green and is excellent for baking or stuffing like a winter squash. Good keeping qualities. Vigorous, prolific vine. C20M, 191

Lady Godiva:<sup>5</sup> (Naked Seeded) 100 days. Grown primarily for the green hullless or "naked" seeds that do not require shelling. Can be eaten raw or roasted. High in protein and oil. The flesh can also be baked, boiled or steamed. Yellow-orange fruit, mottled with green. Highly productive vine; often produces 12 to 15 fruit. A2, D68, F73D, K20M, K46T, K49T, L11, L13M, L77D, N24M, R47

Styrian Hullless:<sup>5 6</sup> Unique oilseed pumpkin from the Styria province in southeastern Austria. Large, green and yellow striped fruits weighing up to 20 pounds. Traditionally eaten in pies, soups and casseroles. Delicious, hullless seeds which can be eaten raw or toasted, high in Vitamin E. Mostly pressed for their deep forest-green, high-quality oil, prized by gourmets. BISSELL, ORTIZ 1992; F80, H73{PD}, J82, N54{PD}, N81, N84, O53M

Sugar Loaf: 100 days. Improved Delicata type with more refined flesh. Attractive, short blocky fruit, 3 inches in diameter; weight 2 to 3 pounds; rusty tan skin, striped and mottled with dark-green; stringless, yellow-orange flesh, high in sugar, of excellent flavor. Stores 2 to 3 months. Developed by Dr. James Baggett at Oregon State University. B75M, C95, E13G{PR}, E75{PL}, G6, G13M, G82, H85M, I39, J9M, K10, L89C, M32, N40{PR}, N52, etc.

Sweet Dumpling: (Vegetable Gourd) 100 days. Small, flattened globe-shaped fruit; 4 inches in diameter; deep, high ribs; skin ivory-colored, with dark-green stripes; flesh orange, very sweet and tender. Suitable for stuffing. Requires no curing, keeping 3 to 4 months. Medium length vines. Good specialty market item. BRENNAN [Cul, Re], SCHNEIDER 1986 [Cul, Re]; D3M{PR},

D11M, E13G{PR}, E97, F70, G6, G79, H61, 164, K16M, L42, N40{PR}, 053M, R47, S55, etc.

Yellow Large Paris: (Gros Jaune de Paris, Mammoth Pumpkin) Large, flattened fruit, with well-marked ribs; skin salmon-yellow, slightly cracked or netted when ripe; flesh yellow, thick, fine flavored, sweet; keeps well. Used in France to make pumpkin soup and pies. VILMORIN; G68, P59M

#### CODES FOR SPECIAL TYPES

1. Baby
2. Butterblossom
3. Spineless
4. Short-Vined
5. Hullless, Edible-Seeded
6. Oil-Seed

## STARTER CULTURES {DR}

BACTERIA  
YEASTS

MOLDS

### BEER YEASTS

#### ALEYEASTS

American Ale: (California Ale, Chico Ale) {LI} American-style pale ale yeast. Used commercially for several classic American ales. Very well balanced; ferments dry; finishes soft, smooth and clean. Medium to low flocculation. Apparent attenuation: 73-77%. Optimum temperature: 60-72° F. A20M, A72M, A98, A99, B8P, B54M, B55M, C17, C25P, E68, F64, F67T, F99, K54, L36M, N17, etc.

Belgian Abbey Ale: {LI} Abbey-style, top-fermenting Belgian ale yeast suitable for high-gravity beers. Contributes distinctive, estery characteristics to Belgian Dubbel, Tripel and Grand Crus, and to some British Barley Wines. Medium flocculation. Apparent attenuation: 72-76%. Optimum temperature: 58-68° F. A72M, A98, A99, B8P, B54M, B55M, C17, E68, F64, F65, F67T, F99, L36M

British Ale: {LI} Popular yeast from Whitbread of England. Ferments dry and crisp, slightly tart, fruity and well-balanced. Works well at temperatures down to 65° F. Medium flocculation. Apparent attenuation: 73-75%. Optimum temperature: 64-72° F. A20M, A72M, A98, A99, B8P, B54M, B55M, C17, C25P, F64, F65, F67T, F99, K54, L36M

Burton Ale: (London Ale II) {LI} A true English pale ale yeast. Leaves a soft, almost "breadly" flavor in the finished ale. Ideal for use in bitter and pale ale type beers, as its mild flavor allows the flavor of the finest hops and malt to be fully appreciated. Slow to start fermentation. Medium flocculation. Apparent attenuation: 73-77%. Optimum temperature: 60-72° F. A72M, A98, A99, B8P, B55M, C17, C25P, E68, F64, F65, F67T, L36M, N17

Doric Ale: (Doric Canadian) Canadian yeast from Lallemand. Works equally well at ale and lager temperatures. For single stage fermentation. Clean, crisp and fast starting. Produces pleasant ale flavors and aromas. A20M, A72M, A99, B54M, B55M, C17, F64, F99, G40, H34M, J52

East Coast Ale: Brewer Patriot strain used to produce many American versions of classic beer styles. Ferments very clean and with low esters. Excellent for golden, blonde, honey, and German alt style ales. Medium to high flocculation. Apparent attenuation: 70-75%. Optimum temperature: 68-73° F. D10{LI}

EDME Ale: A popular English import for those who want an authentic British flavor in their beers. Produces characteristics desirable for hearty flavored ales. A good clean yeast of excellent quality. Medium flocculation. Apparent attenuation: 75-77%. Very

fast acting. Greatly improved over previous strains. A20M, A72M, A98, A99, B54M, C17, C25P, E68, F64, F99, G40, J52, K54, N17

European Ale: (German Altbier) {LI} Traditional ale yeast from Wissenschaftliche in Munich, Germai. Full-bodied, complex strain; finishes very malty. Produces an "old beer" style of ale that predates the lager revolution. High flocculation. Apparent attenuation: 67-71%. Optimum temperature: 60-72° F. A20M, A72M, A98, A99, B8P, B54M, B55M, C17, E68, F64, F65, F67T, F99, J52, L36M

German Ale: (German Alt) {LI} A traditional German ale yeast. Produces beer not dissimilar in style from English ales, though different in flavor. Generally has a sweeter, fruitier flavor than British ale. Produces an extremely rocky head. Low flocculation. Apparent attenuation: 73-77%. Optimum temperature: 55-66° F. A20M, A72M, A98, A99, B8P, B54M, B55M, C17, C25P, F64, F65, F67T, F99, J52, L36M, N17, etc.

Irish Ale: (English Brewery Ale) {LI} Ferments to a drier finish than Burton Ale, leaving a more robust, dry flavor in the finished ale. A relatively strong-flavored yeast that imparts a complex dry character, ideal for stronger ales and stouts. Medium flocculation. Apparent attenuation: 71-75%. Optimum temperature: 62-72° F. A20M, A72M, A98, A99, B8P, B55M, C17, C25P, E68, F64, F67T, F99, K54, L36M, N17, etc.

Kolsch Ale: {LI} A yeast with both ale and lager characteristics. Leaves a subtle, almost lager-like maltiness in beer with subdued fruitiness, and a crisp finish. Ideal for Kolsch-style beers and fruit beers. Low flocculation. Apparent attenuation: 73-77%. Optimum temperature: 56-64° F. A72M, A99, B8P, B54M, B55M, C17, C25P, E68, F64, F65, F67T, L36M, N17

Munton & Fison Ale: (Muntona) A popular English yeast for those who want a real British flavor in their beers. A good clean British ale yeast for the more delicate flavored beers. R>r warmer temperature, single stage fermentation. Occasionally causes a long, drawn-out fermentation. A20M, A72M, A98, A99, B54M, 07, C25P, E68, F64, F99, G40, J52, L36M

Nottingham Ale: An English brewery yeast known for producing clarity in ales. Has a remarkably high degree of flocculation. Settles out very quickly and firmly to the bottom, resulting in a much cleaner beer. Suitable for pale ales, bitters and American ales. A98, A99, B8P, B55M, 07, DIO, F64, F65, F67T, G40

Red Star Ale: Popular general purpose yeast. Produces excellent ales and stouts with a traditional ale flavor. Maximum fermenting power is achieved at room temperature. Starts easily. Ferments rapidly. Sometimes high in ester production. Can also substitute for bread yeast. A98, H34M, J52

Scottish Ale: {LI} Ideally suited for Scottish-style ales, and high-gravity ales of all types. Leaves a rich, almost smoky and peaty character in ales. Excellent for smoked beers. High flocculation. Apparent attenuation: 69-73%. Optimum temperature: 55-70° F. A72M, A99, B8P, B54M, B55M, C17, C25P, E68, F64, F65, F67T, F99, L36M, N17

Special London Ale: (Cask Ale, London ESB) {LI} Highly flocculent strain with a rich, malty character and mild, balanced fruitiness. So flocculent that additional aeration and agitation is needed. Excellent for cask-conditioned ales. High flocculation. Apparent attenuation: 67-71%. Optimum temperature: 64-72° F. A72M, A99, B8P, B54M, B55M, C17, E68, F64, F65, F67T, F99, L36M, N17

Swedish Ale: (Swedish Porter) {LI} Nordic-style *starkbier* yeast of unknown origin. Produces strong beers with a floral nose and malty finish. Excellent for porter beers. Medium flocculation. Apparent attenuation: 69-73%. Optimum temperature: 69-73° F. A72M, A99, B54M, B55M, C17, C25P, F65, L36M

Thames Valley Ale: {LI} Produces classic British bitter beers. Rich, complex flavor profile. Clean, light malt character. Low

fruitiness; low esters; well-balanced. Medium flocculation. Apparent attenuation: 72-76%. Optimum temperature: 62-72° F. A99, B54M, B55M, C17, C25P, F65, L36M

Whitbread Ale: Produces a thin-flavored beer, with noticeable fruity and ester-like flavors that become pronounced in the aftertaste, and a clearly defined crisp, dry edge. Settles readily in both the fermenter and the capped bottle. Relatively fast to start fermentation, but slower than EDME ale. High flocculation. Famous strain from England, excellent for Pale Ale. A72M, A98, A99, B54M, B55M, C17, C25P, E68, F64, F99, G40, J52, K54, L36M, N17, etc.

#### LASER YEASTS

American Lager: (New Ulm Lager) {LI} American lager yeast, not a Pilsner strain. Bold, complex and aromatic. Produces beers with a slight butterscotch flavor. Medium flocculation. Apparent attenuation: 73-77%. Optimum temperature: 48-58° F. A20M, A72M, A98, A99, B8P, B54M, B55M, C17, F64, F65, F67T, F99, J52, L36M

Bavarian Lager: {LI} Produces rich, full-bodied, crisp, malty beers. Well suited for making Helles, Dunkels and Vienna style beers. More tolerant of temperature variations than most lager yeasts. Medium flocculation. Apparent attenuation: 73-77%. Optimum temperature: 48-58° F. Used by many German breweries. A72M, A98, B8P, B54M, B55M, C17, C25P, E68, F64, F67T, F99, J52, K54, L36M, N17, etc.

Bohemian Lager: {LI} Traditional pilsner strain from the Weihenstephan. Ferments clean and very malty, with rich residual sugar in full-gravity pilsners. Excellent with Saaz hops. Medium flocculation. Apparent attenuation: 69-73%. Optimum temperature: 46-54° F. A72M, A98, A99, B8P, B54M, B55M, C17, C25P, F64, F65, F67T, F99, L36M

California Lager: {LI} Excellent yeast for fermenting lagers at warmer temperatures. Yields malty, brilliantly clear beers. Particularly suited for producing 19th Century-style West Coast beers. High flocculation. Apparent attenuation: 67-71%. Optimum temperature: 58-68° F. A20M, A72M, A98, A99, B8P, B54M, B55M, C17, C25P, E68, F64, F65, F67T, F99, L36M

Czech Pilsner: {LI} Classic strain from Bohemia. Produces traditional pilsner beers with a clean, dry finish that retain a rich, malty character. Also ideal for making bock and Vienna style beers. Medium to high flocculation. Apparent attenuation: 70-74%. Optimum temperature: 48-64° F. A72M, A99, B8P, B54M, B55M, C17, C25P, E68, F64, F65, F67T, L36M, N17

Danish Lager: {LI} Produces classic Dortmund-style beers—rich, yet crisp and dry. Soft, light profile which accentuates hop characteristics. Well-suited to aggressively hopped pilsners. Low flocculation. Apparent attenuation: 73-77%. Optimum temperature: 46-56° F. A98, A99, B54M, B55M, C17, F64, F65, F99, L36M

Munich Lager: {LI} Unique, very complex strain. Produces exceptional, frequently prizewinning, German beers—very smooth, well-rounded, and full-bodied. Less spicy than Bavarian Lager. Medium flocculation. Apparent attenuation: 73-77%. Optimum temperature: 48-56° F. A20M, A72M, A98, A99, B8P, B54M, B55M, C17, E68, F64, F65, F67T, F99, L36M, N17

North American Lager: {LI} Traditional strain of North American and Canadian lagers and light pilsners. Will produce a lager with minimal added flavors, ideal when the cleanest possible flavor is desired. Also well-suited to American-style wheat beers. High flocculation. Apparent attenuation: 70-76%. Optimum temperature: 48-56° F. A72M, A99, B8P, B54M, B55M, C17, F64, F65, L36M, N17

Pilsen Lager: (St. Louis Lager) {LI} A classic American pilsner strain, used by a well-known U.S. brewery. Produces beers with a smooth, malty palate. Ferments dry and crisp. Medium flocculation. Apparent attenuation: 71-75%. Optimum temperature: 48-56° F.

A20M, A72M, A98, A99, B8P, B54M, B55M, C17, C25P, E68, F64, F67T, F99, J52, K54, L36M, etc.

Red Star Lager: Bottom-fermenting yeast used for brewing at room temperature. Best for steam beers and for cold, lager beer fermentations. Ferments beer to a fruity finish with a slight acidic character. Popular fast starting yeast. Settles out readily to produce a very clear beer. Optimum temperature range 43 to 46° F. J52

Vierka German Lager: Produces beers with true characteristics of the famous German lagers. Also suitable for Pilsners and light lagers. Cold temperature yeast. For best results use a yeast starter. Developed in cooperation with the brewmasters of world famous German breweries. A superior yeast. B55M, G40, H34M

#### OTHERS

American Hefeweizen: Produces Oregon-style Hefeweizen, characterized by yeast in suspension but with clean flavors. Does not yield the typical banana and clove overtones. Produces some sulfur, but otherwise a clean fermenter. Low flocculation. Apparent attenuation: 70-75%. Optimum temperature: 65-69° F. D10{LI}

Bavarian Wheat: (Weizenbier) {LI} Blend of top-fermenting ale and pure wheat strains. Produces beers which are mildly spicy compared to the traditional estery and phenolic wheat beers. Medium flocculation. Apparent attenuation: 73-77%. Optimum temperature: 64-70° F. A20M, A72M, A98, A99, B8P, B54M, B55M, C17, C25P, E68, F64, F99, J52, L36M, N17, etc.

Belgian Lambic Blend: {LI} Belgian lambic style yeast blend with lactic acid bacteria. Rich, earthy aroma and acidic finish. Suitable for *gueuze*, *faro* and fruit beers. Medium to low flocculation. Apparent attenuation: 65-75%. Optimum temperature: 63-75° F. A99, B54M, B55M, C17, F64, F65, F67T, L36M

Belgian White: {LI} Belgian Witbier yeast. Conveys a tart, slightly phenolic character to beers. Capable of producing distinctive, spiced wheat beers, as well as Belgian-style Grand Cru ales. Alcohol tolerant. Medium flocculation. Apparent attenuation: 72-76%. Optimum temperature: 60-75° F. A72M, A99, B8P, B54M, B55M, C17, E68, F64, F65, F67T, L36M

Sake: {LI} For use in conjunction with *koji* in the production of a wide range of Asian *jius*—rice-based beverages. Full-bodied profile with true sake character. Optimum temperature range for fermentation: 65-75° F. When *koji* is added to steamed rice, it produces enzymes that convert starch to glucose. This is equivalent to the malting process in brewing beer. KONDO; A99, B55M, C17, E68, F65, L36M

Trappist High Gravity: {LI} Robust, slightly phenolic yeast suitable for higher gravity, abbey-style beers and wheat beers. Ferments dry with a rich, ester profile and malty palate. Ideal for *Biere de Garde*. Medium flocculation. Apparent attenuation: 75-80%. Optimum temperature: 64-78° F. A20M, A99, B8P, B54M, B55M, C17, F64, F65, L36M

Weihenstephan Wheat: (Delbrueckii Wheat) {LI} Traditional, pure wheat beer strain. Produces beers with a unique, slightly sour, spicy character—rich with clove, vanilla and banana. Low flocculation. Apparent attenuation: 73-77%. Optimum temperature: 64-70° F. A72M, A99, B8P, B54M, B55M, C17, C25P, E68, F64, F65, F67T, F99, J52, L36M, N17, etc.

#### BREAD CULTURES

##### NON-SOUR

Baking Ybast: Granular active dry baking yeast. One pound equals 48 small yeast cakes. Remains active for 4 months or longer. Use one level tablespoon for each large loaf. Needs to be “proofed” or dissolved in water before use. Should be refrigerated. A52M, B31, C73P, E60P, M63M, N7D

Barm: Natural mix of flour loving organisms. The fresh form will hold in a refrigerator for up to 4 weeks until ready to use. It is then

invigorated by the addition of wheat flour (spelt or kamut), sprouted grain and water, then kept at a temperature of 68° F. after which it can be used for making non-sour, light whole wheat breads, rolls, pizza or pitas. A33M, A33M{PD}, E22{FR}

Cool Rise Natural Leaven: Cool temperature loving, non-sour natural leaven that only requires whole wheat flour and pure water mixed to the consistency of a soft dough. The day before baking it should be refreshed with the addition of more flour and water and returned to the refrigerator to slowly energize. The next day it can be used for making bread, rolls or crackers. E22

European Instint Yeast: Hgh-quality, high-performance all purpose yeast specially developed for professional bakers Very vigorous, since more yeast cells remain alive after the manufacturing process. Can be added directly to dry ingredients. Manufactured by SAF Products, the world's largest yeast producer. G29

European Special Instant Yeast: Special strain of European Instant Yeast designed to provide a long, steady rise, perfect for doughs high in sugar such as sweet bread doughs, or acid sourdoughs. Also good for any dough that should rise "long and slow" to develop its flavor. Manufactured by SAF Products. G29

Fermipan Instant Yeast: (Eagle) Excellent for baking all kinds of breads including pizza, focaccia and other shaped flatbreads, where the small amount of ascorbic acid packaged with the yeast helps relax the dough's gluten. May be added directly to dry ingredients. Very popular in the baking trade. Produced in Montreal by the American Yeast Company of Derry, New Hampshire, a division of Lallemand, Inc. of Canada. G29

Fleischmann's Instant Yeast: Strong, vigorous, fast-acting instant yeast. Also contains ascorbic acid, which produces the acidic atmosphere in which yeast grows best. Doesn't need to be "proofed" or dissolved in water before being used. Formulated in Fenton, Missouri. G29

Red Star Acthe Yeast: Bulk packed for economy. Fresh active dried yeast that has superior leavening power, especially when used for breads and rolls. Needs to be "proofed" or dissolved in water before use. Comes in a reusable jar for easy refrigerator storage. To buy this much yeast in the usual small package would cost considerably more. C64, C95M, G29, H86, I39

Red Star Instant Acthe Yeast: Red Star's traditional active dry yeast produced in smaller granules so that it will dissolve instantly in liquid like instant yeast, no "proofing" being necessary. Bulk packed for economy. Instant active dried yeast is a relatively new form of baking yeast. G29

## SOURDOUGH

Alaskan: An Alaskan type sourdough culture that has been maintained for 21 years. The slow rising of the sourdough culture assists in the breakdown of complex carbohydrates to make breads more digestible and delicious. The tart flavor imparted by this culture gives hotcakes, biscuits and muffins their unique distinction. E22

Austrian: A starter from the old section of Innsbruck. The bakery carries a sign over the entrance proclaiming 1795 as the year the business opened. The culture is especially adapted to rye flours, rises somewhat slowly and produces one of the more sour doughs. WOOD, E. [Re]; L3M

Bahrain: From Bahrain, thought by many to be the ancient Garden of Eden and a curious mixture of the oldest and the newest. The sourdough culture is from the oldest of the oldest. It rises well and is one of the most sour. WOOD, E. [Re]; L3M

Brown Rice: Maintained on organic brown rice flour and pure water. Contains no wheat or gluten, therefore it is safe for people who are allergic to these foods. Makes delicious sourdough brown rice bread, rice muffins and rice pancakes. E22

Chuck Wagon: Handed down by one of the last of the chuck wagon cooks who herded cattle across the plains of the American West. Traditionally eaten around a campfire with beans. Recommended for bread, pancakes and combread. C81M

Finland: The newest culture to be introduced ty Ed Wood, author of "World Sourdoughs from Antiquity". It has performed well in various tests and imparts a wonderful and distinctive flavor and aroma. L3M

Forty Niner: (San Francisco) Obtained from a relative of Ed Wood, author of "World Sourdoughs from Antiquity" who had received it from a prospector of the California gold rush era. The culture rises quite slowly and produces moderately sour dough of exquisite flavor. WOOD, E. [Re]; L3M

French: From a small bakery on the outskirts of Paris that has been in business for over 150 years. The starter rises very well and the dough has one of the mildest sourdough flavors. Interchangeable with the Austrian culture in recipes. WOOD, E. [Re]; L3M

French Lactic: Used in making those delicious crusty loaves of French sourdough breads that everyone loves to eat. Also makes hotcakes light as a feather, and biscuits that melt in your mouth. I39{FR}

French Levain: Extremely vigorous strain created from a pumpernickel-based starter, inspired by the teachings of master baker Raymond Calvel of France. Produces *pain au levain*, a moist bread that doesn't favor the "sourness" so prevalent in American sourdough breads. Traditionally eaten with a bit of sweet butter and *fleurdesel*. G29

Giza: The bakery where this sourdough was found was almost literally in the shadow of the Sphinx in the town of Giza not far from Cairo. In Cairo there are many modern bakeries. This one, in Giza, dates straight back to antiquity. The dough rises well and is moderately sour. WOOD, E. [Re]; L3M

New England: Descended from cultures which have been in circulation in New England for over 250 years. Produces full-flavored breads, as well as excellent pancakes and waffles. Comes with recipes and instructions for feeding. G29

Oregon Pioneer: The same type of "starter" used by early Oregon pioneers in the 1850's. It was taken to the Alaska Gold Rush of 1898 and became the basis of the legendary sourdough starters of that area. The more you use and renew this "starter" the better it becomes. I39{FR}

Red Sea: From one of the oldest ethnic bakeries in Egypt. Found in the village of Hurghada on the shore of the Red Sea. The bread was actually placed on the village street to rise. One of the fastest cultures to rise and has a mild sourdough flavor. Works well in automatic home bread machines. WOOD, E. [Re]; L3M

Russian: A culture from the village of Palekh, two hundred miles northeast of Moscow. It is a fast leavening culture that handles heavy Russian whole wheat doughs very well. It also appears ideal for use with automatic home bread-making machines. L3M

San Francisco: A special strain of sourdough first introduced to the San Francisco Bay area during gold rush days. Sourdough seems to react superlatively to the cool, salty San Francisco air. Produces a bread that is sour yet almost sweet, hard and crisp yet soft, pungent yet mild. A20M, B91T, H69, I8M

Saudi Arabian: From the desert bedouin of Saudi Arabia who have survived the modern transformation of that country unchanged. The Saudi sourdough is as desert as its bedouin baker. It rises moderately well and has one of the most distinctive flavors of all sourdough cultures. WOOD, E. [Re]; L3M

Yukon: A Yukon prospector gave this starter to the physician father of a medical school classmate of Ed Wood, author of "World

Sourdoughs from Antiquity". It produces moderately sour dough and rises well. WOOD, E. [Re]; L3M

#### DAIRY CULTURES

##### CHEESE CULTURES

Aromatic Lactic: Used in the production of sour cream, fermented buttermilk, cultured butter and fresh cheeses such as cottage cheese, Neufchatel, etc. It is used in either the preparation of starters or directly in the manufacture of the above products. M46M{PD}

Blue Mold: (*Penicillium roqueforti*) A blue mold used to ripen and give flavor to blue-veined cheeses such as Roquefort, Gorgonzola, Stilton, Mycella and Danish blue cheeses. Blue molds may be added to milk or mixed with the curd. With certain cheeses such as goat's milk cheese they are sprayed on the surface. F56, H28,130

Chevre: {DS} A new "direct set" culture that produces a rich, creamy chevre goat cheese from goat milk. Excellent as a fresh cheese spread and on bagels. Often used in combination with Fresh Cheese starter culture. Also comes in a kit that includes goat cheese molds, liquid rennet and cheesecloth. F56, G73M, 130

Creme Fraiche: Will make a rich and creamy dessert that can be sweetened with honey, maple syrup or sugar. Very easy to make. Can be served with fresh fruit such as bananas, strawberries, peaches, etc Available as a "direct set" culture which is added directly to milk, saving considerable time. I30{DS}, M46M{PD}

Emmenthaler: Used for making Emmenthaler cheese and other Swiss type cheeses such as Gruyere. The culture is added directly to the milk. Often used in combination with Propionic or Thermophilic cheese cultures. Can not be recultured repeatedly like some other cultures can. 130

Flora Danica: The culture recommended in the book "Goat Cheese Small Scale Production" by the Benedictine nuns of Mont Laurier, Canada for making a variety of goat cheeses, including a delicious Camembert. Will produce a variety of goat cheeses including Fresh Chevre, Camembert, Feta and Blue. Can be recultured many times. 130

Fresh Cheese: Can be used to produce fresh "junket-style" cheeses such as Cottage cheese, Pot Cheese, Neufchatel, sour cream and other soft cheeses as well as buttermilk. Can be kept going or recultured from one batch to the next. G47C, 130

Fromage Blanc: Produces Fromage Blanc which is similar to cream cheese with a delightfully rich flavor. It can be used as a dip, a cream cheese substitute, in cooking as a substitute for ricotta, or simply spread on bagels. The starter culture also comes in a kit that includes a dairy thermometer, recipe booklet and cheesecloth. G73M{DS}, I30{DS}, M46M{PD}

Fromagina: New cheese culture producing a cheese which is a cross between Fromage Blanc and Mascarpone. *Fromagina* cheese is excellent for cooking or it can be served by itself as a cheese spread. Highly recommended for beginning home cheese makers. Developed by Ricki and Robert Carroll. I30{DS}, M46M{PD}

Lactic Mycoderma: Along with Lactic Oidia, capable of rapid initial growth on the surface of cheeses with their high acidity and high salt content. Prepares the surface for the subsequent growth of Red Bacteria (*Brevibacterium linens*). Also synthesizes vitamins. H28

Lactic Oidia: Used in the manufacture of several varieties of semi-soft and semi-hard cheese to prevent the growth of undesirable molds, metabolize lactic acid on the surface of cheese, and promote the growth of cheese ripening bacteria, particularly Red Bacteria (*Brevibacterium linens*). H28

Mesophilic: Used in the manufacture of the majority of cheeses such as Cheddar, Monterey Jack, Stilton, Edam, Gouda, Muenster, Danish blue, Cheshire, Farmhouse and other hard cheeses. Some

strains are used in the preparation of starters, others are added directly to milk and contribute to the maturation and enhancing of cheese flavor. Also used for buttermilk and sour cream. F56{DS}, G73M, G73M{DS}, H28,130,130{DS}

Mozzarella: Designed for making Mozzarella with store bought non-homogenized milk. Produces an excellent meltable Mozzarella cheese. Also comes in a kit that includes starter culture, rennet tablets, citric acid, a dairy thermometer and an easy-to-follow recipe. G73M{DS}, 130

Propionic: (*Propionibacterium freudenreichii* ssp. *shermanii*) Produces the characteristic "eyes", aroma and flavor associated with Swiss, Gruyere and Emmenthaler cheeses. Must be used in combination with Thermophilic starter for preparing Swiss type cheeses. Maintains its vitality for a year in a refrigerator and 18 months in a freezer. H28,130

Red Bacteria: (*Brevibacterium linens*) Plays an important part in the maturing and the production of flavor of certain cheeses. The softer the cheeses the more rapidly and intensely are they subject to the action of cheese maturing bacteria which constitute the typical superficial flora of soft, semi-soft and semi-hard cheeses such as Brick, Muenster, Limburger, Oka, Port Salut, Anfrom, Camembert, etc. H28,130

Thermophilic: Used in the production of cheese whose cooking necessitates high temperatures, such as Mozzarella, Parmesan, Gruyere, Romano, Provolone, Asiago and Swiss cheeses. Can also be used in the preparation of starters or in the direct seeding of the milk intended to be transformed into cheese. F56{DS}, G73M, G73M{DS}, H28,130,130{DS}

White Mold: (*Penicillium camembertii*) A mold used to ripen and flavor Brie, Camembert, Coulommiers, and a variety of French goat cheeses. It develops rapidly and confers a good flavor to cheeses in the course of its maturing. The rapid growth also contributes to the prevention of contaminating molds. F56, H28,130

##### SOUR MILK CULTURES

Acidophilus Milk: A ferment made with *Lactobacillus acidophilus*. Although it is thick-textured like yogurt, it is called acidophilus "milk". It is credited by many health authorities to possess unique therapeutic properties in the treatment of intestinal disorders. Makes an excellent base for salad dressing, or it can be used like sour cream on baked potatoes. HUNTER 1973b, KURMANN, STEINKRAUS; 130

Bulgarian Yogurt: Will produce an excellent very smooth, thick, rich and creamy yogurt that can be made with either whole milk or skim milk. The culture can be kept going for months. Contains *Lactobacillus acidophilus*. One-third ounce packet will make up to 1/2 gallon of yogurt. C95M, G73M, G73M{DS}, 130

Buttermilk: Produces a thick, delicious culture for the same cheeses as the Mesophilic culture such. Also makes an old-fashioned cultured buttermilk for use in cooking pancakes, and sour cream. The buttermilk can be made using either skim or whole milk. G73M{DS}, H28{DS}, I30{DS}

Direct Set Yoghurt: {DS} New direct set yoghurt culture that can be added directly to milk. Works well with store bought whole or skim milk, and also with goat milk. Produces a rich, creamy yoghurt. Each packet will set up to two quarts of milk. May contain acidophilus or *Bifidobacterium* cultures. H28,130

Filmjolk: Thick, ropy cultured milk drink with a clean mild flavor similar to cultured buttermilk. Traditionally used on breakfast cereals and fruit. A major fermented milk in Scandinavia, where large quantities are consumed. For culturing, any milk may be used including soymilk, which makes a rich cultured soy drink. CAMPBELL-PLATT, KURMANN; E22

Hansen's Acidophilus-Yogurt: Contains a combination of *Lactobacillus bulgaricus*, *Streptococcus thermophilus*, and *Lactoba-*

cillus acidophilus. Makes a fermented milk that has the combined rich and creamy texture of *Bulgarius* yogurt with the therapeutic benefits of *Acidophilus* milk. May be recultured. 130

Hansen's Buttermilk: Produces a rich and creamy cultured buttermilk which is perfect for any buttermilk recipe. May also be used as a starter for making Cheddar type cheeses and other cheeses that would normally use a mesophilic culture. Can be recultured. F56,130

Hansen's Yogurt: Makes a creamy yogurt that is custard-like in texture and has a full-flavored nutty, mild, almost sweet flavor. Excellent sweetened with a little honey. Has been a favorite culture for generations of yogurt connoisseurs. F56

Kefir: Reusable culture curds that are composed of yeasts and bacteria living symbiotically. Simple to culture. Add any dairy milk to the "grains", stir, and set aside to incubate at room temperature. Stir daily for 2 to 3 days before straining. Use the kefir as a drink, for baking or for making cheese. The curds that remain after the straining can be used to make another batch of kefir. HUNTER 1973b, KURMANN, STEINKRAUS; E22{FR}, F56{DS}, G47C, I30{FR}, 166

Rosell Yogurt: In use since 1932, it has a world-wide reputation. Produces an excellent yogurt in 3 or 4 hours. Only one yogurt culture permits the manufacture of yogurt for one month. Also used for making yogurt cheese. Will conserve its efficacy for 24 months if kept cold in its original envelope. G47C

Sour Cream: Will turn a pint of cream into a deliciously thick "Old World" style sour cream. Works very well with both store bought milk or goat milk. Can be added directly to milk. Developed by Ricki and Robert Carroll. G73M{DS}, H28{DS}, I30{DS}

Viili: A sweet cultured milk product that is simple to use. No special incubators or sterile jars needed. Sets at room temperature after a 24 hour incubation period. Has a mild, not tart flavor and a creamy, elastic, honey-like texture. Also works well with soy milk. Each culture is a starter for future generations of viili. Introduced from Finland over 85 years ago. Traditionally served cold with berries, sugar, miisli, dry breakfast cereal, and *talkkuna*. KURMANN, TANTTU [Re]; E22{FR}

#### SOYFOOD CULTURES

Barley Koji: (Mugi Koji) Miso koji starter. Will produce regular barley or *mugi miso* in 12 to 18 months, and mellow barley or *amakuchi mugi miso* in 1 to 2 months. Not fortified with yeast and *Lactobacillus* cultures. Includes enough spores for producing 6 pounds of koji. E22, H91

Brown Rice Koji: All-purpose home fermentation culture suitable for producing rice miso, shoyu, sake, rice vinegar and amazake. It can also be used to make sweet vegetable pickles, a delicacy in Japan. Relatively easy to use. A99, E56, G47B, H91, I19M, K54

Hama-Natto: A Japanese fermented soybean product made by fermenting whole soybeans with koji mold. During fermentation the beans acquire a dark reddish color, but turn grayish-black after being dried in the sun. Hama-natto beans are smooth and soft and have a pleasant, somewhat salty flavor resembling mellow *hatcho miso* or shoyu, but is sweeter. Usually sprinkled over rice, served as an hors d'oeuvre with green tea or cooked with vegetables as a seasoning. SHURTLEFF 1975, STEINKRAUS; H91{PD}, I19M{PD}

Natto: Whole soybeans fermented with bacteria. During the fermentation period, the beans become covered with a viscous, sticky material. The quality of the natto is determined, in part, by the stickiness of the beans. Natto is grayish, has a strong musty flavor, and is used with rice or as a side dish. One of the most digestible sources of protein and vitamin B<sub>12</sub>. HOMMA [Re], HUNTER 1973a, SASS, UDESKY; E22, E56, E66T, G20M{PD}, H91, I19M

Red Koji: (Red Rice Koji) Miso koji starter. Will produce red rice miso or *sendai miso* (fermented soybean paste) in 6 to 12 months, and sweet red miso or *edo miso* in 1 to 1 1/2 months. Fortified with yeast and *Lactobacillus* cultures. Includes enough spores for producing 6 pounds of koji. E22

Rice Koji: (Cultured Rice) Special order organic rice from Lundberg's Farm in California, polished rice, and Light Rice koji starter. The first fermentation having already taken place. For amazake and miso. Will make 10 quarts of amazake or 6 pounds of miso, or some of each. Made fresh in small batches. E22{FR}

Seed Miso: Aged unpasteurized seed miso for miso making. Contributes beneficial organisms to get new misos fermenting vigorously. Once miso has been made, some of it can be saved for seed for future homemade misos. A recommended addition to first batches of miso. E22

Shoyu Koji: Koji starter. Produces *shoyu* or *soy sauce* (fermented liquid soy seasonings) in 6 to 12 months. Fortified with yeast and *Lactobacillus* cultures. Includes enough spores for making 2 gallons of shoyu. Has a 6 month shelf life if kept cool and dry. E22

Soybean Koji: (Hatcho Koji) Miso koji starter. Will produce soybean or *hatcho miso* in 18 to 24 months, and wheat-free shoyu or *tamari* in 18 months. Fortified with yeast and *Lactobacillus* cultures. Includes enough spores for producing 6 pounds of koji or 2 gallons of tamari. Has a 6 month shelf life if kept cool and dry. E22

Sufu: A highly flavored, creamy bean paste made by overgrowing tofu with a mold and fermenting the curd in a salt brine/rice wine mixture. It is soft, pale yellow in color, and has a salty flavor somewhat suggestive of anchovies. Also called *Chinese cheese*, *fermented bean curd*, *tofurū*, *fuyu* and *to sufu*. Available in Chinatown markets. CHANG, W. [Re], COST 1988 [Cul, Re], JAFFREY, SHURTLEFF 1975 [Re]; U7

Sweet White Koji: (Light Rice Koji) Rice koji starter. Will produce sweet white or *shiro miso* in 1 month, light yellow or *shinshu miso* in 6 to 12 months, or *amazake* (sweet fermented rice drink) in 24 hours. Fortified with yeast and *Lactobacillus* cultures. Includes enough spores for producing 6 pounds of koji. FINNEGAN [Pre, Re]; E22

Tempeh: A fermented soybean cake from Indonesia that is a low cost, cholesterol free, high quality protein food that can be made at home. Homemade tempeh tastes fresher, slices better, has a better aroma, and costs for less than commercial tempeh. One pound of dry soybeans will make 1 1/2 to 1 3/4 pounds of delicious tempeh in 24 hours at 85° F. E22, H14I.I3, I19M, M87

#### VINEGAR CULTURES {FR}

Cider: Traditionally produced from apple cider. Can also be made from apple wastes. Blends well with peanut or sesame oils. *Switchel* is a refreshing drink, formerly used by New Englanders during haying season. It consists of cold well water and apple cider vinegar. The drink can be sweetened with molasses and flavored with ginger. CUSUMANO [Cul], HUNTER 1973a [Pre], PROULX [Re]; A72M, B8P, B54M, B55M, DIO, F65, K49M

French: Will produce fine quality gourmet herbal vinegars from leftover red or white wine. Comes in a kit that includes bottles, corks, labels and instructions. Legend has it that the original "mother" vinegar came from France after the last world war. F35M

Malt: Traditionally produced from beer and ale. Now commonly made with malt extract. Can be pasteurized to improve keeping qualities, but will no longer form a "mother". Malt vinegar is always served in England with fish and chips, and can be sprinkled over cooked greens or used in place of cider vinegar in any recipe. CUSUMANO [Cul], HUNTER 1973a [Pre], VON WELANETZ; A20M, A72M, A99, B8P, B54M, B55M, DIO, F65, G40, K49M

Red: (Red Wine) Interchangeable with White vinegar in recipes except where the red color would affect a pale sauce. The standard

vinegar for Italian dressings. *Rosel* or *russell* is a fermented beet-vinegar used during the Jewish Passover, and to make a Russian-type beet soup. The liquid is clear, bright red, and has a wine-like aroma. CUSUMANO [Cul], HUNTER 1973a, VON WELANETZ; A20M, A72M, A98, A99, B8P, B54M, B55M, C17, C25P, DIO, E68, F65, G40, K49M, K54

White: (White Wine) Similar to Red vinegar but slightly more delicate. Often infused with an herb or spice, or used as the basis for fruit vinegars. During the Renaissance in France vinegar was flavored with pepper, cloves, roses, fennel, and raspberries. By the 18th century, some 92 varieties of scented vinegars and 55 table flavors were known in France. The *mother vinegar* can be used to make additional batches of vinegar. CUSUMANO [Cul, Re], PROULX; A20M, A72M, A98, A99, B8P, B54M, B55M, C17, C25P, DIO, E68, F65, G40, K49M

#### WINE YEASTS

Assmanshauser: Similar to Pasteur Red in some characteristics, but has a slower fermentation rate and an austere fruitiness rather than "grapiness". Produces wines that are spicy, complex, and of medium body and dark color. Sometimes awkward when young, they achieve balance with barrel aging. Often preferred in Pinot Noir over faster yeasts. N27{LI}

Beerenauslese: Several wineries have had good results with this yeast on grapes infected with botrytis. It intensifies the apricot/honey flavors produced by the mold. The fermentation can usually be arrested by chilling and racking. N27{LI}

Champagne: Very vigorous, general purpose strain. Ferments colder and drier than Montrachet. Suitable for reds and whites, sparkling wines, fruit wines, mead and melomel. Also preferred for flavor in making naturally carbonated soft drinks. ACTON; A98, A99, A99{LI}, J52

Chanson: A yeast of French origin that is preferred by a number of top Chardonnay producers. Wines produced with Chanson have refined and elegant flavors with a graceful emphasis on varietal fruit. Ferments evenly, has low H<sub>2</sub>S production, and flocculates well, making compact lees. N27{LI}

Cotes de Blancs: (Epemay II) Slower fermenting than Montrachet. An excellent general purpose yeast for still or sparkling wines. Produces less foam than Montrachet. Yields a fine, fruity aroma and excellent flavor. Also good for low acid fruit wines and California grape wines. Accentuates the aromatic honey character of meads. Derived from an isolate of the original Epemay strain at the Geisenheim Institute in Germany. A20M, A72M, A98, A99, B8P, B55M, C17, C25P, E68, F64, G40, H34M, J52, K54, L36M, N17, N27, etc.

Dry Mead: {LI} Classic yeast for producing meads with a dry finish. Low-foaming, with little or no sulfur production. Ferments dry, fruity and clean. Very high alcohol tolerance. Optimum temperature range for fermentation: 55-75° F. A72M, A99, B55M, C17, DIO, F64, F65, K54, L36M

Flor Sherry: Some of the better sheries such as Amontillado owe their unique bouquet and flavor to a particular strain of yeast which sometimes forms a thick film on top of the wine. For the advanced winemaker who would like to duplicate this process. Also popular for making sweet and semi-sweet wines. A20M, A99, L36M

French Bordeaux: Ideally suited for red and white wines which mature rapidly, or bigger reds requiring aging. Enhances the fruity characteristics of most wines. Moderate foaming, low sulfur production over a wide temperature range. Optimum temperature: 65-90° F. B55M, F65, L36M

Lalvin 1116: (Lalvin K1-V1116) For white, red and rose wines. Also produces a very clean and light-flavored barleywine or mead. Due to its "killer factor", high alcohol production and good activity at high temperatures, this is one of the best choices for general wine making. An extremely last starter. The "killer factor" inhibits the

growth of sensitive wild yeasts in the must. A72M, A98, A99, B8P, B55M, F65, H34M, J52, N17

Lalvin 1118: (Lalvin EC-1118, Prise de Mousse) A strain that has been isolated from the *grand crus* of the champagne region. Has excellent alcohol resistance and a powerful "killer factor". Ferments well over a wide range of temperatures. Can be used for any type of fermentation. Ideal for stuck fermentations and for both the base wine and bottle fermentation of sparkling wines. A72M, A98, A99, B54M, B55M, C25P, E68, F65, H34M, J52

Lalvin 1122: (Lalvin 71B-1122, Beaujolais 71B, Beaujeu) Suitable for aromatic wines such as Nouveaux and for wines made with very tart fruit. An excellent choice for both white and red wines where an especially "fruity" aroma is desired. Also used for concentrates. A72M, A98, A99, B8P, B55M, C25P, F65, H34M, J52, N27

Malo-Lactic: {LI} Blend of *Leuconostoc oenos* strains isolated from western Oregon wineries. Includes strains Ey2D and Erla. Excellent for high acid wines and low pH conditions. Softens wines by converting harsh malic acid to milder lactic acid. Can be added to juice any time after the onset of yeast fermentation, when sulfur dioxide is less than 15 ppm. B55M, DIO, F65, L36M, N27

Montrachet: An all purpose yeast. Good for making wine from grapes, berries, fruits and vegetables. Very vigorous fermentation. High resistance to sulphur-dioxide. Performs best at 70 to 80° F. Excellent flavor characteristics. Very easy to use, can be added to the must without prior starting. A20M, A98, A99, B8P, C17, C25P, DIO, E68, G40, 139, J52, K54, L36M

Pasteur Champagne: Used for Charmat process sparkling wines, delicately flavored white wines where a minimum of yeast flavor is desired, old fashioned soda pop, and for barley wines. Also helpful in starting stuck fermentations. For cool and cold fermentations, 65° F. and under (but must be started at 70 to 75° F.). Has high alcohol tolerance. A20M, B8P, B54M, C17, C17{LI}, C25P, E68, G40, 139, K54, N17

Pasteur Red: (French Red, Bordeaux Red) A fast, strong fermenter that is used for full-bodied red wines made for aging in oak and in the bottle. It can help give character to some less robust red grapes, or those that must be picked before optimum flavor development. Produces very complex wines, with a characteristic Cabernet-style concentration of fruit and good color extraction. A20M, B8P, B54M, B55M, C17, C17{LI}, C25P, F64, G40, N27{LI}

Pasteur White: (French White, Simi White) Intended mainly for dry, crisp white wines. Provides complexity instead of fruitiness and tends to emphasize acidity, making wines that could be described as austere. Sensitive to sudden chilling, it works best at cool, even temperatures. It can be stopped when sweet. N27{LI}

Premier Cuvee: (Red Star Prise de Mousse) Widely used in France as a champagne yeast. Also good for making Sauvignon Blanc, White Zinfandel, Peach, Bear, Apricot, and plum wines and soda pop such as birch beer, root beer, ginger beer and spruce beer. Has a good tolerance to ethanol and SO<sub>2</sub>. Ferments to dryness. A20M, A72M, A98, A99, B8P, B54M, B55M, C17, DIO, E68, F64, F65, G40, K54, L36M, N27

Prise de Mousse: {LI} Institute Pasteur champagne yeast, race bayanus. Crisp and dry, ideal for sparkling and still white wines and fruit wines. Can also be used for high-gravity beers. Good flocculating characteristics. Low foaming; excellent barrel fermentation. Ferments well at low temperatures, 55-65° F. A99, B8P, B55M, F64, F65, F99, L36M

Red Star Flor Sherry: For dry sherry type wines which require development of a sherry-flor film that is responsible for much of the characteristic flavor. Also used for Port and other strong wines. Has been used in the United States since 1963 for the production of submerged culture sherry. A72M, B55M, E68, F64, F65, H34M, N27

**Red Star Montrachet:** A popular all purpose yeast suitable for fermentations of red and full-bodied white wines. A strong fermenter with good ethanol tolerance. Has a tendency to produce hydrogen sulfide (rotten egg smell). Recommended only for experienced winemakers whose grapes are known to be relatively free of sulphur dust at harvest. Can produce variable results, depending on juice composition and winemaking skill. A72M, B55M, F64, F65, H34M, N27

**Red Star Pasteur Champagne:** Generally used for delicately flavored white wines, where a minimum of yeast flavor is desired, for barley wines, fruit wines and for stuck fermentations. Also used to carbonate soft drinks. A fast, usually complete fermenter that is not suitable for wines requiring slow fermentation. Has very good ethanol tolerance. From the Institut Pasteur in Paris. Used widely in the U.S. since about 1968. A72M, B55M, F64, F65, L36M, N27

**Rhone:** Moderately vigorous strain. Best for Petite Sirah and Rhone type varieties. Good for Zinfandel. Produces wines with fruity, estery aromas. High alcohol tolerance, up to 17%. Moderately fast fermenter. Optimum temperature range for fermentation: 59-82° E B8P.E68

**Steinberg:** A favorite among winemakers for Rieslings, other German-style wines, and apple wines. Produces a distinctive, flowery, complex combination of scents which are best when the wine is fermented cool. The activity of this cold-tolerant yeast can be slowed greatly by chilling but usually resists stopping completely without additional procedures. Also recommended for mead. ACTON; B8P, E68, N27{LI}

**Sweet Mead:** {LI} Excellent for producing extra sweet meads. Top-fermenting yeast which leaves residual sugar after fermentation. Produces very fruity, sweet meads with strong honey aromas. Requires added nutrients for a healthy fermentation. Optimum temperature: 65-75° F. A72M, B55M, C17, DIO, F64, F65, K54, L36M

**Vierka Assmanshauer:** Produces a light, dry Rhine wine. Approximate alcohol content 7 to 9%. Requires 1 pound, 6 ounces of sugar per gallon. Also used for non-alcoholic red currant wine musts which are consumed as health-drinks, and barberry wine. B55M, H34M

**Vierka Bernkastler:** Produces a light, dry Mosel wine. Approximate alcohol content 6 to 8%. Requires 1 pound, 3 ounces of sugar per gallon. Also used for dandelion, orange, and tomato wines, mead and melomel. ACTON; B55M{LI}, K54{LI}

**Vierka Bordeaux:** Produces a full bodied, dry wine. Approximate alcohol content 7 to 9%. Requires 1 pound, 6 ounces of sugar per gallon. Also used for non-alcoholic bilberry wine musts which are consumed as health-drinks, rowan wine, mead and melomel. ACTON; B55M, B55M{LI}, C17{LI}, G40{LI}, H34M, K54{LI}, L36M

**Vierka Burgundy:** Produces a full bodied, dry wine. Approximate alcohol content 9 to 12%. Requires 1 pound, 12 ounces of sugar per gallon. B55M, B55M{LI}, C17{LI}, G40{LI}, H34M, K54{LI}, L36M

**Vierka Champagne:** Produces a light, dry wine. Approximate alcohol content 5 to 7%. Requires 1 pound of sugar per gallon. B55M, B55M{LI}, C17{LI}, G40{LI}, H34M, K54{LI}, L36M

**Vierka Cold Ferment:** (Kaltgarhefe) To be used where there is no chance of maintaining a steady 70° to 75° F. for fermentation. Will ferment thoroughly and without fail at temperatures as low as 42° F. Also used for *Swabian must*, the national drink of Baden-Württemberg, Germany which corresponds to the apple-wine of Frankfurt or the cidre of France. B55M, B55M{LI}, G40, L36M

**Vierka Johannisberg Riesling:** Produces a light, dry Rhine wine. Approximate alcohol content 8 to 10%. Requires 1 pound, 11 ounces of sugar per gallon. B55M, B55M{LI}, C17{LI}, G40, H34M, L36M

**Vierka Liebfraumilch:** Produces a full bodied, medium sweet Rhine wine. Approximate alcohol content 9 to 11%. Requires 1 pound, 12 ounces of sugar per gallon. Also used for non-alcoholic apple wine musts which are consumed as health-drinks, Oregon grape and quince wines, mead and melomel. ACTON; B55M, B55M{LI}, G40{LI}, H34M, K54{LI}, L36M

**Vierka Madeira:** Produces a full bodied, sweet wine. Approximate alcohol content 12 to 15%. Requires 3 pounds, 10 ounces of sugar per gallon. Also used for non-alcoholic strawberry wine musts which are consumed as health-drinks, Rowan wine, mead and melomel. ACTON; B55M, B55M{LI}, G40{LI}, H34M, L36M

**Vierka Malaga:** Produces a full bodied, sweet wine. Approximate alcohol content 12 to 15%. Requires 3 pounds, 5 ounces of sugar per gallon. Also used for non-alcoholic blackberry wine musts which are consumed as health-drinks, and Oregon grape and tomato wines. B55M, H34M

**Vierka Port:** Produces a full bodied, aromatic wine. Approximate alcohol content 12 to 15%. Requires 3 pounds, 5 ounces of sugar per gallon. Also used for non-alcoholic cherry wine musts which are consumed as health-drinks. Recommended for mead and melomel. ACTON; B55M, B55M, C17{LI}, G40{LI}, H34M, K54{LI}, L36M

**Vierka Sauternes:** Produces a full bodied, sweet wine. Approximate alcohol content 12 to 16%. Requires 3 pounds, 5 ounces of sugar per gallon. Also used for pineapple wine, mead, melomel and *Swabian must*. ACTON; B55M, B55M{LI}, C17{LI}, G40{LI}, H34M, K54{LI}, L36M

**Vierka Sherry:** Produces a full bodied, sweet wine. Approximate alcohol content 12 to 15%. Requires 3 pounds, 5 ounces of sugar per gallon. Also used for non-alcoholic gooseberry wine musts which are consumed as health-drinks, and orange and tomato wines. B55M, B55M{LI}, C17{LI}, G40{LI}, H34M, K54{LI}, L36M

**Vierka Steinberger:** Produces a full bodied, medium Rhine wine. Approximate alcohol content 8 to 10%. Requires 1 pound, 8 ounces of sugar per gallon. Also used for apple wine or cidre. B55M, B55M{LI}, C17{LI}

**Vierka Tokay:** Produces a full bodied, aromatic wine with high alcohol content. Approximate alcohol content 14 to 16%. Requires 3 pounds, 10 ounces of sugar per gallon. Also used for fig and rosehip wines, and mock pineapple wine made from carob pods. B55M, B55M{LI}, G40{LI}, H34M, K54{LI}, L36M

**York Creek Zinfandel:** Isolated in 1979 from a natural fermentation which reached over 18% alcohol in a Zinfandel must from the renowned York Creek Vineyard in St. Helena, California. Very fast and vigorous, it may help encourage high-sugar fermentations toward dryness. Wines other than Zinfandel tend to exhibit Zinfandel-style flavors, such as a berry-like fruitiness, when fermented with this yeast. N27{LI}

#### OTHER CULTURES

**Brewmart Cider:** Comes in a kit that includes imported apple cider extract from Normandy, and yeast. Each 3 lb. 5 oz. will yield five gallons of authentic French cider. Requires three pounds of corn sugar. Sometimes apple flavoring extract is added before bottling. A20M, C17

**Chinese Red Rice:** When cultured on rice, will yield grains of an intense red color. The red rice is dried and then used for coloring various foods including pickled vegetables, fish, drinks, pastries, sauces and for manufacturing red wine. It is also added to the brining liquid of red sufiu to give it color, thick consistency and a distinctive flavor and aroma. Also known as *ang-kak*, *anka*, *beni-koji* and *aga-koji*. COST 1988 [Cul], HESSELTINE, SHURTLEFF 1979, STEINKRAUS, UPHOF; U7

**Fermento:** Used in the production of high quality semi-dry sausage with traditional tangy flavors, where fermentation is essential.



Eliminates the curing times necessary for the fermentation process to take place. K27T

Ironmaster Country Cider: Comes in a kit that includes yeast and concentrate from the apple orchards of Normandy. Each 2.2 pound can makes two gallons of sparkling cider. E68, L36M

Kombucha: {FR} A fermented beverage with a slightly sour flavor comparable to a light wine or apple cider, but without alcohol. During the fermentation process a thick film forms on the surface of the liquid. Has antibiotic properties and is used in healing diets. Also known as *tea cider*, *tea beer*, *teeschwamm*, *tea fungus*, *wunderpiltz*, *hongo*, *cajnij*, *fungus japonicus* and *teekwass*. Consumed widely in Russia, Japan, Poland, Bulgaria, Germany, Manchuria and Indonesia. FRANK, HESSELTINE, HUNTER 1973a, STEINKRAUS, TIETZE; D87M, E20M, E22, F73D, G39G, I1M, 174, J82, L24G, M87

Onchom: (Ontjom) Produces an orange-red cake-like product resembling tempeh prepared by fermenting peanut presscake, along with solid waste from tapioca manufacture. Has a soft texture and an attractive appearance along with a meaty flavor. Consumed in Indonesia as a side-dish, either in the form of deep fat-fried slices, in the form of small portions in soups, or served as chips, a snack, or topped with sauce. HESSELTINE, SHURTLEFF 1979 [Cul, Re], STEINKRAUS; U7

Ragi: (Rqgie) Yeasts, bacteria and molds, grown on rice flour and sold in the shape of round, somewhat flattened balls or cakes. Used to saccharify starch in the making of Indonesian fermented delicacies such as *tempeh*, *ontjom*, *tape*, *arrack*, *beras*, *brem* and *peuyeu*. HESSELTINE, OCHSE, STEINKRAUS; A45

Spirulina Algae: (*Spirulina platensis*) Can be grown in a large bottle and then transferred to a fish tank, pond, or large-scale culture tank. Grows in alkaline waters, with a pH of 9 to 11 as optimum. Sodium bicarbonate and other carbonates should be present. Fresh spirulina is produced at less cost, and with higher nutritional value than the dried spirulina purchased in powder or tablet form. C7M{FR}, M32T{FR}

## STRAWBERRY {PL}

FRAGARIA X ANANASSA                      FRAGARIA OVALIS  
FRAGARIA VESCA 'SEMPERFLORENS'

### ALPINE STRAWBERRIES {S}

A distinct form of wood strawberry, characterized by long, pointed fruit that is small but much richer in flavor than the common garden strawberry. They do not produce runners and are therefore ideal for edgings or container culture. Can be grown from seed or division. Their very high pectin content makes them better suited to jam making. K85{PL}, N24M{PL}, R47. (F. vesca 'Semperflorens')

Alexandria: (Baron Solemacher Improved) Large conical fruit, up to 1 inch long; skin bright red; juicy, very aromatic flesh with an excellent sweet flavor. Small, upright plant, 8 to 10 inches tall; exceptionally vigorous; productive; very hardy; disease resistant. Earlier bearing than other types. C92, E63D, G6, H51M{PL}, J82, K49M, M82{PL}, N81, N84, Q24, S55

Alpine Yellow:<sup>1</sup> Small, very long-pointed conical fruit, 3/4 to 1 inch long; skin color ranges from pale cream to golden yellow; highly aromatic. Has an intense flavor when ripe, preferred by some over the red-fruited types. The yellow fruit is less attractive to birds. J29{PL}, J61M{PL}, M32, 053M

Baron Solemacher: (Baron von Solemacher) Medium-sized conical fruit, up to 1 1/2 inches in length; skin bright red; flesh aromatic, flavor very good when thoroughly ripe. Vigorous, upright plant, about 8 inches tall; highly productive. The first widely avail-

able alpine strawberry and a standard in Europe: Very similar to Alexandria. HENDRICKSON, SIMMONS 1978; B49, S61

Blanc Ameliore:<sup>2</sup> (Improved White) A white fruited alpine strawberry originating in France. Produces runners and makes a good ground cover. The white color makes the fruit less attractive to birds. R77

Charles V: Small but flavorful fruit, produced nearly year round in warm climates. Clumping perennial, 2 feet by 2 feet; spreads by seed or divisions. Can be used as a ground cover or in formal garden plantings. Also makes an attractive container plant. K66{PL}, M98{PL}

D'Ogni Mese: Flavor, deep-red fruits, larger than the wild woodland strawberry. Compact plant, produces few runners. Ideal for rock gardens, pots and path edgings. Sow in seedbeds in March and April. Space about 12 inches apart. Usually harvested the following spring. Q11M

Mignonette: Large fruit, up to 1 inch long; red skin. Excellent quality and flavor. Exceptionally prolific; very hardy. Makes an attractive edging or ground cover plant. Used in France for decorating pastries or dropping into a glass of champagne. L91M, N84

Pineapple Crush:<sup>1</sup> Large fruit, up to 1 inch long; light cream-yellow skin. Has an unusual fragrance and flavor reminiscent of strawberry mixed with pineapple. Compact, runnerless plant; bears very early and continuously over a long season. C9{PL}

Red Wonder: Selected for the deep red color of the fruit. Everbearing plant that produces no runners. Grows 6 to 10 inches tall. Excellent as a ground cover or in the rock garden. D37{PL}, N84

Ruegen: (Benary, Rugen) Medium to large elongated fruit, somewhat smaller than Alexandria; skin deep crimson; flesh aromatic, with an intense sweet strawberry flavor. Compact, bushy plant, about 10 inches tall; very productive and long bearing. One of the standard cultivars in Europe. C85M, D92M, E81M, F80, J20, J61M{PL}, J82, J82{PL}, J99D, K49M, N42{PL}, N84, 053M

Ruegen Improved: {PL} Rich red fruit; juicy, sweet and tender, of excellent flavor. Long-bearing strain, will bear continuously from early June through October but is especially abundant in the fall. Somewhat larger and more productive than the standard strain. B9M, B30, B75, B77, C9, D11T, D69, I18M, I39{S}, M16, M65M, M77, N81{S}, Q24{S}

Variegated Alpine:<sup>3</sup> Attractive, ornamental edible groundcover. Spreading plant, 6 to 12 inches tall; dark green leaves, heavily variegated with creamy white. White flowers, produces from spring to fall. Small, red fruits with the flavor of wild strawberries. Will grow in full sun or partial shade. I49M

White:<sup>2</sup> Small, white fruit with an excellent mild sweet flavor, not as acid as the red-fruited types. The unique white color makes them less attractive to birds. Small, upright plant, 8 inches tall, spreads to 24 inches across. K49M, K66{PL}, K79{PL}, M16{PL}

Yellow Wonder:<sup>1</sup> Extremely flavorful, pale yellow fruit with small, tender seeds. Very aromatic. Has a distinct flavor preferred by some over the red-fruited types. Allow to ripen fully before picking. Compact plants grow 10 to 11 inches high. D37{PL}, D92M, I83M{PL}, N84, S61

### GARDEN STRAWBERRIES

The familiar, large-fruited strawberries that are generally not as flavorful or as aromatic as alpine strawberries. They also produce runners which must be removed or replanted at some point in the management of the strawberry bed. Mostly F. x ananassa.

**EVERBEARING** Included here are the older, traditional cultivars and the newer types, sometimes called day neutral strawberries. True day neutral types produce buds, flowers and fruit throughout the growing season, regardless of day length, and to a certain extent,

region. In areas with winters normally too cold for strawberries, they can be grown as annuals. They are also well suited to window-sill, hanging basket, cold frame or greenhouse culture.

**Chandler:** Large, long conic to long flat wedge-shaped fruit; skin red, glossy, attractive; flesh firm, red, well-colored to the center, of very good flavor; ripens somewhat later than Douglas; ships well. Recommended for fresh market and processing. Semi-erect plant; self-pollinating throughout the season; produces numerous runners. Originated in Davis, California. Introduced in 1983. A63, C54, F87, G17, G81, I41, 199M, L46M, M81M

**Chief Bemidji:** Large, rounded wedge-shaped fruit; skin bright red; flesh firm, sweet, solid red throughout; held well above the ground. Plant extremely hardy; vigorous and productive; produces 15 to 20 large runners per plant; does well on poor soil. Survives temperatures of  $-40^{\circ}$  F. without protection. Originated in Port Hope Township, Minnesota. BROOKS 1972; C61

**Fern:** Day neutral type, always has fruit in different stages of development. Medium to large, conic to flat wedge-shaped fruit; skin bright red; flesh very firm, sweet, flavor excellent; ripens early. Semi-erect plant, more spreading than Hecker; self-fertile. Runner production good, comparable to Hecker. Low chilling requirement. Originated in Davis, California. Introduced in 1983. FI, F87, I41, M81M

**Fort Laramie:** Medium to large fruit; flesh very firm, of excellent flavor; recovers quickly after blight or hailstorms. Yields over a long season. Foliage susceptible to mildew. Excellent in mountain, coastal or other cool-winter areas. Can survive temperatures of  $-40^{\circ}$  F. HENDRICKSON, STEBBINS; B73M, C61, D65, D76, E3, E24, G16, H42, H58, 178, 199M, L70, L79, M65M

**Gem:** Fruit small, short wedge-shaped to oblate, irregular; skin deep red, glossy; flesh pale red, tart; dessert quality good. Very productive plant, but doesn't bear much spring fruit; very hardy. Susceptible to leaf spots; resistant to leaf scorch. Originated in Farwell, Michigan by Frank J. Keplinger. Introduced in 1933. BROOKS 1972; A82, G72, K28, M83

**Hecker:** Day neutral type. Large to very large, bright scarlet fruit of excellent flavor. Good for fresh use, freezing and jam making. Fairly cold hardy for a day neutral strawberry. Well suited to prairie conditions due to its earliness. Produces up to 10 months under favorable conditions. Introduced by the University of California. A65, F67, I41, M81M

**Le Sans Rivalle:** Medium to large, long-conic fruit; skin medium glossy red; flesh fairly firm, flavor very good. Moderately vigorous plant; productive; likes light or medium soil and succeeds in chalky conditions. One of the older everbearing types. Originated in France about 1937. SIMMONS 1978; U7D

**Lipstick:**<sup>4</sup> *Fragaria* x *Potentilla*. Unusual red-flowered strawberry. Large, rich, reddish-rose flowers. Much more vibrant and fade resistant than Pink Panda. Blooms from mid-spring well into fall. Small, red fruits produced sparingly. Spreading plant, 6 to 8 inches tall; very attractive deep-green foliage. Does best in sandy soil. Originated in the Netherlands. B77, DI 1M, F70, H63, H78, 149M, 191, M65M, M77

**Luscious Treat:** A dual purpose day-neutral strawberry that can be grown in hanging baskets or in the garden. Starts bearing very early and continues throughout the summer and fall, on both the crown and runners. Glossy fruit, deep red inside and out. Retains its flavor and quality when frozen. L79

**Mara des Bois:** Everbearing woodland strawberry with excellent eating qualities. Medium to large, conical, slightly elongated fruits; red skin and firm, clear red flesh. Exquisite aroma reminiscent of a wild woodland strawberry. Ripens from early August to October. Moderately vigorous plant; resistant to mildew; produces very heavy crops. Developed in France. D11M, F70, P59M

**Ogallala:** (*F. ovalis* x) Medium to large fruit; skin rich, dark red, too tender for good shipping; flesh bright red, firm, tender, sweet, of high quality; processes very well. Bears continuously from late May or early June to early November, except for a 3 week period immediately after the spring crop. Very vigorous, extremely hardy plant. A65, C61, D65, D76, E97, G16, G81, I99M, J83, K75T, L70, M83

**Ostara:** Small to medium-sized, conical fruit; skin red; flesh medium firm, orange-red, flavor moderate; husks very easily. Vigorous, tall, spreading plant; susceptible to mildew; prolific for an everbearer. Originated in Wageningen, The Netherlands. SIMMONS 1978; P59M, P68M

**Ozark Beauty:** Fruit large, often elongated, long-necked; skin firm, glossy; flesh solid, flavor very mild, sweet; dessert quality very good; good for freezing; ripens late. Vigorous, very productive plant; blooms late; produces numerous runners; widely adapted to climate. BROOKS 1972; A39, A82, B73M, B75, C61, E3, G16, G44, G71, G81, H58, H65, 178, J83, M65M, M83, etc.

**Pink Panda:**<sup>4</sup> (*Frel*) *Fragaria* x *Potentilla*. Unusual pink-flowered strawberry. Attractive pink blooms produced from spring until fall. Small, tasty red fruits. Spreading plant, 6 to 8 inches tall, very hardy and vigorous; readily produces runners. Bright, semi-evergreen leaves. An excellent groundcover. Also ideal for window boxes, containers and hanging baskets. Developed in England by Adrian Bloom. B9M, C9, D11T, D37, D95, E87, F20M, F53M, G89M, J61M, L79, M77, M92

**Quinalt:** Very large, conical fruit; skin attractive, tender; flesh soft, color and flavor good; excellent for freezing. Produces a moderate crop in June, becoming more productive July through September. Vigorous, compact plant; produces many runners; has excellent disease resistance. Main crop from crown; also produces fruit on rooted runners. STEBBINS; B45M, B73M, C54, D65, D76, E3, E97, F87, G23, I41, 149M, 178, 199M, M65M, M81M, etc.

**Selva:** Day neutral type. Large, conical fruit; skin deep red, attractive; flesh very firm, juicy, flavor very good. Produces fruit during November, December and January in coastal southern California, when fruit is unavailable from the standard short-day cultivars. Vigorous plants are prolific runner makers; will flower and fruit effectively independent of day length. Originated in Davis, California. Introduced in 1983. C34, C61, D37, D76, E97, F87, I41, M81M

**Shortcake:** Long conical fruit; skin very glossy, attractive; flesh red, well-colored to the center, sweet, of excellent flavor. Yields a primary crop of large berries in June, followed by a second crop 6 to 8 weeks later of good medium-sized berries, larger than most other everbearers. Productive in a wide range of soils and climates. B75

**Streamliner:** Very large fruit; skin rich red; flesh firm, sweet, of excellent flavor and quality. Good keeper for home use. Hardy plant; a heavy spring cropper; makes runners freely. Originated in Lostine, Oregon by Roy C. Edgmand. Introduced in 1944. BROOKS 1972; B45M, K75T, M69M, M83

**Sweetheart:** {S} One of the first open-pollinated strawberries from seed. An excellent novelty everbearing type for containers or home garden use. The fruit is 5 times larger than alpine types, but only medium-sized when compared to other everbearers grown from runners. Will produce from late July till fall from a January sowing. D27, E53M, E63D, F35M{PL}, G87, 191, J82, N84, 053M, 093, Q24, S55

**Temptation:** {S} Improved Sweetheart type. Will provide a continuous supply of fresh berries from July until fall from a January sowing. Medium-sized, deep red fruit with very good flavor. Vigorous, hardy, compact plants; almost entirely free of runners. Ideal for clay strawberry planters and hanging baskets. D11M, D37{PL}, E91G, F70, G53M, L42, L91M, M49, N81, N84, 089, P59M, R32

Tribute: Medium to large fruit, irregular to short conic; skin glossy, bright red; flesh medium red to the center, firm, flavor acidic but pleasant when consumed fresh and unsugared. Medium-sized plant; very vigorous; highly resistant to red stele and tolerant to verticillium wilt; ripens a heavy spring crop in midseason. B43M, B58, C55M, C61, G44, H65,150, M81M, N24M

Tristar: Medium-sized, symmetrical, short conic fruit; skin glossy, deep red at maturity; flesh solid medium deep red, firm, flavor excellent when eaten fresh and unsugared. Small to medium plant, of moderate vigor; produces a medium number of runners; resistant to red stele and tolerant to verticillium wilt; bears a heavy, very early spring crop. B6, B26, B58, B74, B75, C61, D37, E97, G16, G44, G87, H65,150, J61M, L33, L70, etc.

**JUNE-BEARING** Also called main crop strawberries, these produce one large crop, beginning early in spring and ending with the onset of hot weather. They are generally considered to be more vigorous, heavier bearing and of better quality than everbearing types.

#### *Early Season*

Annapolis: Medium to large, attractive, light to medium red fruits; flavor mild but good. Vigorous, very productive plant; susceptible to powdery mildew; highly resistant to most races of red stele. Popular with commercial growers and U-Pick operations. Winter hardy in Atlantic Canada. Originated in Nova Scotia, Canada. BROOKS 1997; B58, C61, C84, F87, G16, G44, H65, H88,141,150

Blakemore: Fruit medium-sized, blunt conic, shoulder broad; skin bright red, very attractive, fairly tough; flesh firm, light red, juicy, acid, high in pectin. Very good flavor and dessert quality, also very good for preserving. Vigorous, productive, disease resistant plant; produces runners freely. Adapted to southern states. A82, B45M, G72,141P, K28, K75T, M69M, M83

Cyclone: Large fruit, slightly necked so that the hull is removed easily; flesh brilliant red, juicy, flavor excellent; freezes well. Good for home gardens and local markets; not firm enough for distant shipping. Vigorous, handy, high yielding plant; produces numerous runners. BROOKS 1972; J83, K75T

Earlibelle: Medium-large fruit, averages 62 berries per pound, long-conic; skin bright red, turning deep red at maturity, very glossy; flesh a uniform bright red, firm, flavor tart, good. Very vigorous plant; produces runners so freely, they must be thinned for best fruiting performance. BROOKS 1972; A82, G81,153M

Earliglow: Medium-sized, conical fruit; skin tough, glossy; flesh rich red, firm; dessert quality good, very good for freezing; ripens 2 to 3 days later than Sunrise. Vigorous, widely adapted plant; produces numerous runners; resistant to 5 races of red stele, tolerant to wilt. Excellent for pick-your-own operations. A24, A38M{PD}, A39, B43M, B58, B75, C55M, C61, C84, D69, F87, G44, G81, H65,150, J83, K71, etc.

Fairfax: Medium-sized fruit, wedge-shaped to short blunt conic; skin quite bright red, turning dark purplish-red when ripe; flesh deep red, mildly subacid, dessert quality excellent. Doesn't keep well, but is ideal for home gardeners. Considered one of the best tasting strawberries. Especially productive when late-season runners are removed. BROOKS 1972, HENDRICKSON; H88

Florida Ninety: Fruit large; shape unique, long and tapered; skin bright red; flavor excellent; very well-suited for fresh market; ripens extremely early, in November and December. Very vigorous plant; highly productive, having a short rest period; produces numerous runners; very susceptible to leaf spot and leaf scorch. BROOKS 1972; A82,153M, M83

Northeast: Large, firm fruits with a strong flavor and aroma; ripens with Earliglow. Recommended for fresh market and freezing. High yielding plant, adapted to both hill and matted row culture. Resistant to 5 eastern races of red stele. Susceptible to powdery

mildew. Produces greater crops than Earliglow on heavier soils. A24, B58, C61, C84, F87, H88,150

Pocahontas: Large, blunt conic, fairly uniform fruit; skin medium to deep red, glossy, attractive, tough; flesh red, medium firm, very tart; dessert quality good, very good for freezing; ripens early, about 1 week after Blakemore. Vigorous, very productive plant; makes runners freely; susceptible to red stele root rot. BROOKS 1972; G65M, I41P, M83

Premier: (Howard 17) Fruit large, long-conic to wedge-shaped, the largest berries furrowed on each side; skin red, attractive, glossy; flesh firm, well-colored to the center, juicy, pleasantly sprightly; quality good. Hardy, productive plant; disease and frost resistant. Originated in Belchertown, Massachusetts by A.B. Howard. Introduced in 1909. HEDRICK 1925; H88

Senator Dunlap: (Dunlap) Medium to large fruit, round-conic, usually with a distinct neck; skin glossy, attractive light red, quickly changing to a dark red; flesh well-colored to the center, juicy, mild, pleasantly flavored; quality good. An old favorite for gardens and local markets. Originated in Urbana, Illinois. Introduced in 1899. HEDRICK 1925; C55M, C61, D76, E97, G16, J83, K71, M46

Sequoia: Exceptionally large, long conic fruit; skin dark red, tender, smooth, attractive; must be harvested at frequent intervals during hot periods or finish will become dull; flesh soft, requiring extra care in handling and shipping; flavor excellent. Begins to bear in January, hitting peak production in March. Performs like an everbearer in mild climates Well suited to home gardens and "U-pick" farms. BROOKS 1972, STEBBINS; A63, C54, D37, G17, G81,199M, K75T, M81M, M83, N33

Sunrise: Fruit medium-sized, conic, symmetrical; skin light, bright red which does not darken, glossy; flesh light pink, firm, subacid; dessert quality good; ripens early. Very vigorous plant; produces runners freely; resistant to 3 races of red stele and to verticillium wilt. BROOKS 1972; A82, B58, G72, G81, H49, H88, I41P, I53M, J83, K28, K75T, M83

Sweet Charlie: Large, orange-red, wedge-shaped to conical fruits; very sweet and flavorful. Vigorous, productive plant, tolerant of anthracnose. Easy to harvest. Adapted to the Mid-Atlantic and southern United States. Developed at the University of Florida. Winner of a taste test at the 1994 North Carolina Strawberry Grower's meeting. BROOKS 1997; D37, G81,141,150, L46M

Tioga: Medium to large fruit, long-conic to wedge-shaped; skin medium red, glossy, tough; flesh medium red, exceptionally firm, flavor good, acidity medium high; shipping quality excellent. Vigorous, prolific plant; moderately resistant to diseases; widely adapted to all growing areas of California. BROOKS 1972; A63, M83

Veestar: Medium-sized fruit, conic, uniform; skin medium red, glossy, smooth, attractive; flesh light to medium red, moderately firm, slightly tart, of excellent flavor; ripens early. Upright, medium-sized plant; of medium vigor. Runner production moderate. Originated in Vineland Station, Ontario, Canada. BROOKS 1972; B26, C85M, FI

#### *Midseason*

Allstar: Very large fruit; skin glossy, tough, bright red; flesh firm, mild, sweet, of good quality; excellent for freezing; ripens with Guardian. Vigorous, productive plant; produces numerous runners; resistant to 5 races of red stele, tolerant to verticillium wilt. Performs well under diverse soil, climatic and cultural conditions. A24, B6, B43M, B58, C55M, C61, C84, D65, G3, G44, G81, H88, 150, J97M, M65M, etc.

Cardinal: Exceptionally large fruit; flesh firm, uniformly red throughout, of excellent quality when fresh or processed. High yields. Excellent for pick-your-own operations as well as home gardens. One of the leading cultivars in Oklahoma, Missouri,

Arkansas, Tennessee and the Southeast. A39, A82, B6, B43M, B58, C55M, C84, D76, F87, F93, G81, H65, J83, L33, M83, etc.

Catskill: Fruit large, long-conic, slightly irregular; skin glos<sup>^</sup>, bright crimson, attractive; flesh light red, moderately firm, mildly subacid, dessert quality excellent. Very vigorous and productive plant; produces runners freely; adapted to a wide range of soil types; resistant to verticillium wilt. BROOKS 1972; C55M, C61, G81, H54, H88

Cavendish: Medium to very large, attractive, deep glossy red fruits; firm red flesh; excellent, sweet melon-like flavor; ripens between Honeoye and Kent. Moderately vigorous, very productive plant. Resistant or tolerant to wilt, red stele and powdery mildew. Very winter hardy. Originated in Nova Scotia, Canada. B58, C61, E97, F1, F87, G16, G44, G81, H65, M1, 150, J20

Delmarvel: Large, very attractive, symmetrical fruits with good color; highly aromatic; texture and flavor very good to excellent; ripens in early midseason. Vigorous plant with abundant runners; productive in either light or heavy soils. Disease resistance outstanding. Recommended for the Mid-Atlantic region and adjacent areas. A24, B6, B58, C61, C84, F87, G44, G81, 150, M99G

Glooscap: Medium to large fruit; skin glos<sup>^</sup>, red; flavor and quality excellent. Good for freezing or fresh market. Very large, high yielding plant; makes runners freely; does best in cool, wet climates. Extremely winter hardy. Susceptible to red stele. Originated in Kentville, Nova Scotia, Canada. A65, B26, B58, C55M, C84, F87, 141, 150, L70, M81M

Guardian: Large, irregular conic fruit; skin light red, glossy; flesh firm, light red, of good flavor; ripens 4 to 5 days later than Surecrop. Moderately vigorous, productive plant; resistant to 5 races of red stele root rot and verticillium wilt; produces a moderate number of runners. BROOKS 1972; A24, A82, B6, B58, C55M, C61, C84, D76, 141, J83, M65M

Honeoye: (NY 1409) Very large, conical fruit; skin bright red, glossy, tough; flesh firm, quality very good. Vigorous, very productive plant; produces numerous runners; very winter hardy. Recommended for more northern states and the Midwest. A24, B43M, B58, C55M, C61, C84, D65, D76, G16, G23, G44, G81, H65, H88, 150, J20, J83, etc.

Hood: Large, round conic fruit; skin bright medium red, glossy, attractive; flesh light red, medium firm, pleasantly subacid. Excellent for preserves and jams, satisfactory for local fresh fruit markets. Productive plant, yields of 6 tons per acre have been obtained. Very popular home garden cultivar in the Northwest. Originated in Corvallis, Oregon. BROOKS 1972; C34, 141, 149M, L18, M81M

Jewel: (NY-1324) Fruit large, blunt wedge conic-shaped; skin bright red, glos<sup>^</sup>, very attractive; flesh red, somewhat firmer than average, has a slightly aromatic flavor reminiscent of Holiday, of very good quality. Excellent for freezing and processing. Hardy plant; not resistant to red stele or wilt. A24, B6, B58, C61, C84, F16, F87, G16, G44, 141, 150, J20, M99G

Kent: Very large fruit; skin dark red; flesh firm, red throughout; quality good, excellent for fresh eating and frozen desserts; easily picked. Vigorous plant; produces runners freely. Well adapted to northern climates and shows excellent winter-hardiness. Released by the Kentville Research Station in Nova Scotia. B6, B26, B58, C61, C84, C85M, F16, G44, G87, H42, 141, 150, K64, M81M

Lester: Large, very symmetrical fruit; skin uniformly deep red, attractive; flesh firm, of good mild flavor; ripens with Surecrop, between Earliglow and Raritan. Resistant to 5 strains of red stele, susceptible to verticillium wilt. Runners freely to produce a fruiting bed of medium density. B6, B58, C84, H88, 150

Midway: Medium to large fruit of irregular shape; skin uniform deep red, tough, glossy; flesh firm, flavor subacid with good dessert quality; freezes well. Moderately vigorous plant; produces runners

freely; resistant to the common race of red stele. BROOKS 1972; A82, B6, B58, C55M, C61, C84, D65, G16, G44, H49, H54, 150

Porter's Pride: Large fruit of flavor good; sufficiently firm for local market but not for distant shipping. Hardy, vigorous plant; resistant to mildew; productive under prairie conditions. Originated in Parkside, Saskatchewan, Canada, by A.J. Porter, Honeywood Nursery. BROOKS 1972; F67

Raritan: Large, glossy, bright red fruit; flesh firm, dessert quality very good, color acceptable for fresh market but not for processing. Productive plant; produces runners freely, making a good matted row; susceptible to red stele and wilt. Originated in New Brunswick, New Jersey. BROOKS 1972; B6, B58, G71, H88, 150, J97M, M99G

Redchief: Medium to large cone-shaped fruit; skin deep red, glossy; flesh firm, subacid; of good dessert quality that is maintained in frozen products; ripens 2 to 3 days later than Surecrop. Moderately vigorous plant; produces runners freely; tolerant to 5 races of red stele. BROOKS 1972; A24, B6, B58, C55M, C61, C84, F87, G44, G81, H88, 150, J83

Redcoat: Medium to large fruit, maintains good size throughout the harvest season; skin glos<sup>^</sup>, light red, highly attractive; flesh firm, flavor acceptable, color rather light. Acceptable for freezing, good for jam. Tall, vigorous plant; produces runners freely; fairly resistant to powdery mildew. BROOKS 1972; C85M, G50, H85

Robinson: Medium to large, conical fruit; skin red, attractive; flesh light red, soft, flavor mild; not adapted to freezing. Being replaced by firmer, better-flavored cultivars. Small, vigorous, very productive plant; makes runners very freely; tolerant to virus diseases; very drought resistant. BROOKS 1972; B73M, C55M, D65, E3, G23, H49, H65, H88, 178, J83

Royal Sovereign: Large, bluntly conical fruit, with some berries that are wedge-shaped; skin brilliant red; flesh pale, firm, subacid, flavor excellent; ripens in midseason. Vigorous, compact plant; very productive; highly susceptible to disease. An old English cultivar, still frequently grown and held in high esteem. Introduced in 1892. SIMMONS 1978; U7D

Scott: Large to very large fruit, symmetrical conic; skin tough, resists bruising; flesh bright red, firm, flavor mild; ripens with Guardian; freezes well. Highly vigorous plant; productive; produces numerous runners; resistant to 5 races of red stele, tolerant of verticillium wilt. Good for home gardens and roadside markets. B58

Shuksan: Medium to large, conical fruit; skin glossy, bright red, resistant to abrasion; flesh firm, bright red throughout, sweet, flavor very good; ripens in late June. Good fresh and excellent for freezing. Large, vigorous plant, very hardy and productive; tolerant of wet soils. Originated in Puyallup, Washington. C34, 141, 149M, J61M, L18, M81M

Sparkle: (Paymaster) Medium-sized fruit, short blunt conic to oblate; skin rather dark red, glos<sup>^</sup>, attractive; flesh soft, mildly subacid, quality excellent; good for dessert and freezing. Productive to very productive plant; resistant to powdery mildew and one race of red stele. A long time favorite with home gardeners. BROOKS 1972; A24, B6, B58, C55M, C61, D11M, D65, D69, F42M{£D}, F70, G16, G23, G81, H88, 150, J20, J83, etc.

Surecrop: Fruit large, round conic, irregular; skin attractive, glossy, tough, light bright red that becomes a rich red but does not turn dark; flesh light red, firm; flavor tart, good; quality good for dessert. Large, very vigorous plant; produces many runners; drought resistant; resistant to several races of red stele. BROOKS 1972; A24, A39, A82, B6, B58, B73M, C55M, C61, C84, G23, H58, H65, H88, J83, M65M, etc.

Suwannee: Medium to large fruit of excellent flavor. Maintains high flavor and quality under adverse weather conditions when most other cultivars fail. Rated as the best-flavored strawberry by noted breeder and berry connoisseur the late Professor George L. Slate of

the New York State Agricultural Experiment Station. BROOKS 1972, HENDRICKSON; U7D

Tennessee Beauty: Large, round-conic to wedge-shaped fruit; skin attractive, glos<sup>^</sup>, medium to deep red, evenly colored; flesh medium red, whitish toward core, firm, subacid, well-flavored; dessert and shipping quality good; freezes well. Vigorous, medium-tall plant; tolerant to virus diseases. BROOKS 1972; A82, B45M, C55M, F93, G72, G81, I41P, I53M, K28, K75T

White Pine:<sup>2</sup> (Weiss Ananas) Small, globose fruit, 3/4 to 1 inch long; relatively thin, glossy white skin blushed with pink; firm white flesh. Moderately productive. Primitive cultivar of historical interest selected at the Max Planck Institute for Plant Breeding. ANONYMOUS 1990; L90M

#### Late Season

Apollo: Large, symmetrical fruit; skin glos<sup>s</sup> attractive, deep scarlet; flesh sweet, flavor good. Medium-sized plant; produces a moderate number of runners; tolerant to leaf spot, leaf curl and powdery mildew; performs well in matted row or hills. Originated in Willard, North Carolina. BROOKS 1972; G81

Blomidon: Large, uniform fruit; skin glos<sup>s</sup> medium red, attractive; flesh firm, of very good flavor; ripens about 9 days after Earliglow. Good for fresh market, shipping and freezing. Heavy yielding plant; vigorous and winter handy. Does best in northern climates. H88

Bounty: Medium-sized fruit; skin medium red, attractive; flesh firm, of very good flavor; ripens 8 to 10 days after Midw<sup>^</sup>. Vigorous, heavy yielding plant; produces runners freely; winter-hardy; not resistant to soil borne diseases. Does best in cold, northern climates. Introduced in 1977 by the Nova Scotia Research Station in Kentville. B26, FI, G50

Delite: Medium to large, conical fruit; skin glossy, bright red; flesh moderately firm, pink, aromatic, of good flavor and dessert quality; ripens 5 to 7 days later than Surecrop. Very vigorous, very productive plant; produces runners freely. Released by Southern Illinois University. C61, K75T

Lateglow: Large to very large, symmetrical fruit; skin tough, glossy, deep scarlet; flesh firm, medium red, juicy, sweet, aromatic. Ripens with Delite, slightly later than Allstar and Guardian. Medium-sized, vigorous plant; produces runners freely; very resistant to red stele and wilt; tolerant to leaf diseases. A24, B6, B58, C84, C61, G71, H88, I50, J2M

Latestar: Lateglow x Allstar. Large, attractive fruit; firm, glossy red skin; firm, light red flesh, mild and pleasant, slightly acidic; ripens slightly later than Lateglow. Like its parent Lateglow, consists principally of glucose rather than fructose. Vigorous, very productive plant; resistant to 5 races of red stele. Introduced in 1995. BROOKS 1997; A24, B58, C84, F87, G44, G81, H88, I50

Marlate: Large, round conic fruit, easy to pick; skin bright red; flesh firm and sweet. Tall, vigorous plant; produces a moderate number of runners; resistant to some leaf diseases; susceptible to red stele. Particularly adapted to the northeastern states. H54

Trumpeter: Large, rounded conic to heart shaped fruit; skin bright red, attractive; flesh an intense red throughout, very firm, juicy, slightly tart, aromatic, flavor very good; freezing quality superior. Very tall and vigorous plant; hardy; highly resistant to root rot; performs well on several soil types. Originated in Excelsior, Minnesota. BROOKS 1972; B4, J83

Vesper: Very large fruit, up to 1 1/2 inches in diameter; skin medium tough, glos<sup>^</sup>, very attractive; flesh light red, moderately firm, mildly subacid, flavor very good; ripens 3 to 5 days after Jerseybelle. Requires more frequent harvesting than some other cultivars because it ripens rapidly. Originated in New Brunswick, New Jersey. BROOKS 1972; D65

#### CODES FOR SPECIAL TYPES

1. Yellow-Skinned
2. White-Skinned
3. Variegated
4. Pink/Red-Flowered

## SUNFLOWER {S}

#### HELIANTHUS ANNUUS

##### CONFECTIONERY SUNFLOWERS

Mostly used as a snack food, these have large seeds, approximately five-eighths of an inch in length, usually striped, and a relatively thick hull which remains free of the kernel and is easily removed. The oil content is about twenty-seven per cent. They are also used as bird food. ROSENGARTEN.

#### HYBRID

SIGCO 954: 80 days. An improved sunflower that ripens early, has a sturdy, heavy stalk and produces a good-sized head well-filled with large, heavy seeds. Stalks are 5 to 6 feet tall, and instead of branching, usually have but one good-sized, solidly packed head per stalk. G16

SIGCO SL70: High oleic, long shelf life type. Developed for the food industry to reduce the risk of roasted products becoming rancid prematurely. Contains 70% or more oleic acid, a stable monounsaturate with a fatty acid profile similar to almonds and olive oil. Has a shelf life 300 times greater than traditional types which are high in linoleic acid, an unstable polyunsaturate oil. K74G{D#}

Sun 891: 110 days. A high yielding, confectionery type sunflower, earlier and more resistant to lodging than Mammoth types. Grows to 7 feet tall, with heads that average 8 to 12 inches in diameter. One of the principal cultivars used by the top commercial sunflower growers in America. G6

Sunbred 254: 110 days. An extremely heavy yielder with above-average stalk strength, high oil content, a low hull-to-kernel percentage and tasty seeds. Resistant to rust, downy mildew and verticillium wilt. Blooms in 70 days; takes 110 days to mature. Developed by Northrup King. Tested at the University of Minnesota. C4, E97

Sunseed: Very early maturing single-headed hybrid. Large, golden-yellow heads, 12 to 15 inches across. Large, black and white seeds. Uniform, stocky plants, 4 to 5 feet tall. Excellent seed production. Can be eaten as a snack or used for the production of oil. L89

#### OPEN-POLLINATED

Apache Brown Striped: Medium-sized heads with brown-striped seeds. Planted in spring in the low desert (after frost danger has passed), or with the summer rains. Originally from the San Carlos Reservation in Arizona. Does well in TYicson. 116, N84

Black Stripe: 70-80 days. Tall, sturdy plant, grows 6 to 10 feet in height; somewhat smaller in size than Grey Stripe, but produces larger harvests of tasty seeds. Large, yellow seedheads, about 20 inches in diameter with very large seeds. E97, J73

Dwarf Russian: 60-70 days. Study, vigorous, early maturing stalks are shorter than Mammoth Russian, yet seed heads are just as large. Extra large, striped seeds. D82, K95M

Giganteus: Ihll, sturdy stalks; height 8 to 12 feet; usually produce a single large, attractive golden head, about 12 inches in diameter. Seeds are tasty and nutritious roasted. Fine for edible seed production as well as ornament. Also useful as a background or screen. C92, I91, L89, M29, M49

**Grey Stripe:** (Giant Grey Stripe, Large Grey Stripe, Mammoth Grey Stripe) 85 days. Tall, sturdy stalks reach a height of 8 to 12 feet. Attractive heads up to 20 inches in diameter filled with an abundance of large, thin-shelled plump seeds high in protein. Delicious as a snack and are also valuable as wild bird or chicken feed. C92, D68, D76, E97, G16, G82, H33M, 181, J20, K49M, K50, L7M, N52, R47

**Havasupai Striped:** Long, narrow seeds. Lodging has been a problem in the low desert. Does not do well in Tucson, Arizona. Originally from the bottom of the Grand Canyon. 116, N84

**Hopi Black Dye:** (Hopi Dye, Tceqa) The hull of the purple-black seeds is used for dyeing, but the seed kernel is edible. Can make a variety of dye colors, from blue to red, depending on the mordant used. Grows 6 to 8 feet tall, with 5 to 8 inch diameter flower heads plus smaller side heads. Develops aerial roots for better anchorage. Adapted to cool, high desert regions, but can be grown in other areas. E61, F46, 116, J25M, K20M, L3J, L7M, L11, N84

**Israeli:** 90 days. Improved single-headed type from Israel. Large, black and white seeds of good quality. Single, golden flowers, 10 to 14 inches in diameter. Stocky plants, 4 to 6 feet tall. K49T

**Jumbo:** 65 days. Produces large heads averaging 14 inches across. Large black seeds, striped with white mostly on the margins. Seeds are ready for harvesting after about 98 days. Medium-sized plants, growing to 8 feet tall. Should be planted about 18 inches apart. Introduced in 1988. C20M, H99J{SP}, L7M

**Mammoth:** 80 days. Large heads well-filled with thin-shelled, striped seeds that are plump and meaty. Makes a high-protein snack; also a valuable bird food. Tall, 6 to 12 foot plants; heavily productive; will thrive on poor soil. B6, B75, C20M, D74B, E59Z, F13, F82, G57M, H95, 139, J97M, K66, L11

**Mammoth Russian:** (Large Russian, Russian Giant) 80 days. Medium to large, striped seeds; thin-shelled, meaty, rich in flavor. Stalks average 8 to 12 feet tall and produce a large single head with occasional smaller heads. An old standard cultivar, first offered by American seed companies in the 1880's. A2, A16, C85M, D11M, D82, E5T, F70, H54, K23{PL}, K49T, K71, L7M, L79, R47

**Seneca:** Medium-large seedheads, about 10 inches across, occasional smaller branching heads; small mixed seeds of gray, white and deep purple. Used for snacks as well as oil. Grows about 8 feet tall. Originated with the Seneca Indian tribe of Nov York State. D29P, K46T

**Sundak:** (Early Sundak) 98 days. An improved, early-maturing, rust-resistant cultivar. Large, black seeds with gray stripes. Stalks grow 5 to 6 feet tall, usually with only one flower head per stalk. Heads average 8 to 12 inches in diameter, depending on spacing. Developed by North Dakota State University. E24, E24{SP}, J9M, K49M, L7M

**Sunspot:** 60 days. Dwarf, compact, erect plants; grow only 2 feet tall yet produce large, 10 inch diameter heads. Ideal for small gardens, and a natural for children. Blooms in only 60 days and provides weeks of colorful, attractive flowers, right at bed height. Mature heads yield an abundance of nutritious, tasty seeds. A25, B75, D68, D74B, D76, D92M, E97, G16, G82, 191, K49M, L91M, L42, M29, M32, M49, etc.

**Tarahumara White:** All-white seeds. Solid gold flower heads. Excellent producer of large heads in low desert areas, with irrigation. Grows 5 to 7 feet tall. Introduced and adapted over a 30 year period of cultivation. Probably of Canadian Mennonite origin, but obtained by the Tarahumara from Chihuahuan Mennonites. Unusual and rare. A2, A66, F73D, 116, K20M, K23{PL}, K49M, K49T, L3J, L77D, N84

#### OILSEED SUNFLOWERS

Primarily used as a source of oil and high-protein meal, these have small black seeds, about three-eighths of an inch long, with a thin hull which adheres to the kernel, and an oil content of

about forty per cent. They are also the type preferred for sprouting. ROSENGARTEN.

**Peredovik:** 110 days. A Russian strain grown commercially for the pressing of quality sunflower oil for salads and cooking. The small, black-shelled seeds also make good bird food, and excellent poultry and rabbit food. E81M, G26, K66, L7M, M25, N11, N84

**Polyheaded:** Spectacular plants, grow to 8 feet tall and produce 20 to 40 heads per plant, 4 to 8 inches in diameter. Orange and yellow flowers. Suitable for sunflower seed oil or for sprouting. Attractive variation of half-wild forms. L11

**Rostov:** 90 days. Early-maturing Russian black-seeded type, originally from the Ukraine. Heads average 12 inches or more in diameter. Height of plant 5 to 8 feet. Can withstand heavy rain and winds. A2, K20M, K49M, L77D

**Sunfola:** Tall, attractive garden plant; produces one flower per plant; yellow flowers with golden-yellow centers. Produces a good cooking oil. Also used as a cut flower. PIG

## SWEET POTATO {PL}

### IPOMOEA BATATAS

#### TUBEROUS SWEET POTATOES

**DRY FLESH** Mostly yellow- or white-fleshed, these are more mealy, starchier, and less sweet than moist flesh types. They are classified as dry flesh if they feel "dry" in the mouth, not by their moisture content. Some do especially well, and are favored in, the Northeast and Middle Atlantic states.

**Boniato:** (Cuban Sweet Potato) Short, plump, irregularly shaped tuber; reddish skin; white flesh, slightly less sweet and drier in texture than moist orange-fleshed types. When baked the skin becomes crunchy and very tasty. Available at Spanish markets in New York and other large cities. CUSUMANO [Cul, Re], HAWKES [Re], ORTIZ 1973 [Re], SCHNEIDER 1986 [Cul, Re]; B60M{PR}, L14G{PQ}, N40{PR}

**Ivoire:** White-skinned, white-fleshed sweet potato that has the characteristics of an Irish potato. Quite dry and dense. Has twice the starch of common types. Unusual flavbr and texture. Usually mashed and served with butter or sauce like a potato. Matures in midseason. Developed by Franklin W. Martin. H29

**Mexican Purple:** Large to very large roots, up to 5 pounds or more; skin brownish-red; flesh deep purple when cooked, dry but nut-like in flavor. Vigorous, productive vine with purple-tinged leaves. Common in the markets of Tijuana. D57

**Okinawa:** Small to medium-sized, elongated roots; skin grayish-white; flesh slightly moist when cooked, changes to a lilac-magenta color; flavor rich and sweet. Somewhat of a shy bearer in California, producing roots spottily and away from the center of the plant. Local favorite in Hawaii, where it is known as *poni*. D57, K20M

**Old Kentucky:** 120 days. Large, white-skinned roots; flesh cream-colored when cooked, sweet, fiberless, of excellent flavor; Matures late. Keeps very well but is difficult to dig. Vining type that produces roots away from the center of the plant. Old heirloom cultivar. K20M

**Sumor:** A novelty type, developed by Philip Dukes of the USDA Vegetable Breeding Lab in Charleston, South Carolina. Very smooth, light tan skin; white to yellowish flesh, very low sugar content; flavor almost as bland as an Irish potato. Stores well, with sweetness increasing after extended storage. May be baked, mashed, creamed, fried or consumed in salads. Recommended as a substitute crop in climates too hot for growing Irish potatoes. Sumor is the old English word for summer. K20M, L4, L35

Viola: Purple-skinned, white-fleshed sweet potato of very high quality. Notable for its minimal discoloration after cooking. Dry, relatively dense flesh. Can be used as a substitute for Irish potatoes. High-yielding plant with wide adaptability. Developed by Franklin W. Martin. H29

White THumph: (White Yam, Southern Queen, Poplar Root, Choker, White Bunch) 120 days. An unusual white-skinned, white-fleshed cultivar with very dry and very smooth flesh and a very sweet flavor. One of the oldest cultivars in the country. E9M, H49, J99G, K20M, K71, L35, M46

Yellow Jersey: (Little Stem Jersey) Orange skin; very dry, sweet yellow flesh. Resistant to root-knot nematode. Does well in the Northeast and Middle Atlantic states. Sweet potatoes that bake dry are sometimes called Jersey sweet potatoes after the dry-fleshed Jersey group of cultivars such as Big Stem Jersey and Little Stem Jersey. D3M{PR}, K20M

**MOIST FLESH** Sometimes erroneously called yam or *Louisiana yam*, this type has soft, very sweet, yam-like flesh that is usually dark yellow or orange-red. They are classified as moist flesh if they feel “moist” in the mouth, not by their moisture content. They grow particularly well, and are favored in, the Southern states.

Beaugard: 100 days. Uniform, rose-purple tubers with dark orange flesh. Stores well, becoming sweeter after 8 to 10 weeks in storage. Highly productive. Resistant to white grub and soil rot. Produces more #1 roots than Jewel. Early maturing type developed by the Louisiana Agricultural Experiment Station. E9M, E75, G16, H33M, 191, J14, J99G, K20M, L4, L35

Bush Porto Rico: (Bunch Porto Rico, Vineless Porto Rico, Red Yam) 110 days. Irregular-shaped roots; smooth, copper-colored skin; deep reddish-orange, sweet flesh. Old time favorite for flavor; excellent for baking. Matures 3 weeks earlier than Running Porto Rico. Semi-upright plant; comparatively short, usually only 4 to 5 feet long. Popular with gardeners who have limited space. B75, D65, D76, E9M, E97, H33M, H49, H54, H65, J99G, K20M, K71, L35, M46

Carolina Bunch: 110-120 days. Developed by the USDA and Clemson University for use in gardens where the bunch type plant habit produces high yields in less space. Uniform, spindle-shaped tubers; smooth bright, light copper skin; deep orange flesh. Vigorous, dense plants. Resistant to four races of rootknot nematode. L4

Centennial: 110 days. Root medium to large; cylindrical to tapered; skin bright orange; flesh sweet, deep-orange, has a fine moist texture and flavor. Matures early; “baby bakers” can be dug in 90 to 100 days from set plants. Long, vining type plant. Widely adapted and productive: Tolerates clay soil better than Jewel. Standard cultivar for local market and home gardens. B75, D65, D76, E9M, E97, G16, H33M, H49, H65, 191, J99G, K20M, K71, L35, M46

Excel: Attractive light copper skin and orange flesh. Excellent for baking or making fried sweet potato chips. Sizes well-shaped roots earlier than most cultivars. Yields about 15% more than Jewel. A new disease and insect resistant cultivar developed by Philip Dukes of the USDA Vegetable Breeding Lab in Charleston, South Carolina. Introduced in 1988. K20M, L4

Garnet: Large, fairly uniform tubers, tapered at both ends; very attractive, deep reddish-purple skin; deep orange flesh, very moist and sweet, rich and flavorful. Excellent for baking. One of the most widely grown sweet potatoes in California. Very popular with organic growers. D3M{PR}, D57, G44M{PR}

Georgia Jet: (Jet) 90 days. Large, uniform roots; skin dark reddish-purple; flesh moist, deep-orange in color, of excellent flavor. Vining type plant. Very early and heavy yielding; often produces table-size roots in only 75 days. Does well as far north as Canada. Released in 1974 as an early market cultivar for Georgia farmers, it has become very popular with small growers. B75, D76, E75, E97, G16, H24, H33M, H49, J99G, K20M, K71, L35, M46

Jewel: (New Jewel, Golden Jewel) 120-135 days. Skin bright-copper; flesh deep-orange, of soft texture which makes it bake more quickly; flavor rich, quality high. Holds quality and flavor well in long-term storage, up to 50 weeks. Vining type plants; heavy yielding, up to 6 potatoes per plant. Disease resistant. Accounts for 75% of all commercially produced sweet potatoes. Introduced by North Carolina State University. D76, E9M, E97, G16, G44M{PR}, H33M, H49, K20M, K71, L4, L35, M46

Nancy Hall: (Yellow Yam) 110 days. Skin light-tan; flesh moist, firm, deep-yellow, juicy, waxy and sweet when baked; keeps well. Resistant to soft rot. The “yellow yam” of the 30’s and 40’s. Although not attractive in appearance, a favorite of older gardeners because of its excellent flavor. Semi-bush type plant. F73D, H24, H33M, H49, J99G, K20M, K71, L35, M46, N84

Nugget: (Red Nugget) Smooth, slightly blocky, pinkish-red roots; cylindrical to tapered. Semi-dry, reddish flesh of excellent quality. Widely adapted. Resistant to internal cork, root-knot nematode, fusarium wilt and brown rot. Somewhat weak on sprout production. J99G, K20M

Red Jewel: 150 days. Good yields of red-skinned, orange-fleshed potatoes. Popular with home gardeners because it is especially easy to grow. One of the red-skinned cultivars preferred by consumers in Georgia over their copper-skinned counterparts. H54, L35

Regal: Brilliant purplish-red tubers with sweet orange flesh. Has excellent baking qualities. Stores well but not as long as Jewel. Produces abundant sprouts and has excellent yield potential. Resistant to many diseases and insect pests. Developed by the USDA, Clemson University and Texas A & M. L4

Satsuma-Imo: (Japanese) Very large, plump tubers, often pentagonal in shape; reddish orange skin; distinctive greenish-yellow to cream colored flesh; very dense and moist; sweet and flavorful. Excellent for baking and tempura. Made into a sweet confection known as *kinton*, a popular New Year delicacy. Widely grown in California for the Japanese and Oriental markets. TSUJI [Re]; D3M{PR}, G20M{PR}

Southern Delite: A new disease and insect resistant cultivar developed by Philip Dukes of the USDA Vegetable Breeding Lab in Charleston, South Carolina. Medium-sized, fusiform tuber; skin rose to dark copper; flesh dark orange, of very good flavor. Baking properties excellent. Stores slightly better than Jewel. Vine vigorous, moderately long. Introduced in 1986. L4

Topaz: Widely adapted orange-fleshed sweet potato of very good quality. Sweet, moist flesh. Does well in dry climate areas. Spreading plant; has a tendency to root at the nodes and produce tubers outside the row. Matures in midseason. Developed at Texas A & M University. H29

Vardanian: 110 days. Skin golden-yellow; flesh deep-orange, of rich flavor. Considered to have the best eating quality of the short-vined types; also has better resistance to fusarium wilt. Bush type plant; ideal for small gardens. Heavy yielding and early maturing. Produces well in many parts of the country and on various soil types. B75, D76, E9M, E48, E75, E97, G16, H33M, H49, H65, 191, J99G, K20M, K71, L35, M46, etc.

#### SWEET POTATO SPINACH

A distinctive class of sweet potatoes, the plants of which are usually lacking in tuberous roots. Instead, they are prolific bearers of young leafy stem tips and tender, succulent stems which are eaten like those of *Ipomoea aquatica*—the *water spinach* or *kangkong* of Asia, either boiled, steamed, stir-fried or added to soups and stews and other dishes. Popular in warmer tropical and subtropical areas. H29

## SWISS CHARD {S}

### BETA VULGARIS CICLA GROUP

#### CHARD

Grown for the leaves which can be prepared like spinach, as well as the broad, thick, frequently white stalks which are often prepared separately in the manner of asparagus. The leaves are usually considered too coarse for use in salads unless chopped finely.

**Argentata:** (Costa Argentata) 55 days. An old Italian heirloom, long selected for its good flavor which is mild, clean and sweet. Attractive, vigorous plant has silver-white crispy midribs and deep green crinkled leaves. Long standing; grows several feet tall; will stand a wide variety of weather conditions. B8, I18M, 177, K66, N84, Q11M, Q34, SI 7

**Blonde a Garde Blanche:** (Silvey Swiss Chard) 55-60 days. Large, broad, light-green leaves which are very much undulated, half erect, and remarkable for the size of their stalks and midribs, which are often 4 inches broad or more. A light and pale color in the leaves is usually accompanied by a mild flavor, while leaves of a dark-green color always have a strong taste. VILMORIN; P59M

**Blonde de Lyon:** (Blonde a Carde Blanche Race de Lyon) Large, light green leaves with very large white midribs; broad white stalks, tender and mild. Relatively short plant; resistant to heat. Recommended for summer culture. G68

**Bright Lights:**<sup>1</sup> Ornamental rainbow chard. Produces stems in colors ranging from yellow, gold and orange to pink, crimson, lavender and purple. Intermediate pastels or shades of the primary colors may also occur, as well as striping. Stems colors are evident when plants are only 3 to 5 weeks old, allowing for selection and transplanting of the most desirable colors. Some leaves may be bronze. All America Selections winner in 1998. C53, D74B, D76, E24, E97, F13, G6, G82, H85M, 139,191, K66, K71, L42, L89, M29, Q34, etc.

**Burgundy:**<sup>2</sup> (Burgundy Crimson) 65 days. Heavily crumpled, deep green leaves with maroon overtones; translucent brilliant crimson stems and leaf veins; very rich flavor. A colorful addition to salads, or the leaves can be cooked like spinach and the stems like asparagus. Plants yield until frost. D27, E91G

**Candy Stripe:**<sup>1</sup> Medium-broad, white stems with red pinstripes, contrast nicely with dark-green rumpled leaves. Just the right amount of fade from red to white to make a striking ornamental. Vigor and quality similar to that of Rhubarb or Ruby Red chards. Selected out of the original colored chard population from which the Bright Lights cultivar originated. E24

**Charlotte:**<sup>2</sup> 55 days. Improved rhubarb chard recently developed in Switzerland. Deep ruby-red stalks; narrow savoyed leaves; mild, slightly sweet flavor. Excellent raw or cooked. Large, productive plants. Of better quality and developing a darker color than Rhubarb or Ruby Red. May turn purple-red in cold weather. C53, F73D, I18M, 177, J20, N84

**Dark Green White Ribbed:** (White Ribbed, White Silver) 60 days. Large, upright plant reaches a height of 20 to 26 inches. Produces large, smooth to slightly crumpled dark-green leaves with broad, white petioles\* Very productive and flavorful. A popular and proven standard cultivar. A87M, C20M, G71, G93M, H61, K73

**Dorat:** 60 days. Pale yellow-green, deeply-crinkled leaves are mild and tender. Thick, very wide, pure white, mild-tasting stalks. An improved form of Lucullus, with more uniformity and greater vigor. Resistant to bolting. Overwinters well in mild areas. Danish gourmet seed. E63D, 177, J9M, L89

**Fordhook Giant:** (Burpee's Fordhook Giant) 60 days. A tall, vigorous strain, about 2 foot tall and 1 foot wide with broad, very

crinkled, thick, fleshy dark-green leaves. Broad, thick, greenish-white stems. Yields continuously from early summer until frost. A16, A25, B75, B78, D82, E38, F92, G6, G68, H61, I64, L89, M46, N16, R47

**Lucullus:** 50 days. Extra large, thick, fleshy, heavily crumpled, yellowish-green leaves. Stalks long, rather rounded, pure white. Vigorous, upright plant, growing about 28 inches high. Yields an enormous amount of greens. Similar to Fordhook Giant except for the lighter colored leaves. A2, A25, A75, B49, C44, C85M, FI, G16, G71, G87, I64, L7M, L79, M46, M49, etc.

**Monstruoso:** (Mostruosa d'Ingegnoli) 60 days\* Very striking and refined Italian variety. Exceptionally large, tender, broad white stems; broad, moderately savoyed, bright green leaves; very good flavor. Excellent stir-fried, baked or served raw as erudite. Very productive. Highly appreciated in Italy. C53, F73D, Q11M

**Paros:** 55 days\* Very large, upright, dark-green crinkled leaves on thick, succulent white stalks. Developed by the French for its flavor, which is distinctly milder and sweeter than ordinary American cultivars. Young leaves can be used in salads. Grows easily, yielding fine-quality harvests from early summer into winter. K66

**Rainbow Chard:**<sup>1</sup> (Five Color Mix) 60 days. A beautiful technicolor mixture of ornamental Swiss chards. Individual plants variously produce succulent stems in shades of either red, orange, yellow, cream or white. Tender and tasty in the kitchen and excellent material for flower arrangements. E53M, E91G, G57M, J9M, K47, K49M, 089, PIG, Q34, R47

**Rex Wide Ribbed:** 55 days. Vigorous and uniform plants with large, glos<sup>^</sup>, dark-green, heavily crinkled leaves. Broad, silver-white stalks average 2 inches in width. Withstands both cold and warm temperatures, making it suitable for full season production. D11M, F70

**Rhubarb Chard:**<sup>2</sup> (Burpee's Rhubarb Chard) 55 days. Deep-crimson stalks and leaf veins contrast with heavily crumpled dark-green leaves. The roots turn almost white when boiled and are sweeter than red beets. They can be pickled with caraway seeds, turned into golden beets by adding saffron, or prepared with thickened grape juice for *Harvard beets*. B49, B75, C44, C92, D11M, D82, E13G{PR}, F70, G16, H61, K73, L42, L89, M46, M49, N40{PR}, R47, etc.

**Ruby Red:**<sup>2</sup> (Ruby) 60 days. An attractive ornamental chard with crumpled, dark greenish-red leaves. The tender, sweet stalks and midribs are crimson in color, which extends into the leaf veins. Has more of a beet flavor than Fordhook Giant. Keep the outside leaves cropped off to have bright red Ruby chard greens. A16, B1M, C20M, E5T, E24, E63D, G6, G71, I39, J25M, K50, K66, L7M

**San Francisco Wild:** 60 days. Tender, light green leaves with very small midribs, 9 inches long; delicate stems. Excellent flavor, never tough or bitter. Slow-bolting plant; height 18 inches. Originally from Italy, now grows wild around the margins of the San Francisco Bay. J73, M32

**Silverado:** 55-60 days. Deeply savoyed, glossy dark-green leaves; broad, white, succulent stems; excellent texture and flavor. Compact plant, 14 to 16 inches tall; slow to bolt. Suitable for single leaf or whole plant harvest. Easy to bunch and pack for fresh markets. Also a good home garden variety. A1, A87M, C28, E24, G57M, K10, K50, K73, L10, L42, M49, S75M

**Swiss Chard of Geneva:** 60 days. An excellent cultivar with very large ribs and celery-like stalks. So hardy that it withstands severe winters and is suitable for year round culture. Tops are delicious as greens. Prepare stalks like asparagus. 191

**Vulcan:**<sup>2</sup> 60 days. An improved Rhubarb chard developed in Switzerland. Uniform bright red stems and leaf veins contrast with dark-green crinkled leaves. Leaves and stems are very sweet, with outstanding Swiss chard flavor. 191



## LEAF BEETS

Grown primarily for the succulent leaves which make an excellent hot weather substitute for spinach. This is the type preferred for use in salads. Included here are the Japanese types which are somewhat intermediate between the chards and the leaf beets. **PIG, P59M**

**Banerjee's Giant:** An improved strain of Palang Sag. The plants are very robust growing and produce large fleshy leaves double the size of ordinary strains. Sown from August to October in India. **S59M**

**Erbette:** (Vende da Taglio) Grown for its fine tasting, smooth textured greens which are used when young like spinach. Makes a very good cut-and-come-again green. Keep it cut and it will continue to produce all season long. **KASPER [Re]; B8, C53, N84, Q11M, S17, S55**

**Nihon:** (Japanese Swiss Chard) Broad, deep-green leaves with narrow, thick, light-green stalks. Resembles smooth round-leaved spinach. Stands heat well. An excellent tender green chard for home gardeners. Intermediate between broad-leaved chard and leaf beet. **L59**

**Palak Durga:** 60 days. Very tender, sweet-salty, light-green leaves with a very thin mid-rib. Similar to regular spinach in flavor and form. Much more tender and delicate than Swiss Chard. Popular in India where it is the most common form of cooked greens. Grows well in climates where spinach has difficulty. **J73**

**Palang Sag:** (Indian Spinach, Palanki, Palak) An annual herb with a prominent taproot, an erect stem with trowel-shaped leaves at the base, and leafy spikes. The leaves are used as a salad and for preparing stew. A common inexpensive vegetable seen in the markets of northern India during the cold weather season. Reselected stock of a small-leaved strain. **NAYAR, ZEVEN; R0, S59M**

**Pavich:** European small-leaved strain, very similar to Perpetual Spinach. Small, succulent leaves with small midribs. Makes a better leafy green vegetable than broad-leaved chard types due to its superior flavor. **B49**

**Perpetual:** (Perpetual Spinach, Spinach Beet, Cutting Chard) 50 days. Rare, fine old European strain related to Swiss chard. Smaller, smooth, succulent dark-green leaves with small midribs. Drought, frost, and bolt resistant. Early maturing; very productive. Has a long "perpetual" harvest. Used in soups and in the stuffing of *tortellini*. **GRAY, P. [Cul, Re], LARKCOM 1984 [Cu]; A16, B49, C53, C85M, D11M, F70, F82, F92,139, L91M, M49, O53M, R32, R47, S75M, etc.**

## CODES FOR SPECIAL TYPES

1. Multicolor-Stalked
2. Red-Stalked

## TEPARY BEAN {S}

## PHASEOLUS ACUTIFOLIUS

## BLACK-SEEDED

**Black:** Selected by Bruce Bailey, longtime member of Native Seeds/Search from white teparies purchased many years ago in a Tucson Mexican market. Similar to a historic Tohono O'odham and Yuma cultivar. Adapted to the low hot desert. Plant with the summer rains. **A90M{DF}, F73D, H15P, 116, N84**

**Mitla Black:** 80 days. Slightly smaller and rounder than Sonoran teparies. Has the same good flavor and nutrition. Excellent in black bean soup. The small pods can be used as a green bean. Less day-length sensitive and grows better in more extreme northern latitudes than Sonoran types, making two crops possible. From the Mitla Valley, Oaxaca, Mexico. **A2, C95, J39, K17M, K49T, L3J, L77D**

**San Pablo Balleza:** Black-seeded type collected in an Hispanic colonial town on the eastern slopes of the Sierra Madre in Chihuahua, Mexico. Adapted to the low desert, below 3500 feet. **116, N84**

## BROWN/YELLOW-SEEDED

**Cocopah Brown:** A small sample of these was originally collected from a Cocopah woman gardener in Sonora. The Cocopah or Cucupa live and farm along the Lower Colorado River. Brown seeds that may have some mottling. Known locally as "Frijoles Cucupa". **F73D, 116, N84**

**Paiute:** Grown on the Shivwits Paiute Indian Reservation in Utah. Includes various bean colors such as chocolate brown, speckled light tan and burnt orange. Adapted to the high desert where it is planted in June or with the summer rains. One of the most northerly tepary beans. **116, N84**

**Pima Beige and Brown:** Beans are mixed shades of beige, gold and tan. Originally collected near Santan, Arizona, on the Gila River Indian Reservation. Adapted to the low desert, below 3500 feet. **F73D, 116, N84**

**Pinacate:** Tan, slightly mottled seeds. Originally obtained from the most extremely arid agricultural area in Mexico, just south of the U.S. border, in the Sierra El Pinacate Protected Zone. Planted with the summer rains in the low hot desert. **116, L3J, N84**

**Sacaton Brown:** Commercially cultivated in the United States by the Gila River Pima near Sacaton, Arizona. Makes an excellent pate. Known locally as S'oam Bawi. Adapted to low hot desert areas, below 3500 feet elevation. **116, N84**

**Sonoran:** 90-110 days. Small, delicious beans with over 30% crude protein. Under native desert conditions they require as little as 70 days to mature. Farther north or with cooler temperatures, they require a longer growing season. Native to the Sonoran Desert, the drought tolerant tepary was domesticated by the Papago Indians. **J25M**

**Sonoran Brown:** (Sonoran Gold) 85 days. Golden brown seeds. One of the earliest cultivars to mature. Has a delicious flavor when used in soups or as a pate. Drought tolerant plant; very productive in intense heat and dry conditions. From the Papagos of the lower Sonoran Desert region. **A2, A90M{DF}, F73D, J39, K17M, K49T, L11, L77D**

**Tohono O'odham Brown:** 60-90 days. A red-brown bean from Menenger's Dam on the reservation near the Mexican border. Favored for vegetable pate. Adapted to the low hot desert where it is planted with the summer rains. Not recommended for humid regions. Known locally as "W'pegi bawi". **A90M{DF}, F86T{DF}, 116,116{DF}, J11M{DF}, L3J, N84**

**Virus Free Yellow:** Ocher colored seeds. Selected by the USDA and grown out in Tucson, Arizona. Do not infect by growing near other teparies, as others may carry bean mosaic virus. Planted with the summer rains in the low desert. **116, N84**

**Yoeme:** (Yaqui) A beige bean from a traditional Yoeme (Yaqui) village on Sonora's coastal plain at approximately 80 foot elevation. Adapted to the low hot desert where it is planted with the summer rains. In colder areas, plant in late May or early June. **F73D, 116, N84**

## MOTTLED

**Blue Speckles:** 96 days. Mayan folk race. Medium-sized, plump seeds with excellent flavor. Similar to Golden, but fuller seed with blue speckles on tan. From southern Mexico but produces a good crop in southern Arizona near 4300 feet elevation. Also grows well in northern New Mexico. Does not tolerate the heat of the low desert. **F73D, 116,116{DF}, J39, L3J, L11, N84**

**Brown Speckles:** 96 days. Small, plump, light gray seeds speckled with pale brown. Selected from Blue Speckles. Grows well at High

Desert Research Farm in Abiquiu, New Mexico, at 6,500 feet elevation. Introduced in 1981 by Good Seed Co. F73D, 116, N84

Mitla Speckled: 70-90 days. From the Mitla Valley of Oaxaca, Mexico, these are the same as the Mitla Black except for the color and a slightly different, nutty flavor. J25M

#### WHITE-SEEDED

Cocopah White: Grown in gardens by the Chupa (River People), or Cocopah, living in Sonora, Mexico, just south of San Luis, a United States border town. Known locally as "Frijoles Cucupa". 116, N84

Colonia Morelos White: Grown by Mexicans under irrigation in a small desert town originally founded by Mormons and where Geronimo agreed to surrender. Planted with the summer rains in the low hot desert. 116, N84

Guarijio White: (Warihio White) 90-92 days. Medium-large, somewhat flattened, white seeds. Prolific even in hot, dry weather. Drought resistant, but irrigation improves yield. Native staple in the Mexican Sonoran regions. A90M{DF}, C95

Kickapoo White: A transplanted Wisconsin tribe of Kickapoo Indians adopted this native desert crop for their new southeastern Sonora, Mexico home of Rio Bavispe. Planted with the summer rains in the low hot desert. In colder climates plant in late May or early June. 116, N84

Mayo White Aluvia: Small, white and green beans. Dry farmed near Las Capomas, Sinaloa, Mexico on the lower western flanks of the Sierra Madre Mountains near the El Fuerte River. Planted with the summer rains in the low hot desert. 116, N84

Namaquipe White: Purchased at a Mennonite Campo Store near Cuauhtemoc, Chihuahua, Mexico. Teparies are an adopted staple in this area of frequent drought. Adapted to low desert conditions. 116, N84

O'odham White: 90 days. Seeds creamy white rather than the more common brown. The extremely dry composition of the bean requires slightly more cooking time than standard dry beans. Commercially cultivated in the United States by the Gila River Pima, who grow it near Sacaton, Arizona under hot, arid conditions. F73D, F86T{DF}, I16{DF}, J11M{DF}

San Felipe Pueblo: Large, white-seeded beans. A traditional crop that is grown with irrigation along the Rio Grande in northern New Mexico. Adapted to the high semi-desert where it is planted with the summer rains. In temperate areas plant in late May or early June. 116, N84

## THYME {PL}

### THYMUS SPP.

#### CITRUS-SCENTED

Doone Valley: New growth is bright gold mixed with a small amount of deep green, highlighted with red in winter. Deep-green, glossy old growth provides a nice contrast. Fresh lemon scent. A moderately fast growing, prostrate cultivar; height 4 to 6 inches. Lavender flowers. Needs winter protection. C9, C43M, C67M, C81M, H51M, J82, K57, L56, L90J, M35, M53, M82

E.B. Anderson: Tight-growing evergreen mounds of lemon-scented thyme. New growth is gold with maroon undersides and stems, giving it a striking appearance. Older leaves are dark green with a few golden tints in summer, becoming bright gold in winter. Lilac flowers are long lasting. C2, C9, F32D, H51M, K22, M82

Golden Lemon Creeping: (T. x citriodorus) Attractive, glossy, dark-green leaves variegated with gold. Strong, fresh lemon scent

and flavor. Height 4 to 6 inches. An excellent ground cover for sunny locations with well drained soil. Lavender flower spikes. Mostly ornamental, but can be used for tea. C43M, C67M, G96, J76, K2, K22, K85, L56, M35

Golden Lemon Upright: (T. x citriodorus) Gold and green variegated leaves, lemon scented. Similar to Golden Lemon Creeping but with a bushy, upright growth habit. Height 8 to 10 inches. Pink flowers. Same uses as lemon thyme. Excellent color contrast in the garden with brilliant golden leaves. E61, F32D, F93G, H94M, I39, K22, K85, L56, L90J, L94M, M82

Golden Lemon Variegated: (T. x citriodorus) Dark-green leaves with striking golden and green variegation. Very strong lemon scent and flavor. Thick bushy plants. Uses and culture are the same as common Lemon thyme. C9, C43M, H29M, K57

Lemon: (Green Lemon) (T. x citriodorus) Attractive, glossy, dark-green to yellow-green leaves. Strong lemon scent and flavor. Hardy, shrub-like plant; grows 10 to 12 inches high; spreads by layering. Small, pale-lilac flowers. Excellent culinary thyme, especially good for tea. C9, C43M, C67M, E7, E61, F35M, H51M, J66, J85T{PR}, K22, M35, N19M

Lime: (Lime Thyme) Very attractive ground cover thyme with a distinctive citrus flavor. Tidy, bright chartreuse foliage with a very strong lime-like aroma and taste. Excellent for culinary use. Vigorous fast growing plant, 4 to 6 inches tall. Ideal for edging and highlighting. Hardy in Zones 6 to 9. G96, H94M, I18M, I99P, J57, K22, K57, L90J, L94M, M82, N42

Orange Balsam: Small, narrow leaves with a distinct, strong, orange-thyme fragrance and flavor. Good for tea and culinary purposes. Excellent in fruit salads and salad dressings Very good border plant, growing only 6 inches tall. Attractive pale-pink flowers. C9, C43M, C67M, C81M, E61, H94M, J66, J76, K22, K85, L90J, M53, M82

Orange Spice: Attractive creeping thyme with a very distinctive citrus scent. Bright green leaves with a very appealing orange and spice aroma and flavor. The remarkably strong, clear orange flavor lingers pleasingly on the palate without the harsh aftertaste of other thymes. Excellent for culinary use and tea. Small, spreading plant, forms dense ground-hugging mats. J82

Silver Lemon: A sport of Golden Lemon thyme. Attractive, grey-green leaves edged with creamy-white Very strong, lemon-thyme scent and flavor. Extra hardy plant; grows to a height of 8 inches. Its excellent scent and color make it a very desirable addition to gardens. C81M, E61, H29M, H94M, J66, L94M, M82

Silver Queen: Striking silver appearance with grey and cream variegated foliage, turns a distinctive maroon in autumn and winter. Rich lemon scent and flavor. Excellent in chicken soup. Mounding, twiggy, spreading subshrub; height 6 to 8 inches; width 24 inches. A good accent plant. R53M

#### OTHERS

Broad Leaf English: (Broad Leaf) Large, broad, dark-green leaves on erect stems. Low, mounding shrub; grows to medium height, about 8 inches. Lavender flowers. Yields are greater than from other types. Useful as a seasoning, and also makes excellent tea. C43M, E61, H29M, H51M, J66, J76, M82, N42

De Provence: A strain from the south of France with excellent flavor. Best grown as an annual. In short season areas, start indoors 8 to 12 weeks before planting out. Spreads nicely in between pathways and stone steps. Can even be direct seeded in lawns for fragrant mowing. C53{S}, L94M

Dot Wells' Creeping: (T. pulegioides) Shiny green leaves with an excellent thyme-like flavor and aroma. Very hardy plant, grows 6 inches tall. Lavender flowers. A superior culinary herb or ground cover. Discovered in Asheville, North Carolina in an old garden landscaped by the famous Biltmore Estate Gardens. K22, M82

Dot Wells' Upright: An upright, shrubby version of Dot Wells Creeping. Leaves and flowers very much the same. Fast growing plant; height 12 inches; spreads by layers. Hardy cultivar with superior taste. F32D, J66, K22

Down Hill Farm: Similar to the common garden thyme but more dwarf growing. Height 5 inches. Has an excellent flavor and aroma. Hardy in zones 4 to 9. Discovered at and named after a farm in Pennsylvania that grew herbs for Washington, D.C. restaurants. N42

English: (English Winter) (*T. vulgaris*) Medium-sized, oval, dark-green leaves. Semi-creeping habit; grows 10 to 12 inches high and spreads readily. An excellent culinary thyme, with an intense aroma and flavor. The most popular thyme for seasoning poultry, soups, salads, etc. Hardest of the culinary thymes. Similar to French thyme. C9, C67M, D92M{S}, F35M, H94M, K22, K85, L90J, N19M

English Wedgewood: A variegated form of English thyme with attractive, round green-edged leaves, delicately mottled with chartreuse in the center. The variation is brightest in spring and fall. Height 5 inches. Excellent culinary type with a strong thyme flavor and scent. A97, B77, E7, E61, F32D, F93G, J66, K22, L94M, M15T, M82, N42

French: (Narrow Leaf French, Summer) (*T. vulgaris*) Trim, upright plants; height 10 to 12 inches. Leaves grayish-green; narrower and more delicate than English thyme Very good culinary thyme. Considered to have a stronger, sweeter flavor than English thyme, preferred by the French. Produces an abundance of foliage over the entire season, making it ideal for multiple harvests. Pink flowers. Needs some winter protection. C9, C43M, C67M, C81M, D92M{S}, H51M, I39{S}, J66, K22, K57, K85, L90J, MJ5, N19M

German Winter: Somewhat compact, looser growing form of common thyme. Height 8 inches. Very hardy plant; winters over even in cold, harsh climates. Has the same uses as English thyme. C67M, C85M{S}, E63D{S}, F80{S}, G6{S}, G68, K22, K85, L7M{S}, M82, N42

Grey Hill: An excellent culinary thyme with good ornamental qualities. Attractive, frosty grey-green leaves with a strong, very fine flavor and fragrance. Grows into perfectly shaped mounds, about 6 inches tall. Profuse pink flowers in spring. Hardy to Zone 5. Introduced by Sandy Mush Herb Nursery. E61, H94M, K22, K85, L94M, M82

Miniature English Narrow Leaf: Tin/, narrow, grey-green leaves with an intense aroma and flavor similar to French thyme. Low, compact grower, height 3 to 6 inches. Perfect for bonsai. K22, K85, M82

Oregano: (Italian Oregano Thyme) (*T. pulegioides*) Large, round, glossy, bright-green leaves have the distinct aroma of Greek oregano. Very good culinary thyme, can be used whenever an oregano-thyme flavor is called for. Upright, shrubby growth habit, height 18 inches. Evergreen. Not reliably handy. One of the showiest thymes when in bloom. C9, C43M, C67M, F32D, H51M, H94M, I39, J66, K22, K85, L90J, M53, M82, N42

Pennsylvania Dutch Tea: (*T. pulegioides*) Hardy thyme that is especially good for tea. Large, soft, bright-green leaves. Has a unique mild flavor and fragrance, remarkably close to that of Chinese black tea. Very similar in growth and appearance to Oregano thyme. Height 5 to 7 inches. Pink flowers. F32D, H94M, J66, K22, L90J, M82, N42

Porlock: Excellent culinary thyme. Dense growth, to 12 inches tall. Dark green foliage. Mauve flowers produced early in the summer. Upright growing plant; very winter handy. Similar to common garden thyme in habit and flavor. F32D, K22, K57, M82, N42, N84, R53M

Rosa's Delight: Very similar to English thyme, but not as creeping. Rounded, somewhat pointed leaves with a very pleasant scent.

Vigorous, compact plant, slightly more upright than English thyme. M82

Silver: Tall-growing plant, to 18 inches. Foliage variegated green and white. Lavender flowers. Good culinary type, with a strong thyme scent and flavor. Also makes an attractive rock garden, hanging basket or accent plant. A97, E7, E61, F35M, F37T, H51M, H94M, J66, J82, K85, L90J, M53, M82

## TOMATO {S}

### LYCOPERSICON LYCOPERSICUM

#### PROCESSING TOMATOES

Tomatoes that are processed or prepared in various ways, including paste tomatoes, canning tomatoes, sauce tomatoes, juicing tomatoes, drying tomatoes, stuffing tomatoes, and broiling tomatoes.

#### GREEN-SKINNED

Green Bell Pepper:<sup>2</sup> 75-85 days. Unique green stuffing tomato. Very attractive, hollow, thick-walled fruits; green, mottled and striped with deeper green; green interiors. Turns yellow with green stripes when fully ripe. About the size and shape of a bell pepper. Excellent for stuffing. Strong, indeterminate vine, produces good crops. A2, MO, 089

#### RED-SKINNED

##### Hybrid

La Roma: 62 days. Hybrid Roma type. Uniform, medium-sized fruits; weight 3 to 4 ounces. Vigorous, compact, determinate vine; very prolific, produced 7 times more fruit than standard Roma in field trials. Resistant to verticillium wilt race 1 and fusarium wilt, races 1& 2. K20M, MO

Milano: Long, pear-shaped, deep red fruit; plump, meaty interior, of rich flavor. Cooks down in half the time required for other tomatoes, while maintaining its flavor. Suitable for sauce, paste, drying, or cooking whole. Ripens very early. Compact, determinate vine; very prolific. K66, K73

Perfect Peel: 65 days. Medium-sized, juicy, bright red fruit. Ideal for home canning or freezing because it's so easy to peel. Also good for slicing. Compact, determinate vine; very productive; widely adapted. Resistant to verticillium wilt race 1 and fusarium wilt race 1. Introduced in 1979. MO

##### Open-Pollinated

Ailsa Craig:<sup>12</sup> 70 days. Uniform, medium-sized, deep-red fruit; very firm, of excellent flavor. Reliably productive, indeterminate vine. For cold greenhouse or outdoor use. Popular in England, where it is commonly broiled for breakfast. Old traditional cultivar that originated in Scotland. B49, K20M, L88J, N84, 053M, R32, S55, S61, S75M

Alicante:<sup>12</sup> Medium-large, round fruit, 2 to 2 1/2 inches in diameter; non-greenback; interior fleshy, of good color; quality and flavor excellent. Very popular in England where it is broiled for breakfast. Does not wilt when baked or broiled, emerging firm and full-bodied. Tall, indeterminate vine; somewhat resistant to mildew. For cold greenhouses or outdoors. E33, K20M, M1P, N84, R32, S61, S75M

Amish Paste: 85 days. Heirloom paste tomato from Wisconsin. Very large, heart-shaped fruit; 2 1/2 inches in diameter, 4 1/2 inches deep; weight about 8 ounces. Interior very meaty, with very little juice, flavor excellent; seeds few; susceptible to cracking. Excellent for sauce or paste. Prolific. Favorite of the Seed Savers Exchange. B6, B75, B75{PL}, D26D, D56M, F24D, F24M, H49, K10, K47, K71, L88J, MO, M32, M46, M65, 089, PIG, R47, etc.

Auld Sod:<sup>12</sup> 75 days. Bright red, handball-sized fruits with true tomato flavor. Keeps well when ripened on the vine and after picking. Indeterminate growth habit. Popular with Irish bed and breakfasts where they are traditionally broiled and served with “bangers and rashers”. M27, M32

Bellestar: 72 days. Large-fruited plum type Very firm, meaty, bright-red fruit; weight 4 to 6 ounces; uniformly high crimson interiors; resists cracking. Quality high for paste, sauce and juice; also has good flavor for fresh use. Large size facilitates hand harvesting and peeling. Compact, well-protected, determinate vine; suitable for high density plantings. For home gardens and roadside stands. Introduced in 1981. A2, D68, E24, G6, J39, L42, MO, M27, R47, S75M

Black Plum: 80 days. Interesting commercial Russian paste tomato with an exceptional, deep rich flavor. Elongated, deep-mahogany to brown fruit, about 3 inches long. Develops more of a blackish color in hot, sunny weather. Resembles a standard paste tomato in shape. Slightly thinner walled than Roma or Ropreco. A steady and consistent producer. Indeterminate. D29P, F73D, K47, K49T, M32

Burgess Stuffing:<sup>2</sup> 78 days. Hollow, flattened bell-shaped, bright red fruit; 3 1/4 inches in diameter, 2 1/2 inches deep; widely ribbed. Thick-walled, with a small, central core and mild flavor. Excellent stuffed with cold salads or filled and baked. Also makes attractive, distinctive slices for salads or green tomato pickles. Large, indeterminate vine. B73M, B73M{PL}, E5T, MO

Campbell 1327: 72 days. Large, smooth, flattened globe-shaped fruit; weight 6 ounces; good interior color; resistant to cracking. Vigorous, prolific, semi-determinate vine; provides good fruit protection; sets well under unfavorable conditions. Resistant to fusarium and verticillium wilts. Developed by Campbell Soup Company for canning. B75M, G71, G79, H54, H61, H95, J14{PL}, K10, K73, MO, M1P, N16, N52

Chico III: 70 days. Small, pear-shaped fruit; 2 1/2 to 3 inches in diameter; weight 2 to 3 ounces; firm, solid interior. Excellent for processing and tomato paste. Vigorous, compact, determinate vine; highly disease resistant; sets fruit well at high temperatures; widely adapted. Suitable for mechanical harvesting. C95, DIT, G57M, L77D, L89C, N52

Dad’s Mug:<sup>2</sup> 85 days. Large, blocky, deep-scarlet fruit; thick-walled; partially hollow, with seed cavities along the sides; very firm, meaty flesh of fine flavor. Good for slicing and paste; excellent for stuffing like a sweet pepper when green. Prolific, indeterminate vine. E5T, F24D, 177, K49M, MO

Del Oro: 72 days. Medium-sized, thick-walled fruit; interior thick and meaty. Excellent for canning whole, freezing, juice or sauces. Vigorous, prolific, determinate vine; resistant to verticillium, fusarium, nematodes and alternaria stem canker. Has a concentrated set. Used by many famous tomato sauce companies. Also good for home gardens. Developed by Harris seeds. F13, MO

Goliath: 85 days. Extremely large, somewhat rough, light red fruit; very solid interior with few seeds, of fine flavor. Can reach three pounds in weight. Ideal for canning. Very large, tall, indeterminate vine; requires strong support. An old heirloom, first grown in the late 1800’s. F24M, F73D, MO

Grandma Mary’s: 75 days. Very large plum-shaped fruit, weighing 8 to 12 ounces. Thick, very meaty pulp with few seeds, of excellent flavor. Delicious eaten fresh. Ripens well if picked green. Indeterminate vine; grows well under adverse conditions. Scarce heirloom cultivar. D68, M27

Heinz 1350: 75 days. Uniform, slightly flattened fruit; weight 6 ounces; bright red interior and exterior color; resists cracking. Prolific, semi-determinate vine; provides good leaf cover; tolerates verticillium and fusarium wilts. One of the leading commercial canning cultivars; also good for home gardens. G57M, G82, G87, H49, L7M, MO

Heinz 1439: 72 days. Slightly flattened, globe-shaped, non-green-back fruit; weight 6 ounces; very meaty interiors; excellent crack resistance; holds well. Compact, determinate vine; provides good leaf cover; tolerates verticillium and fusarium wilts. Has a concentrated set. Developed by H.J. Heinz Company for catsup, purees and sauce. B75M, C85M, F63, G13M, G57M, G79, K50, L42, M1P, N16

Howard German: Large, variable, elongated fruits reminiscent of an Ancho pepper. Meaty, red flesh, mild and sweet; very small seed cavity. Rated as best in flavor by noted food writer and historian William Wo>s Weaver. Excellent for canning, paste or sauces. Large, indeterminate plants. Original seed from Harrisburg, Pennsylvania. F24D, F24G, MO

Leccesi di Apulia:<sup>1</sup> Small, red plum-shaped fruit, about 2 1/4 inches in diameter. Traditionally used in the Apulia region of Italy for making bottled tomato sauce and paste for the winter season. The tomatoes are harvested in July, and ripened further off the vine before processing. Also reportedly used for drying. Small, determinate plants. GRAY, P. [Pre]; PIG

Liberty Bell:<sup>2</sup> 80 days. Hollow, bell-shaped, rich-red fruit; 3 inches in diameter, weight 4 to 5 ounces; deeply ribbed; thick-walled; small, easily removed central seed core; mild flavor. Excellent for stuffing, either hot or cold. Also makes attractive tomato rings or scoops for dips. Vigorous, indeterminate vine. E83T, M1P

Moira: 66 days. Bush beefsteak type. Developed for canning, juice, or whole pak. Uniform, round, dark-red fruit; weight 6 to 7 ounces; excellent blood-red interior color; very good flavor. Almost completely resistant to cracking and blossom-end rot, remaining blemish-free even in adverse weather. Compact, determinate vine. D68, F46

Napoli: 80 days. Italian paste type. Small, bright red, plum-shaped fruit; 3 inches long, 1 inch in diameter; weight 2 ounces; thick-walled; interior firm and meaty. Excellent for canning or paste; also good for fresh use. Compact, determinate vine; produces a concentrated set; resists fusarium and verticillium wilts. B8M, C92, DIT, D/2, K20M, L77D, M0, M1P, N84, Q11M, TIM

New Zealand Pear: 80 days. Very large, rough, pyriform fruit; resembles a Bartlett pear; susceptible to blossom-end rot. Very meaty, with excellent flavor. Green-shouldered, indoor ripening helps ripen the top. Excellent for sauce and paste as well as for eating fresh. Indeterminate vine; requires staking. A2,177, K20M, K49M, M0

Nova: 72 days. Early maturing Roma type. Elongated, pear-shaped fruit; 3 inches long, 1 1/2 inches in diameter; weight about 2 ounces; interior firm and meaty. Compact, determinate vine; high yielding; resistant to verticillium wilt and late blight. Does well in cool northern areas. Developed at the New York Agricultural Experiment Station. A2,139M, J39, K49M

Polish Paste: Extremely large, flavorful, pear-shaped fruit; 5 1/2 to 6 1/2 inches long; often weighs up to one pound; ripens in late August. Large, indeterminate vine; may produce up to 40 or 50 pounds of fruit annually. Developed by Territorial Seed Co., from genetic material obtained from the Seed Savers Exchange. C26{PL}, K49T, M0

Principe Borghese:<sup>1</sup> An Italian tomato particularly adapted to sun drying and winter preservation. Small, plum-shaped fruit with flattened sides and a nipple on the blossom end; weight 1 to 2 ounces; interior very meaty, with little juice and few seeds. Determinate vine; bears fruit in clusters. In drier climates, branches can be tied with raffia and hung up like *ristras* until the fruit is dry and leathery. BIANCHINI, DREMANN, S. 1989; A2, B49, B75, B75{PL}, C53, D68, G6, H49, J20, J73, K23{PL}, K49M, K66, L3J, M0, M1P, Q11M, R47, etc.

Roma: 75 days. Small, plum-shaped, bright red fruit; 3 inches long, 1 1/2 inches in diameter; thick-walled; interior meaty, with

few seeds. Excellent for paste, sauce, canning whole or for adding body to juice. Prolific, compact, determinate vine; disease resistant. Very popular home garden cultivar. B73M, C92, E59Z, G47D{DF}, G92{DF}, H61, J20, K71, L7M, L97G{DF}, M95M

Roma VF: 75 days. Medium-small, plum-shaped fruit; 2 to 3 inches long, 1 1/2 inches in diameter; weight 2 to 2 1/2 ounces; thick-walled; interior dry, meaty, firm, of good color. Adapted to peeling or whole processing. Excellent for sauces and paste. Vigorous, determinate vine; widely adapted; highly disease resistant. A25, B49, B75{PL}, B75M, C44, C85M, D65, G79, J14{PL}, K73, MO, M1P, N16

Romano Burghanese:<sup>1</sup> Thick-fleshed, red plum tomato, very popular for drying in Italy. Determinate vine type. Recommended for its flavor by amateur seed saver and collector Don Burke, who introduced this cultivar to Australia. PIG

Ropreco: Italian paste type heirloom. Ripens much earlier than San Marzano. Cooks down to a savory sauce or paste. Determinate vine; prolific, outyielding Roma, Nova and others. Spreads to 4 feet in diameter, making it much more manageable than San Marzano, needs no staking or training. A2, G44M, I18M{PL}, I99M, K23{PL}, K49T, K49Z, L13M

Royal Chico: 72 days. Large Roma type paste tomato. Bright red, plum-shaped fruit; weight 3 to 3 1/2 ounces; firm, meaty interior. Excellent for sauce, paste or canning. Compact, determinate vine; provides good foliage cover; highly disease resistant. More productive than Roma; produces a heavy initial set, then continues to bear until frost. C20M, E97, F63, H95, L77D, N52

San Marzano:<sup>1</sup> 80 days. Elongated, flat-sided, blunt-ended fruit; 3 to 3 1/2 inches long, 1 1/2 inches in diameter; of deep-red color; resists cracking; holds and stores well. Interior meaty, mild-flavored, free from juicy pulp. Excellent for canning whole or for puree, sauce, and paste. In Italy, they are dried, then stuffed with anchovies, fennel seeds and capers. Vigorous, indeterminate vine; sets fruit in clusters. Very popular standard type GRAY, P. [Cul]; B73M, B78, C53, C85M, G79, I18M{PL}, L13M, MO, M1P

San Marzano Lampadina: 82 days. Improved San Marzano strain from Italy. Large, lobed, elongated, deep-red fruits; thick, meaty flesh with open seed cavities; scant juice. Pleasant, mild flavor. Excellent for sauce, canning or freezing. Vigorous, indeterminate vine. In Italy, fruits are often ripened further off the vine before processing. GRAY, P. [Pre, Re]; J20, N84, Q11M

Stone: An old reliable cultivar that is excellent for canning. Bright red, slightly flattened, globe-shaped fruit; weight 5 to 7 ounces; ripens uniformly, keeps well. Flavor somewhat acidic. Vigorous, reliably productive, indeterminate vine; provides good foliar protection for the fruit; resists drought and wilt. Introduced in 1889. B38, E5T, G57M, J20, K20M, K49M, L7M, M1P

Striped Cavern:<sup>2</sup> Hollow stuffing type. Large, blocky, bell-shaped fruit; weight 8 ounces; widely ribbed; very meaty, of good flavor. Has an easily removed central core. Thick walls stay firm, and will not split or crumble making it ideal for stuffing. Also good for slicing fresh. Ripe fruit can be stored for 4 weeks; semi-ripe fruit even longer. K20M, K49M

Stuffing:<sup>2</sup> (Itepper Tomato, Hollow Tomato) 75 days. Hollow, bell-shaped, thick-walled fruit; 3 inches in diameter; small, easily removed central seed core. Excellent stuffed with a cold salad or filled and baked. Large, productive, indeterminate vine. A21, B78

Super Italian Paste: (Giant Italian Paste) 80 days. Very large, elongated, plum-shaped fruit; 4 to 6 inches long, 2 to 2 1/2 inches in diameter; weight 10 to 12 ounces. Interior firm, very meaty, with very little juice and few seeds, of sweet flavor. Excellent for sauce and paste. Prolific, indeterminate vine. B75, B75{PL}, B78, E5T, F24M, K20M, K49M, MO, PIG

Super Roma: 70 days. Improved Roma type. Medium-sized, plum-shaped, thick-walled fruit. Interior juicy, nearly seedless, of

very good flavor. Bred for ketchup, tomato juice, or soup making. Compact, determinate, prolific vine; resistant to fusarium and verticillium wilts. C20M, L91M, Q11M

Veeroma: 72 days. An early maturing Roma type. Medium-red, plum-shaped fruit; weight 2 ounces; resists cracking. Excellent for sauce, paste, ketchup or whole pak. Compact, determinate plant; higher yielding than Roma; tolerant to fusarium and verticillium wilts. Adapted to hand or machine harvest. L42

#### YELLOW/ORANGE-SKINNED

##### *Hybrid*

Italian Gold: 70 days. High quality golden Roma type. Attractive, pear-shaped, golden orange fruits; easy to peel. High-pectin flesh makes an extra thick, rich sauce. Developed for making distinctive homemade sauces and salsas. Also excellent for canning and freezing. Very compact, prolific, determinate vine; wilt resistant. B75, D76, F63, G82, I39, L42, L89, M0, M1P, M46

Yellow River:<sup>1</sup> 85 days. Attractive, plum-shaped fruits; weight 3 to 4 ounces; bright yellow skin and flesh. Excellent fresh eating qualities. Also produces an excellent dried golden product. Compact, determinate plant. Resistant to verticillium wilt and fusarium wilt races 1 and 2. Developed by United Genetics Seeds Co. 177, K50, Q11M

##### *Open-Pollinated*

Banana Legs: 75 days. Attractive yellow paste tomato. Distinctive, elongated fruits, 4 inches long and 1 1/2 inches across, usually with a nipple at the blossom end; bright yellow when ripe. Meaty, low in acid, with few seeds; flavor very good. Good for sauce or slicing. Determinate vine, very prolific. Occasional fruits will have light green stripes. A2, C95, D56M, F73D, 177, K10, M0, M1P, M65, 089, PIG, Q34

Yellow Bell: 60 days. Unique yellow paste tomato. Plum-shaped fruit; 3 inches long, 1 1/2 inches in diameter; ripens from green to creamy yellow to yellow; flavor excellent, both rich and sweet. Suitable for salads, and for making paste, juice, preserves and yellow catsup. Indeterminate vine; heavy yielding, produces an average of 5 fruits per cluster, up to a maximum of 12 per cluster. Family heirloom from Tennessee. C20M, J20, K20M, L7M, L88J, MO

Yellow Ruffled:<sup>2</sup> (Ruffled, Yellow Ruffles) 80 days. Unusual yellow stuffing tomato. Hollow, distinctly ridged, lemon-yellow fruit; 2 1/2 inches deep, 3 to 3 1/2 inches in diameter; of excellent flavor. When pulp is scooped out, it makes an attractive container for salads, desserts and other stuffings. Productive, indeterminate vine. A2, C95, K20M, K49M, K49T, MO, M1P

Yellow Stuffer:<sup>2</sup> (Yellow Stuffing) 76 Days. Yellow, bell-shaped fruit, 3 1/4 inches across, a little less in depth; hollow except for a few small seeds around the core; thick-walled; firm flesh with a nice mild flavor, very little juice. Excellent for baking, holding its shape well. Tall, vigorous, indeterminate vine. GORMAN [Re]; A2, C26{PL}, C92, E53M, F63, F80, G71, G82, L42, MO, M1P

#### SALAD TOMATOES

Small-fruited tomatoes, ideal for serving whole in salads. Many are very sweet and may be eaten out of hand like a sweet fruit. The various plum and pear types are important specialty market items and are also popular for pickling and preserving.

#### GIUEM-SJCINNED

Green Grape: 80 days. Distinctive, small, roundish, green to yellowish-green fruit; reminiscent of a large muscat grape; 1 to 1 1/2 inches in diameter. Thin-skinned, sweet, juicy and flavorful. Resists cracking. Compact, prolific vine; bears fruit in large, grape-like clusters. Best harvested when still greenish in color. Suitable for use in sauces, soups, pickles, ketchups and hors d'oeuvres. Developed

by Tom Wagner. A2, C53, C95, F80,118M{PL}, 139,177, K10, K23{PL}, K46T, K49M, K71, L7M, L91M, MO, M1P, M46, etc.

Lime Green Salad:<sup>5</sup> Earliest green-fleshed tomato. Small, 2 1/2 to 3 ounce fruits. Apple-green skin, turns yellow-green when ripe. Juicy, attractive lime-green flesh with a pleasant tangy flavor. Compact, determinate vine with rugose leaves. Developed by Tom Wagner. J9M, K20M

Thompson Seedless Grape: Small oblong fruits, 0.8 to 1.1 ounces in weight. More attractive if momentarily dipped in hot water and the yellowish-green skin removed to reveal the tasty, lime-green flesh. Very productive, indeterminate, well-branched plants. Developed by Tom Wagner. J9M

#### PINK-SKINNED

Pink Cherry: Small, round, smooth, rose-pink fruit; only 3/4 inch in diameter; of good flavor. Very attractive. Good for salads and pickling. Highly productive vine; sets fruit in bunches of 5 to 7; produces until frost. Heirloom. MO, M1P, 089

Pink Ping Pong: 80 days. Medium-small, round, rose-pink fruit; 1 1/2 to 2 inches in diameter; has an excellent mild flavor; resists cracking. Good for salads and snacks. Extremely prolific, indeterminate vine; tolerant to drought. Heirloom. A2, C26{PL}, K20M, L11, M1P

Whippersnapper:<sup>5</sup> 52 days. Extra-early cherry tomato. Small, oval, dark-pink fruit; 3/4 to 1 inch in diameter; sweet and flavorful. Compact, determinate, multi-branched vine; of trailing habit, only 12 inches tall; often produces over 100 fruit. Excellent for pots and hanging baskets. Should not be pruned or staked. D68, F44, G6, J39, K20M, L88J, N24M

#### RED-SKINNED

##### *Hybrid*

Cherry Grande: 65 days. Uniform, round, bright red fruit; 1 1/4 inches in diameter; of good flavor; firm enough for shipping. Vigorous, determinate vine; bears fruit heavily in large clusters; provides good fruit protection; highly disease resistant; widely adapted. For home gardens, local markets or commercial production. A87M, G1M, G13M, H61, K10, K50, K73, L42, MO, M1P, M29, M49

Small Fry:<sup>5</sup> 65 days. Small, round, bright-red fruit; 1 inch in diameter; interior firm, of excellent flavor. Compact, determinate vine; very productive, bears fruit in clusters of 7 or 8; tolerant to fusarium and verticillium wilts and root rot nematodes. Ideal for growing in containers or small gardens. All America Selections winner in 1970. C44, D11M, E91G, F70, G71, G79, H61, K10, L42, MO, M1P, N16, Q11M

Sweet 100:<sup>3 10</sup> 65 days. Small, round, bright red fruit; 1 inch in diameter; extremely sweet. Excellent for eating out of hand. Has a higher vitamin C content than most tomatoes. Indeterminate, multi-branched vine; requires staking for best results. Extremely productive; produces dozens of fruit per side branch, hundreds on each plant. A home garden favorite. A25, C44, DI 1M, F70, F92, G16, H42,118M{PL}, L42, MO

Sweet Chelsea:<sup>3</sup> (Chelsea) 65 days. Small, round, cherry-red fruit; 1 1/2 inches in diameter; interior thick, very firm, flavor very sweet, low in acid, high in sugar; resists cracking and splitting. Vigorous, determinate vine; produces 15 to 20 fruits per cluster, with 10 or more clusters per plant; extremely drought tolerant and disease resistant. AI, C20M, C92, D68, J20, K16M, L42, M0, M1P, M29, M46, TIM

##### *Open-Pollinated*

Baxter's Bush Cherry: (Baxter's Early Bush Cherry) 72 days. Uniform, round, bright-red fruit; 1 inch in diameter; of good flavor; very crack resistant. Will keep for up to 28 days when refrigerated, even when picked ripe. Excellent for shipping. Compact, determi-

nate vine; grows 3 1/2 to 4 feet tall; highly productive, sets well under adverse temperatures. G87, M0, M1P

Camp Joy: Small, round, bright-red fruit; 1 to 1 1/2 inches in diameter; delicious, full tomato flavor; ripens early. Large, vigorous, indeterminate vine; highly productive over a long harvest season; should be staked for best results. Developed by a small farming cooperative that sells produce to fine restaurants. G92{DF}, J39, K66, L88J

Chadwick's Cherry: 90 days. Small, round, red fruit; weight about 1 ounce; interior juicy, with a mature, full-rounded sweetness; quality excellent. Vigorous, indeterminate vine; highly productive. Disease resistant. Selected by English horticulturist Alan Chadwick. A2, B49, K17M, K46T, K49T

Cheerio: 55 days. One of the earliest red cherry tomatoes. Medium-large, bright red fruit with a delicious, full tomato flavor. For home gardens and local markets. Compact, branching, determinate vine; yields heavily for about 30 days; tolerates cold and adverse weather conditions. Suitable for stake or ground culture. L77D, M1P

Early Cherry: 56 days. Round to oval-shaped, bright-red fruit; 1 1/2 inches in diameter; under 1 ounce in weight; flavor mild and pleasant. Compact, determinate vine; produces heavily for about 30 days. Somewhat able to set fruit parthenocarpically. Developed at Cornell University. J9M, L89

Florida Basket:<sup>5</sup> 55 days. Slightly larger version of Florida Petite. Small, slightly elongated fruit, 1 to 2 inches in diameter; weight 1 3/4 ounces; of excellent flavor. Very short, determinate vine with a prostrate growing habit. When planted in a hanging basket will drape 4 to 6 inches over the edge. Resistant to gray leafspot. M0

Gardener's Delight:<sup>3</sup> (Sugar Lump) 68 days. Small, round, bright-red fruit; 1 to 1 1/2 inches in diameter; weight 1/3 to 1/2 ounce; extremely sweet; resists cracking. Excellent for eating out of hand. Indeterminate vine; bears long, grape-like clusters, 6 to 12 fruits per cluster; produces until frost. B49, B75, B75{PL}, C53, D68, D74B, E24, E33, J9M, J20, L91M, M0, M1P, 053M, S55, etc.

Large Red Cherry: 75 days. Deep globe-shaped, bright scarlet fruit; 1 1/4 to 1 1/2 inches in diameter; sweet, mild flavor. Excellent for salads, preserving or eating whole. Vigorous, indeterminate, multi-branched vine; highly productive over a long season; resists alternaria stem canker. Standard cherry type. A87M, B75M, B78, G79, G93M, H61, H85M, K71, K73, M0, M1P, N16

Mexico Midget: 60 days. Round, dark crimson fruits, 1/2 to 1 inch in diameter. Excellent, real tomato flavor. Plants grow 5 feet tall and are laden with fruit from top to bottom. One picking of six plants has produced five gallons of fruit. Favorite of the Seed Savers Exchange. K47

Peacevine Cherry:<sup>10</sup> Found to have the highest Vitamin C content among 30 cherry tomatoes analyzed by Rutgers University researchers. Small, red fruits, 3/4 inch in diameter. Delicious flavor. Indeterminate vines, 2 to 3 feet tall, produce tresses of fruits continuously. Also high in gamma amino butyric acid. Developed by Alan Kapuler. C26{PL}, D68, F46, K17M, K23{PL}, K49T, K95M

Red Cherry: (Small Red Cherry) 75 days. Small, round, bright-red fruit; 1 inch in diameter; weight less than 1 ounce; of good flavor and quality. Fine for salads or eating whole. Vigorous, indeterminate vine; produces an abundance of fruit over a long harvest period; resists fruitworm and high temperatures. Introduced prior to 1865. BURR; B6, C44, D26D, E59Z, E9iG, FI, F92, G57M, G71, G79, H21, J73, K73, L7M

Red Peach: Unusual heirloom. Small, round, red fruit, sometimes has a dull slightly fuzzy skin; 1 1/2 inches in diameter; weight 1 ounce; soft flesh of good flavor. Ripens in midseason. Indeterminate vine. M1P, 089

**Red Pear:** 75 days. Small, bright red, pear-shaped fruit; 2 inches long, 1 inch in diameter; weight 1 ounce; of mild, pleasant flavor. Excellent for salads, preserves or pickling. Vigorous, indeterminate vine; bears fruit in long clusters; highly productive over a long season. Introduced prior to 1865. BURR [Re]; B73M, C53, D11M, D26D, F70, H95, K10, K23{PL}, K71, MO, M1P

**Red Plum:** 75 days. Small, oval, scarlet fruit; 1 1/2 to 2 inches long, 1 inch in diameter; weight 1 ounce. Interior pink, or rose-red, mild, well-flavored, seeds comparatively few. Excellent for salads, pickling and preserving. Indeterminate vine; highly productive; bears fruit in clusters. Introduced prior to 1865. BURR; G79, MO, M1P

**Riesentraube:** 70 days. Distinctive, rounded pear-shaped fruits, usually with a nipple at the blossom end; 1 1/2 inches long. Excellent, rich, full-flavor similar to beefsteak tomatoes. Good for salads, juice or sauces. Compact, indeterminate vine, produces large bunches of 20 to 40 fruits. Becoming very popular with home gardeners. Heirloom from Germany. Riesentraube translates as "giant grape", and refers to the Grapes of Eshcol mentioned in the Bible. WEAVER 1997; D29P, E5T, F80, K20M, K57{PL}, L7M, L88J, MO, M1P, M32

**Sub Arctic Cherry:**<sup>4 5</sup> 43 days. Small, round fruit; 1/2 inch in diameter; weight just under 1/2 ounce. Small, compact, trailing vine; high yielding, averages over 300 fruits per plant. Ideal for window boxes and hanging baskets. Very cold tolerant, setting fruit under colder conditions than other types. Released by the Beaverlodge Experiment Station, Alberta, Canada in 1976. J9M

**Sugar Lump:**<sup>3</sup> (Jung's Sugar Lump) 65 days. Smooth, round, deep-red fruit; 1 1/2 to 2 inches in diameter; very sweet, of good quality and flavor. Excellent for eating out of hand. Also good for salads, canning whole or juice. Vigorous, indeterminate vine; bears fruit in clusters of 6 to 12; produces until frost. C95, K71, M1P

**Sweetie:**<sup>3</sup> 65 days. Round, bright-red fruit; 1 to 1 1/2 inches in diameter; unusually sweet and flavorful, sugar content as high as 14%. Has a high vitamin C content. Excellent for snacking, salads, or low-sugar preserves. Vigorous, indeterminate vine; bears fruit in long clusters of 12 to 20 fruit; widely adapted. Should be staked or trellised for best results. A16, C92, F82, G27M, G87, I39, J14{PL}, K49M, L10, L13M, L79, L89, M0, M1P, M32

**Tiny Tim:**<sup>5</sup> 55 days. Small, round, scarlet-red fruit; 3/4 to 1 inch in diameter; of very good quality and flavor. Excellent for salads and relish trays. Compact, determinate vine; grows only 12 to 15 inches tall, 6 to 12 inches in diameter. Very ornamental, with rugose leaves. Ideal for growing in pots, window boxes and flower beds. A16, A25, B73M, C85M, D1T, D11M, E38, F70, G71, L7M, L42, M1P, R47

#### YELLOW/ORANGE-SKINNED

##### *Hybrid*

**Sun Gold:** 57 days. Super sweet tomato with the flavor of a tropical fruit. Small, bite-size, bright tangerine-orange fruits. Extremely sweet, but with a distinctive, fruity or winey taste. Superior for snacking. Tall, vigorous, indeterminate vine. Yields about 20 fruits per vine, borne on long, grape-like clusters. Suitable for outdoor or greenhouse production. C20M, C53, D56M, D68, E75{PL}, G6, G93M, I18M{PL}, I77, J20, K66, L89, L91M, M0, M1P, M46, M65, Q34, S70, etc.

##### *Open Pollinated*

**Cherry Gold:**<sup>5</sup> 45 days. A golden version of Tiny Tim. Deep golden-yellow fruit; the same size as Tiny Tim, but much better flavored. Very compact, determinate vine; grows only 6 inches tall, 6 inches in diameter. Excellent for windowsill gardens, or chain store pot plant sales. Introduced by Stokes Seeds. L42

**Gold Nugget:** 70 days. Round to slightly oval fruit, 1 to 1 1/4 inches in diameter; rich golden-yellow in color; generally resists

cracking. Has a delicious, well-balanced flavor resembling Yellow Plum. Most fruits are seedless. Compact, determinate vine; highly prolific. For home gardens or commercial production. Developed by Dr. James Baggett at Oregon State University. A2, C53, C95, E24, F44, G6, G5JM, I39, J9M, J20, K10, K49M, L89, M0, M1P, Q34, etc.

**Snow White:** 65-75 days. Unusual ivory-colored cherry tomato. Medium-sized, completely round fruits, pale-yellow when fully ripe. Very delicate, smooth, creamy flavor, sweet without being overly sugary. Excellent for salads and snacking. Prolific, indeterminate vine. Developed by Joe Bratka. B49, K20M, L77D, M0

**Sundrop:** (Burpee's Sundrop) 76 days. Small, globe-shaped, deep orange fruit; 1 1/2 inches in diameter; thick-walled; firm, meaty flesh, sweet flavor. Resistant to cracking or bursting, holding well on the vine even late in the season. Excellent for snacking or relish trays. Indeterminate vine. A2, F80, L11, N24M, 089

**Wonder Light:** (Lemon Vine, Plum Lemon) 75-80 days. Unusual, lemon-like tomato. Roundish-oval fruits, usually with a nipple on the blossom end, bright yellow. Very reminiscent of a lemon in size, shape and color. Good taste and texture. Very good for salads and salsa. Indeterminate vine, hardy and productive. Collected in Irkutsk, Siberia by Kate Rogers Gessert. C44, G6, K10, M0, M1P

**Yellow Cherry:** 75 days. Small, round, bright-yellow fruit; 1/2 to 1 inch in diameter; of mild, sweet flavor. An excellent garnish or addition to salads and side dishes. Vigorous, indeterminate vine; highly productive over a long season; tolerant to heat and drought. Introduced prior to 1865. BURR; K20M, L88J, M0, M1P, N40{PR}, R47

**Yellow Peach:** Unusual heirloom. Small, round, yellow fruit, sometimes has a dull slightly fuzzy skin; 1 1/2 inches in diameter; weight 1 ounce; soft flesh of good flavor. Ripens in midseason. Indeterminate vine. M1P

**Yellow Pear:** 75 days. Small, pear-shaped, waxy clear-yellow fruit; 1 1/2 to 2 inches long, 1 inch in diameter; weight 1 ounce; of mild, sweet flavor. Excellent for salads, preserving and pickling. Large, indeterminate vine; highly prolific, produces fruit in clusters. Introduced prior to 1865. BURR; A25, B73M, B75{PL}, C53, C85M, D11M, F70, G79, H61, K23{PL}, L7M, M0, M1P, N16, R47, etc.

**Yellow Plum:** 75 days. Small, plum-shaped, clear-yellow fruit; 1 1/2 inches long, 1 inch in diameter; weight 1 ounce; of mild, sweet flavor. Excellent for salads, preserves or pickling. Vigorous, indeterminate vine; very productive, bears fruit in clusters until frost. Introduced prior to 1865. BURR; C92, D68, G13M, G71, K5M, K49M, L11, M0, M1P, M32

#### SLICING TOMATOES

Mostly medium to large tomatoes, ideal for slicing and eating raw in sandwiches and salads. The very large, meaty, richly flavored beefsteak types are especially popular for this purpose.

#### PINK-SKINNED

##### *Hybrid*

**Pink Girl:** 76 days. Large, smooth, flattened globe-shaped fruit; an attractive pink color; weight 7 to 8 ounces; has excellent tolerance to cracking. Flesh meaty, juicy, of mild flavor. Indeterminate, widely adapted vine; produces heavily until frost. Resistant to fusarium and verticillium wilts and tobacco mosaic virus. For home gardens, local markets, and roadside stands. B73M, D11M, E91G, E97, F13, F70, G57M, G82, H33M, H61, K10, M0, M1P

##### *Open-Pollinated*

**Arkansas Traveler:** 80-90 days. Rough, irregular, medium-sized fruits; weight 6 to 8 ounces; excellent, creamy, mild flavor. Indeterminate, highly adaptable vine. Southern heirloom well known for its ability to produce flavorful fruit in hot, dry weather. Popular in the

Ozark Mountains of Arkansas and Missouri. B38, D56M, E97, K10, K49T, L7M, MO, M1P, M65

Bradley: 80 days. Medium-sized, deep globe-shaped, pink fruit; weight 6 to 7 ounces; green-shouldered; very juicy, mild and flavorful. Strong, semi-determinate, short stake type vine; resistant to fusarium wilt and alternaria stem canker. For home gardens and local markets. D74B, G53M, H61, K20M, MO, M1P

Brandywine: (Pink Brandywine) 74 days. Medium-large, slightly irregular, dark reddish-pink fruit; weight 10 to 12 ounces; susceptible to cracking. Flavor extremely fine, distinctive, of gourmet quality. Excellent for slices, salads and sandwiches. Vigorous, indeterminate vine; moderately productive; has potato-like foliage. Introduced in 1889 by Johnson & Stokes seed company of Philadelphia. WEAVER 1997; B38, B49, B75, B75{PL}, E5T, E97, F15{PR}, F24G, G6, G16, H49, I63Z, J25M{PL}, K49M, K71, L7M, MO, M1P, etc.

Brimmer: (Pink Brimmer) 82 days. Heirloom from Virginia. Large, flattened globe-shaped, purplish-pink fruit; 4 inches in diameter; weight often 2 1/2 pounds or more when well grown. Flesh very meaty, with few seeds and core, mild, low in acid. Indeterminate vine. Winner of the Grand Prize for size and quality at the Jamestown Exposition, sometime prior to 1910. Introduced about 1905. L7M

Dutchman: 80 days. An heirloom Beefsteak type. Large, flattened globe-shaped, dark-pink fruit; 4 to 5 inches in diameter; weight up to 2 pounds. Flesh very solid, low in acid, flavor excellent, mild and sweet. Large, indeterminate vine; unproductive. Similar to Giant Belgium, but somewhat flatter. B38, M0, M1P

Dwarf Champion:<sup>6</sup> 8 (Tree) 70 days. Unique "stakeless" or thick-stemmed tomato. Very short, stiff stem, 1 inch in diameter, 18 to 24 inches tall; grows perfectly erect without any support. Dwarf indeterminate habit. Rose-pink fruit; weight 5 ounces; firm and meaty, mild, low in acid. First raised in the gardens of the Count de Fleurieu at the Chateau de Laye, near Villefranche, France, about 1865. BURR, VILMORIN; K71, M1P

Eva Purple Ball: 78 days. Attractive, high quality heirloom from the 19th Century. Uniform, round, pinkish-purple fruits; weight 4 to 5 ounces; crack resistant, very smooth and blemish free. Soft, tender, sweet and juicy. Ripens easily and is easy to peel. Excellent for salads and sauces. Resistant to foliar and fruit diseases. Originally from the Black Forest region of Germany. D29P, K20M, K46T, L7M, M0, M1P

German Head: 80 days. Beefsteak type. Large, smooth, well-shaped fruit; an attractive dark-pink in color; weight 10 ounces. Flesh juicy, meaty, of excellent rich flavor. Large, indeterminate vine. Recommended for roadside markets. Very old cultivar. F73D, M0, M1P

German Johnson: Heirloom from Virginia and North Carolina. Large, flattened globe-shaped fruit; pink with yellow shoulders; weight 16 to 24 ounces. Flesh very meaty, low in acid, with few seeds, of excellent mild flavor. Good for slicing or canning. Indeterminate vine; very productive; fairly resistant to disease. B38, D26D, D68, F63, F73D, K10, K71, L7M, M0, M1P

Giant Belgium: 90 days. Very large, deep oblate, dark pink fruit; 4 inches in diameter; weight 1 1/2 to 2 pounds, occasionally up to 5 pounds; smooth at the blossom end. Flesh extremely meaty, low in acid, flavor very good. Excellent for slicing. Also makes fine cocktail wines. Indeterminate vine. Developed in Ohio. D56M, F73D, 177, K23{PL}, K46T, K71, M0, M1P, M32, M46, M65

Giant Tree:<sup>7</sup> (Italian Potato-Leaved) 90 days. Very large, round, smooth, pink fruit; weight 1 to 2 pounds; flesh tender but firm, low in acid, mild flavored, with few seeds. Vigorous, strong-stemmed, indeterminate vine; will grow to 15 feet or more if trellised. Has heavy, thick leaves that provide good protection. Excellent for home gardens. F80, G82, M0

June Pink: (Pink Earliana) 75 days. Medium-sized, somewhat flattened fruit; weight 4 to 5 ounces; exterior very attractive, rose-pink, sometimes with green shoulders; interior solid, of excellent flavor; resistant to cracking. Large, vigorous, indeterminate vine; bears fruit in clusters of 6 to 10, produces over a long period. Introduced about 1900. A2, D29P, L7M, L77D, M1P

Mortgage Lifter: (Pink Mortgage Lifter) Large, well-shaped, dark-pink fruit; weight up to 1 pound; very meaty, with few seeds. Indeterminate vine. An old cultivar that is still in demand. According to folklore it was named by a farmer who sold a crop of these tomatoes to pay off a farm he was about to lose. A21, B6, B38, B49, B75, B75{PL}, E5T, F63, K10, K49M, K71, M0, M1P, M32, 089, etc.

Oxheart: 85 days. Large, heart-shaped, rose-pink fruit; weight often 1 1/2 pounds, occasionally up to 2 pounds; flesh solid, meaty, mild, with very few seeds. Vigorous, indeterminate vine; best grown in cages to protect fruit from sunscald. An old-fashioned home garden favorite. B38, B73M, C44, C92, D11M, D76, F70, F80, G68, G79, J97M, K10, M0, R47

Pomme cAmore: 95 days. Small, pink fruit; 2 to 2 1/2 inches in diameter. Medium-large vine; susceptible to wilt. One of the historical *love apples* of colonial Europe. Carried to Mauritius by one of several European governments who claimed that island as a colony. Saved from extinction by the Research Department of Colonial Williamsburg, Virginia. A2, C95

Ponder Heart: Very large pink tomato from Japan. Semi-globe-shaped fruit with a slightly pointed blossom end; very smooth, without ribbed shoulders. Flesh thick and meaty, non-acid, has a small seed cavity. A cross of Ponderosa and Oxheart. M1P

Ponderosa: (Pink Ponderosa, Pink Beefsteak) 90 days. Very large, flattened globe-shaped, deep-pink fruit; weight 12 to 16 ounces, some up to 2 pounds; susceptible to cracking and sunscald. Interior firm, meaty, with very few seeds, of excellent mild flavor. Good sliced, canned or stewed. Vigorous, indeterminate vine; produces continuously until frost. Long-time favorite. Introduced in 1891. B38, C85M, G79, G82, 139, K10, K71, M0, M1P, N16, Q34

Tappy's Finest: 77 days. West Virginia family heirloom. Large, slightly irregular, deep-pink fruit; 3 to 4 inches in diameter; weight 14 to 16 ounces, sometimes up to 2 pounds. Interior very meaty, with small core and few seeds, of extremely fine flavor. Good for slicing and processing, excellent for juice. Indeterminate vine; unproductive. K20M, L7M, M0

Watermelon Beefsteak: 75 days. Very large, deep oblate, dark-pink fruit, somewhat reminiscent of a watermelon; weight up to 2 pounds; flesh purplish-red, extremely meaty, sweet and mild. Indeterminate vine. An heirloom strain that dates back over a century. E5T, F73D, L13M, M0, M1P

#### rep-skinned

#### Hybrid

Big Beef: 73 days. High quality, early red beefsteak type. Large, smooth, globe-shaped fruits; weight 8 to 12 ounces; firm, meaty, juicy; rich, full, old-time flavor. Indeterminate vine with multiple disease resistance. Maintains production of large fruits late in the season. Widely adapted. Highly rated for flavor and overall performance. All America Selections Winner in 1994. B73M, B75, C92, D65, D65{PL}, D74B, E97, G6, G16, G71, H49, 191, J97M, K50, K66, K71, M1P, M29, etc.

Carmello: 70 days. Gourmet French tomato. Medium-sized, smooth, very attractive fruits; crack resistant. Rich, full-bodied flavor, a perfect balance of sweetness and acidity. Widely adapted, productive, indeterminate vine. Resistant to verticillium, fusarium, nematodes and tobacco mosaic virus. Very popular in Europe. C20M, I18M, I18M{PL}, 177, K57{PL}, K66



Caruso:<sup>9</sup> Large, round, slightly ribbed fruit; weight 7 ounces; faint green shoulder; fair green-ripe flavor. Vigorous, open, indeterminate vine; high yielding; early in production. Very tolerant to heat, continuing to set fruit during the summer months. Also sets and fruits under cooler greenhouse temperatures. Particularly recommended for early heated crops and autumn crops. FI, F85G, K10, L42, M1P

Celebrity: 70 days. Large, deep globe-shaped, smooth, deep red fruit; firm flesh with excellent flavor. Strong determinate vine; provides good cover; adapted to a broad range of conditions. Has multiple disease resistance, including genetic resistance to tobacco mosaic virus. Excellent for home gardens and commercial production. All America Selections winner in 1984. B75M, D11M, E75{PL}, F13, F70, G6, G71, G93M, H33M, H61, H95, H99M{DE}, J14{PL}, K73, MO, M1P, etc.

Cobra:<sup>9</sup> Truss-harvested, greenhouse forcing tomato. Large, very firm, beefsteak type fruits; extremely uniform; weight 7 to 8 ounces. One of the best tasting of the greenhouse tomatoes. Carries the interior ripening gene for field ripened flavor. Indeterminate, high yielding vine. Also suitable for tunnel and field production. AI, C85M, D11M, E91G, F70, F85G, G68,177, K50, L42, MO, M29, M49, N16, S95M, etc.

Dombo:<sup>9</sup> (Jumbo) Large, green-shouldered fruit; weight 8 to 12 ounces; very firm and flavorful. Medium late maturity. Strong but short-jointed vine; highly disease resistant. Produces 12 clusters of fruit, versus 8 clusters which is standard for non-hybrid cultivars like Vendor. Recommended for spring, summer, and early fall crops. F85G, M1P

Early Cascade: 55 days. Medium-sized, deep globe-shaped fruit; weight 4 to 8 ounces; smooth, deep red exteriors; of excellent flavor. Ideal for salads and sandwiches. Also good for canning and sauce. Tall, indeterminate vine; sets fruit abundantly in clusters of 7 to 9; continues to produce heavily all season. Tolerant to verticillium, fusarium and nematodes. A16, A25, C85M, D11M, D65, F70, G6, G79, G87, MO, M1P, M49

Floramerica: 70 days. Large, deep globe-shaped, deep red fruit; 3 inches in diameter; weight 6 to 10 ounces; of firm texture and excellent flavor. Strong, determinate vine; widely adapted. Tolerant or resistant to 15 genetic disorders and diseases. Excellent for home gardens. All America Selections winner in 1978. Developed by the University of Florida. A16, A25, B73M, C44, C85M, D11M, D27, D65, F70, G57M, G71, G79,184, M1P, N16, etc.

Heartland:<sup>8</sup> 68 days. Medium to large fruit, 3 to 4 inches in diameter; weight 6 to 8 ounces; of good quality and flavor. Compact, self-supporting plant; height 3 to 4 feet; bears all season. Dark green, wrinkled, heavy foliage. Resistant to verticillium, fusarium and nematodes. One of the first dwarf indeterminate tomatoes. F63, MO, M1P

Patio:<sup>5</sup> 70 days. Medium-sized, deep oblate fruit; weight 4 to 5 ounces; exterior smooth, deep red; interior firm and flavorful. Strong, compact, determinate vine; high yielding; tolerant to fusarium wilt. Requires support. Developed for growing in tubs or limited space gardens. D11M, E53M, FI, F70, G71, G79, G93M, H61, J84, K73, MO, M1P, N16

Pixie:<sup>5</sup> (Burpee's Pixie) 55 days. Smooth, globe-shaped, bright scarlet fruit; 1 1/2 to 2 inches in diameter; flesh meaty, juicy, very flavorful. Compact, determinate, strong-stemmed vine; only 14 to 18 inches tall. Excellent for pots, window boxes, limited-space gardens and hydroponic culture. Does well in cool northern areas. A25, C85M, D11M, F70, M1P, R32

Winter Red:<sup>11</sup> Improved Long Keeper type. Earlier and higher yielding. Has a richer flavor and redder color. Vine-ripe fruits can be harvested during the summer, green fruits will keep up to 3 months after the first frost and ripen indoors. Disease resistant. B75, B75{PL}

### Open-Pollinated

Abraham Lincoln: (Buckbee's Abraham Lincoln) 87 days. Home garden favorite since 1923. Recently re-bred by Shumway's to farther improve purity which had diminished over the years. Large, smooth, dark red fruit; sweet, solid and meaty; ripens all the way through. Excellent for slicing, juice or catsup. Indeterminate vine; produces as many as 9 fruits in a cluster, with a total weight of 7 pounds. Has bronze-green foliage. D26D, D56M, E5T, K71, L7M, M0, M1P, M65

Angora: 68 days. Medium-sized, smooth, brilliant red fruit; 2 1/2 inches in diameter; flesh firm, mild-flavored; resists cracking. Moderately vigorous, determinate vine. Stems and leaves are covered with grayish-white pubescence, making it attractive enough for the flower garden. Produces a small percentage of glabrous plants which can be rouged out at the seedling stage. C95, E83T, K20M, L88J, M0, M1P

Auriga:<sup>10</sup> 72 days. Small, orange-red, oblate fruits; average weight just over two ounces; good flavor. Has the highest carotene content of any tomato tested—4.3 mg. per 100 gs., approximately 8 to 10 times higher than regular tomatoes. Indeterminate type growth habit. Originated in Switzerland. 139, N84

Beefsteak: (Scarlet Beefsteak, Red Ponderosa, Crimson Cushion) 85 days Very large, flattened, slightly ribbed, brilliant crimson-scarlet fruit; weight 12 to 16 ounces. Solid, meaty, deep red flesh, nearly seedless, with old-fashioned "real" tomato flavor. Excellent for slicing. Vigorous, indeterminate, productive vine. Popular home garden cultivar. Scarlet sport of Ponderosa. A25, B6, F24D, F24M, F80, G71, G79, G92{DF}, H61, K49M, K71, K73, M0, M1P

Bonny Best: (John Baer) 75 days. Medium-sized, round to deep globe-shaped, bright red fruit; weight 5 to 8 ounces; solid, meaty flesh, with full tomato flavor. Vigorous, indeterminate vine; adapted to a wide range of growing conditions. Has sparse foliage. Long-time favorite for home gardens and local markets. Introduced in 1908. B38, C85M, F24M, G53M, G79, G83M, J20, J25M, K73, L11, L88J, M0, M1P, N52

Break o' Day: 65 days. Medium-large, globe shaped, orange-red fruit; 2 1/2 to 3 inches in diameter; weight 6 ounces. Flesh solid and meaty, with few seeds, low in acid, of very good flavor. Indeterminate vine; matures early and produces abundantly throughout the season; resistant to wilt. Has sparse foliage. Home garden favorite for over 50 years. K20M, PIG, R47

Bush Beefsteak: 62 days. Medium-large, flattened globe-shaped, deep red fruit; weight 8 to 12 ounces; solid, meaty, rich red flesh, with very few seeds. Ideal for slicing. Vigorous, compact, determinate vine; highly productive, even under adverse conditions. Excellent for home gardens in northern areas. A16, C85M, D27, H33M, L42, L79, M0, M1P

Cal Ace: 80 days. Large, smooth, deep oblate fruit; weight 8 to 12 ounces; uniform ripening; of good texture and flavor. Strong, determinate, highly productive vine; provides good protection. Resistant to fusarium and verticillium wilts. Used extensively for fresh market and home garden production in California. Especially adapted to arid regions. B8M, B75M, C20M, DIT, G93M, H61, K10, K73, M0, N52

Caro Red:<sup>10</sup> 78 days. Contains about 10 times the pro vitamin A found in standard tomatoes. Smooth, globe-shaped, rich orange-red fruit; 2 1/2 to 3 inches in diameter; weight 4 to 8 ounces. Has a rich, distinctive flavor. Prolific, indeterminate vine. Developed at Purdue University. K20M

Cold Set:<sup>4</sup> (Outdoor Seeder) 70 days. Seeds germinate in soil as cold as 50° F., and young seedlings tolerate temperatures as low as 18° F. Performs best in cool to moderate climates, without excessive wetness or humidity. Medium-sized, round, blood red fruit; weight 5 to 6 ounces. Determinate, high yielding vine. Introduced in 1963

by Ontario Agricultural College. A2, D27, D76, D76{PL}, E97, E97{PL}, J39, K20M

Costoluto Genovese: (Ribbed Genova) 90 days. Medium-sized, flattened, slightly ribbed, scarlet fruit; 2 1/2 to 3 1/2 inches in diameter; of excellent flavor. Indeterminate vine. Does well in hot weather, but will continue to produce when the weather turns cool. An old, unimproved cultivar from northern Italy. C53, D29P, G53M, I18M, I18M{PL}, 177, J73, K23{PL}, K49T, K66, L7M, L77D, MO, M1P, Q11M, etc.

Delicious: (Burpee's Delicious) 77 days Very large, deep globe-shaped fruit; resists cracking. Mostly over 1 pound in weight, with many 2 to 3 pounds. Produced the world record of 6 pounds 8 ounces. Interiors solid, with small seed cavities, of excellent flavor. Perfect for slicing. Indeterminate vine; moderately productive. B6, B75, E5T, E91G, E97, E97{PL}, G71, G79, H61, J14{PL}, K49M, MO, M1P

Dinner Plate: 90 days. Beefsteak type Very large, heart-shaped fruit; average weight 1 1/2 to 2 1/2 pounds; susceptible to cracking at the shoulders. Interior very thick and meaty, richly flavored, nearly seedless. Superior for slicing. Indeterminate vine, should be grown in a cage or on a trellis. Heirloom. D56M, E5T, K49M, MO, M1P, M65

Doublerich:<sup>10</sup> 80 days. High vitamin tomato. Contains 50 to 60 units of vitamin C, compared to 12 to 15 in other tomatoes. Medium-sized, globe-shaped, deep scarlet fruit; weight 4 to 8 ounces. Interior bright red, solid, meaty, juicy, with a small amount of seeds. Excellent for canning and juicing. Vigorous, indeterminate, high yielding vine. B49, C26{PL}, F46, K23{PL}, K49T, L3J, L13M, L89

Earliana: 65 days. Medium-sized, flattened globe-shaped, bright scarlet fruit; 3 inches in diameter; weight 4 to 5 ounces; thick-skinned; green-shouldered. Solid flesh of good flavor. Vigorous, indeterminate, open-spreading vine; bears fruit in clusters of 6 to 10. Widely grown for early markets. Also good for home gardens. A2, F24M, K20M, K27M, L77D, M1P

Earlrouge: 65 days. Medium-sized, slightly oblate fruit; weight 6 1/2 to 7 ounces; easily removed peel; resists cracking. Sweet, flavorful, high-crimson interiors. Good for slicing and canning. Compact, determinate vine; sets fruit well at extremes of temperature. For home gardens, local markets and shipping. Developed in Canada. C95, D68, J25M, J39, K20M, K49Z

Egg: 80 days. Small, egg-shaped, smooth fruit; 2 to 3 inches long; weight 3 ounces; resists cracking; keeps well. Firm, non-acid flesh, of very good flavor. Makes excellent juice, salsa and canned tomatoes. Very uniform in size and shape, even in poor growing seasons. Holds well on the vine and in after-season storage. Strong, high-yielding, determinate vine. L77D, N7G

Fireball: 65 days. Medium-sized, flattened globe-shaped, rich red fruit; 2 1/2 to 3 inches in diameter; weight 4 to 5 ounces; resists cracking. Compact, determinate vine; produces a concentrated set. Has sparse foliage, should be caged to protect fruit from sunscald. Widely grown for the early basket trade. B1M, B3M, C20M, C61, 184, K27M

Flora-Dade: 75 days. Medium-sized, round to deep globe-shaped fruit; weight about 7 ounces; smooth and firm; jointless. Very productive, determinate vine; well protected by heavy foliage. Well adapted to humid southern areas. Developed by the University of Florida for calcareous soils and adverse conditions. A1, A87M, B75M, D33, F63, G13M, G27M, I67M, J84, K10, K50, M0, M1P

German Red Strawberry: 80 days. Distinctive heirloom from Germany. Resembles a strawberry in color and shape. Medium-sized, fairly uniform fruits; 3 1/2 inches long and weighing about 10 ounces. Very solid and meaty with few seeds and little juice. Delicious, complex flavor. Excellent in salads and sandwiches. Indeterminate. F73D, F80, H15P, K71, L7M, M1P

Glacier: 54 days. Small, round fruit; 2 1/2 to 3 inches in diameter; weight 2 to 3 ounces; of excellent sweet flavor; resists cracking. Spreading, determinate vine, to 18 inches tall; produces up to 100 fruit, with 60 not uncommon. Does well in cool northern areas. Also successful as a winter crop in southern Florida. Heirloom from Sweden. C97, D68, E24, F46, I39M, J25M, K17M, M0, M1P

Glamour: 75 days. Medium-sized, flattened globe-shaped fruit; weight 6 to 8 ounces; exterior bright red, smooth; interior thick-walled, meaty, mild but flavorful; resistant to cracking. High yielding, indeterminate vine. Standard main crop cultivar used by bedding plant growers. C85M, E53M, E91G, F13, G79, H61, I64, I67M, K49M, K50, K73, L42, M0, M1P

Harbinger: 60 days. Medium-small, bright red fruit; 2 to 2 1/2 inches in diameter; weight 3 ounces; of very good flavor; thin skin, prone to cracking. Ripens reliably off the plant after cold summers in northern areas. Indeterminate vine; highly productive over a long season. Does well under glass. Traditional English cultivar. Introduced about 1910. B49, R32, R47, S55, S61, S75M

Homestead: (Homestead 24) 80 days. Medium-large, deep globular fruit; weight about 8 ounces; exterior smooth, dark red; interior firm, meaty, flavorful. Strong, semi-determinate vine, requires no staking. Large leaves provide good fruit protection. Resistant to fusarium wilt. Adapted to areas with hot temperatures and high humidity. A87M, C20M, D12, E5T, G1M, G57M, G68, K71, L7M, L10, M1P, N16

Imur Prior Beta: (IPB) 60 days. Small to medium-sized, globe-shaped, dark red fruit; 1 1/2 to 2 inches in diameter; weight 2 to 4 ounces; somewhat tough skin; firm, juicy flesh, very flavorful. Large, indeterminate vine; very prolific. Has potato-like foliage. Popular in short-season areas. Released by Washington State University. A2, B78, F82, H15P, K20M, K49M, K95M, PIG

Jersey Devil: Long, tapered, pointed fruit, reminiscent of a very large frying pepper; of rich red color; weight 2 to 6 ounces. Interior very sweet, but with a good full tomato flavor, has few seeds. The very firm, immature green fruit makes an excellent pickle; Very large, indeterminate vine; requires staking or caging. Good for home gardens. A2

Jung's Improved Wayahead: 63 days. One of the earliest maturing tomatoes that also has good size. Smooth, slightly flattened, bright scarlet fruit; 3 to 3 1/2 inches in diameter, 1 1/2 to 2 inches deep; weight 4 to 6 ounces. Firm interior, with a full tomato flavor. Determinate vine; highly productive over a long harvest season. G16

Landry's Russian: 70 days. Canadian heirloom, brought to the prairie provinces many years ago by Russian immigrants. Uniform, medium-sized, round fruit; 2 1/2 to 3 inches in diameter; weight 1/2 pound. Deliciously sweet, deep red flesh. Indeterminate, consistently productive vine. C92, J25M

Long Keeper:<sup>11</sup> (Burpee's Long Keeper) 78 days. Unique storage tomato. Unblemished ripe or partially ripe fruit, when harvested before frost and stored properly, will stay fresh for 6 to 12 weeks or more without a change in flavor or texture. The skin is light, golden orange-red when ripe. Medium red flesh. Firm fruits hold their shape when canned whole. B73M, B75, C44, C85M, DI 1M, F70, G16, G71, G79, J9M, L7M, L79, L89, M0, M1P, etc.

Manalucie: 85 days. Medium-large, smooth fruit; weight 6 to 8 ounces; flesh firm, meaty, of very good quality; relatively resistant to cracking. Very slow ripening, must be allowed to fully mature before harvesting. Vigorous, indeterminate vine; productive over a long period; provides good foliage cover for protection against sunscald. Has multiple disease resistance. B75, B75{PL}, F80, M0, M1P

Marglobe: 75 days. Medium-large, globe-shaped, very uniform fruit; weight 8 to 10 ounces; thick-walled; solid sweet flesh, with a full tomato flavor. Vigorous, determinate, prolific vine; somewhat

resistant to fusarium wilt. Long-time home garden favorite. A25, E53M, G68, G79, H49, I64, K71, Z70, L13M, MO, M1P, N16, S17

Marion: 75 days. Medium to large, deep globe-shaped fruit; weight about 8 ounces; exterior smooth, dark red; interior firm, of good flavor. For both home gardens and fresh market. High yielding, indeterminate vine; well protected by heavy foliage; disease resistant. Adapted to the Middle and Upper South. G1M, L4, MO, M1P

Marmande: (Marmande VF) 65 days. Medium-large, irregularly shaped, slightly ribbed, scarlet red fruit; weight 6 to 8 ounces; solid, meaty, mild flesh, with excellent full tomato flavor. Vigorous, prolific, semi-determinate vine; sets fruit early and under cool conditions; resists wilt. Developed in France by the Vilmorin Company. Very popular in Europe. B75, B75{PL}, C85M, D12, E5T, E63D, G68, K49M, MO, M1P, Q11M, S55

Moneymaker: 75 days. Medium-sized, globular fruit; weight 4 to 6 ounces; exterior intense red when ripe, smooth; quality very high. Prolific, indeterminate vine. Sets well in any weather; especially adapted to humid tropical and sub-tropical areas. Also does well in cool greenhouses. B49, E5T, F92, K49M, L89C, M1P, M27, N84, O53M, P59M, Q18, S75M, TIM

Nepal: 78 days. Medium to large, globe-shaped, bright red fruit; weight 10 to 12 ounces, occasionally over 1 pound; very meaty and flavorful; resists cracking. Retains its excellent "old-fashioned" flavor during cold weather conditions. Vigorous, indeterminate vine; very prolific. Originated in the Himalayas. A2, C95, F24M, F44, K20M, K23{PL}, L11, L88J, L94, MO, M27, R47

New Yorker: 63 days. Medium-sized, roundish fruit; weight 4 to 6 1/2 ounces; exterior smooth, bright scarlet; interior solid, meaty, of fine flavor. Compact, determinate vine; produces fruit in a concentrated set; resists verticillium wilt. Does well in cool northern or short season areas. C69, F13, F46, F63, K10, L42, MO, M1P

Oregon Spring: 60 days. Adapted to areas with cool summer nights, setting parthenocarpic fruit when temperatures fall below 50°F. When night temperatures increase, fruit will be seeded. Medium-sized fruit; weight 6 to 8 ounces; of excellent quality and flavor. Determinate vine; tolerant to fusarium and verticillium wilts. Developed by Dr. James R. Baggett at Oregon State University. A2, A21, B49, D68, D82, E24, F82, G6, H95, I39, J9M, K49T, K49Z, K66, L89, M1P, M27, M32, etc.

Pearson: 80 days. Medium-sized, deep globe-shaped fruit; 2 1/2 to 3 inches in diameter. Has a somewhat acid, "old-fashioned" tomato flavor. May have green shoulders, even when ripe. Very good for slicing; also used for canning. Medium-large, determinate plant; tolerant to semi-arid growing conditions. Has good foliage cover that protects the fruit from sunscald. A2, B75M, D1T, G57M, K5M, M32, S17

Peron: (Peron Sprayless) 68 days. Medium-large, deep globe-shaped, bright scarlet fruit; 3 to 3 1/2 inches in diameter; weight 8 ounces; solid flesh, of very good flavor. Strong, indeterminate vine; reliably productive; highly disease resistant. Introduced from South America in 1951 by Gleckler's Seedsmen. E5T, E97, K23{PL}, K49M, L7M, L11, L13M, L77D, L88J, MO, M1P

Porter: 78 days. Small, round-oval, pinkish-red fruit; weight 1 ounce; solid, meaty flesh, of very good flavor; resists cracking. Large, open, indeterminate vine; produces heavily until frost; grows well in poor soil. Has fair foliage color. Exceptionally heat and drought resistant. Developed by V.O. Porter in 1927 for home gardens and local markets in the Southwest. A2, E5T, F46, G57M, K20M, MO, M1P, N16

Pusa Ruby: 70 days. Medium-sized, uniformly deep-red fruit; 2 inches in diameter; keeps well. Vigorous, indeterminate, prolific vine; very disease resistant. Can be grown throughout the year in warm climates. Very popular with home and market growers in India. A2, J73, K20M, M1P, N91, Q18, Q45M, R0, R50, S36

Rodade: 77 days. Released by South Africa in 1982, as the first cultivar resistant to bacterial wilt, a serious disease in warm subtropical areas. Also resistant to fusarium and verticillium. Very attractive, smooth, firm fruit; ripens evenly. Similar to Flora-Dade, but produces a higher percentage of first grade fruit and is less prone to catfacing and cracking. MO

Rutgers: 75 days. Medium-large, bright red fruit; weight 8 to 10 ounces; ripens uniformly. Has a rich, mellow, full-bodied flavor. Quality very good for slicing. Vigorous, indeterminate vine; adapted to a wide range of growing conditions. An excellent all-purpose cultivar. Long-time home garden favorite. Also good for local markets and shipping. B6, B38, B49, C44, D76, F80, G79, H33M, H61, K71, K73, L10, MO, M1P, N16

San Francisco Fog: Legendary variety from the San Francisco Bay region. Particularly well-adapted to cool, wet, coastal California growing conditions. Medium-sized, globe-shaped fruits; moderately firm skins; weight 3 ounces. Excellent, full flavor, fairly well balanced. Spreading, indeterminate vine. B49, C95, F73D, K17M, K49M, M0

Santiam: 58 days. Medium-sized fruit; weight 4 to 5 ounces; thick-skinned; mild, slightly acid, sweet and juicy, of good quality. Vigorous, determinate vine, to 30 inches tall; high yielding; sets parthenocarpic fruit. Resistant to fusarium and verticillium wilts. Sister strain to Oregon Spring. Matures 1 to 2 weeks earlier, depending on the weather. A2, C95, J9M, L89C, N52

Scarlet Topper: (Pritchard, Pritchard's Scarlet Topper) 75 days. Medium-large, globe-shaped, brilliant red fruit; 3 to 3 1/2 inches in diameter; thick-walled; flesh meaty, solid, with a small seed core, flavor very good; resists cracking. Strong, compact, determinate vine; very productive; resistant to fusarium wilt. All America Selections winner in 1933. Introduced by the originator of Marglobe and Break o' Day. K49M, M1P, RUM

Scotia: 60 days. Medium-sized, deep globe-shaped, deep-red fruit; weight 4 ounces; slightly green-shouldered; firm flesh, of good flavor. Determinate vine; reliably productive; sets well in cool weather. Popular home garden cultivar in maritime Canada, especially for making green tomato relish. C85M, E38, FI, K20M, K95M, L42, M0, M49

Siberia:<sup>4</sup> (Siberian) 50 days. An experimental cultivar smuggled out of Siberia into Canada by a Russian traveler. Will set fruit at 38°F. Small to medium-sized fruit; weight 3 to 4 ounces; of fair flavor. Compact, determinate vine; often produces 40 to 60 fruit. Recommended for cold, short season areas where it is difficult to grow tomatoes. Also successful as a winter crop in southern Florida. A2, C95, C97, D11M, E5T, E24, F46, F73D, F70, F82, H42, K49Z, M0, M1P, M46, etc.

St. Pierre: Slicing tomato with an excellent subacid flavor and tender, thin skin. Large, smooth, globose fruit about 5 inches in diameter; thick, juicy flesh. Produces prolifically under adverse conditions of cool weather, little water and no weeding. Indeterminate. An old French cultivar. Very popular in parts of Europe. C95, E63D, J20, J73, M1P, N84, S77, S55, S95M

Stakeless:<sup>6</sup> 78 days. Unique "stakeless" or thick-stemmed tomato. Thick, upright main stem; 1 inch in diameter, 18 to 24 inches tall when fully mature; does not require staking. Medium-large, round fruit; 3 inches in diameter; weight 6 to 8 ounces; solid, meaty, deep red flesh. Dense, potato-like foliage prevents sunscald. Developed at the University of Delaware. B75M, H57M, M0

Stupice:<sup>8</sup> 50 days. Small to medium-sized, flattened, glossy red fruit; 2 inches in diameter; weight 2 to 4 ounces; sweet, juicy, very flavorful flesh. Compact, productive vine; widely adapted. Dwarf indeterminate in habit. Has potato-like foliage. Does well in short-season areas. Introduced by Abundant Life Seed Foundation in 1977. Originally from the former Czechoslovakia. A2, E24, E75{PL}, F44, I18M{PL}, J9M, K20M, K23{PL}, K49T, L7M, L89, M0, M27, PIG, R47, etc.

Sub-Arctic Maxi:<sup>4</sup> 52 days. The largest and most flavorful of the Sub-Arctic series. Small, round to oblate deep red fruit; 2 1/2 inches in diameter; weight 2 1/2 to 3 ounces. Compact, determinate vine; bears early, heavy yields on vigorous lateral branches after the main stem aborts. Has excellent cold set ability. Developed at the Beaverlodge Experiment Station, Alberta, Canada. E38, J39, L42, M1P

Sub-Arctic Plenty:<sup>4</sup> 50 days. Small, roundish fruit; 1 1/2 to 2 inches in diameter; weight 1 1/2 to 2 ounces; of good flavor. Compact, determinate, upright vine. Has a unique "birds nest" growth habit in which the main stem aborts, followed by fast-growing lateral branches that produce concentrated clusters at the center of the plant. Will set fruit during cold weather conditions. A2, A16, D76, E97, E97{PL}, F44, F80, J39

Super Marmande: 72 days. Medium-large, slightly flattened, somewhat irregular fruit; 3 to 4 inches in diameter; weight 6 to 8 ounces; very meaty and extremely flavorful. Excellent for slicing; sometimes used for stuffing. Compact, semi-determinate vine. Suitable for growing out of doors or in cool greenhouses. A2, B49, DIT, K20M, L77D, L91M, R32, S95M

The Amateur:<sup>5</sup> Small to medium-sized fruit; 2 to 2 1/2 inches in diameter; of sweet flavor and excellent quality; ripens early. Compact, determinate vine; grows only 15 inches tall, requires no support; reliably productive, even during adverse conditions. Ideal for growing under cloches or poly tunnels. Very popular in England. B49, N84, O53M, S55, S61

Thessaloniki: 68 days. Smooth, uniform, globe-shaped fruit with perfect blossom ends; 2 1/2 to 3 inches in diameter; weight 4 to 6 ounces. Firm, juicy interiors, mild, of very good flavor. Resistant to cracking and sunscald. Very good keeper. Indeterminate vine; highly disease resistant. Developed in Greece. A2, K10, K49T, MO, M1P

Trip-L-Crop:<sup>7</sup> 85 days. Large, bright red fruit; 4 to 5 inches in diameter; weight up to 1 pound; solid, meaty, mild-flavored flesh, contains very few seeds. Excellent for slicing; also good for canning. Vigorous, indeterminate vine, grows 10 to 15 feet tall when trellised; produces as many as 2 to 3 bushels of fruit. B73M, B73M{PL}, C69, D11M, D56M, F70, F73D, K71, L7M, MO, M1P, M65

Tropic:<sup>9</sup> 80 days. Medium-large, flattened globe-shaped fruit; weight 8 to 10 ounces; green-shouldered; solid, meaty flesh. Strong, high yielding, indeterminate vine; tolerant to heat and high humidity. Has good foliage cover and multiple disease resistance. Adapted to greenhouse culture and outdoor production in the Deep South. B8M, C97, DIT, G27M, K20M, L7M, MO, M1P, PIG

Urbana: (Giant Everbearing) 75 days. Large, smooth, bright glossy red fruit; weight 4 to 8 ounces; ripens uniformly, resists cracking. Solid flesh with few seeds, of very fine flavor. Strong, indeterminate, high yielding vine; adapted to a wide range of soils and climates. Matures early and continues to bear throughout the season. All America Selections winner in 1951. G57M

Valiant: 67 days. Large, globe-shaped fruit; weight 12 to 15 ounces; exterior very smooth, dark crimson red; interior very solid and meaty, free from acidity, of very good flavor. Ideal for slicing; also fine for juice and canning. High yielding, indeterminate vine; bears fruit in clusters of 3 to 5; sets well even in hot, dry climates. C69, K20M

Vendor:<sup>9</sup> 75 days. Standard non-hybrid greenhouse tomato. Uniform ripening, medium-large, deep globe-shaped fruit; weight 6 to 8 ounces. Interior ripening genes make Vendor better tasting in the green-ripe stage than European hybrids. Semi-compact plant; tolerant to leaf mold and tobacco mosaic virus. Also used for hydroponic and outdoor culture. D27, E38, F44, L42

Victor: 70 days. Medium-sized, smooth, deep oblate fruit; 2 1/2 to 3 inches in diameter; weight 4 1/2 ounces; firm flesh, of very good flavor and quality. Compact, determinate, highly prolific vine. Good

home garden cultivar for cool northern areas. All America Selections winner in 1941. J39

Walter: (Villemaire) 75 days. Medium-sized, deep globe-shaped fruit with good internal color; weight 7 ounces; resists cracking. Determinate vine; adapted to both short stake and field culture. Produces high quality fruit even in warm, humid areas. Has multiple disease resistance. Developed at the Bradenton Experiment Station, Bradenton, Florida. C20M, F63, G1M, G27M, L7M, M0, M1P, R47

#### YELLOW/ORANGE-SKINNED

##### *Hybrid*

Golden Boy: 80 days. Large, globe-shaped, deep golden-orange fruit; weight 8 ounces; flesh solid, meaty, low in acid, very mild flavored, with few seeds; quality excellent. Strong, vigorous, indeterminate vine; widely adapted; bears fruit in large clusters over an extended season. D68, E9IG, G16, G68, H61, H85M, H95, I91, J20, K71, M0, M1P, M46, M95M, N16, etc.

Husky Gold:<sup>8</sup> 70 days. Dwarf indeterminate type. Also known as indeterminate short intemode. Combines the unlimited production potential of indeterminate types with controlled growth. Deep-golden, 8 ounce fruits, mild and sweet. Grows 4 to 4 1/2 feet tall. Attractive, dark-green rugose foliage. Strong, thick central stems. All America Selections Winner in 1993. B73M, B75, D74B, E9IG, F13, G27M, G71, G82, H57M, H61, H95, I39, K10, L91M, M0, M1P, M29, M46, etc.

Lemon Boy: 72 days. Medium-sized, deep globe-shaped, lemon yellow fruit; weight 6 to 8 ounces; mild, flavorful, lemon yellow flesh. Vigorous, high yielding, indeterminate vine; widely adapted; resistant to fusarium and verticillium wilts and nematodes. Attractive specialty market item. B75, D76, E75{PL}, E97, G79, G82, H42, I39, I91, J97M, L42, M0, M1P

Mandarin Cross: 75 days. Medium to large, semi globe-shaped fruit; weight about 9 ounces; exterior golden-orange, smooth, attractive; interior thick-walled, solid, very meaty, low in acid, mild but flavorful. Vigorous, indeterminate vine; very productive, setting fruit in clusters of 9 or 10. Resistant to heat. A2, I18M, I18M{PL}, I77, K20M, K66, M0, S63M

##### *Open-Pollinated*

Burgess Colossal Golden: Very large, deep oblate, golden-orange fruit; weight 14 ounces, occasionally up to 2 1/2 pounds; thick, meaty, very mild flesh. Large, spreading, well-branched, indeterminate vine. Has heavy foliage cover that gives adequate fruit protection. M0

Caro Rich:<sup>10</sup> 80 days. An improved version of Caro Red, offering higher yields and better flavor. Contains 10 times more provitamin A than other tomatoes. Medium-sized, slightly flattened, deep golden orange fruit; weight 4 to 6 ounces; low in acid, of good sweet flavor. High yielding, determinate vine. Ripens too late for far northern areas. B38, B49, C26{PL}, G44M, I39, K23{PL}, K49M, K49T, K49Z, L3J, L13M, L88J, M0, M1P

Djena Lee's Golden Girl: 80 days. Family heirloom of Djena Lee since the early 1920's. Won first prize at the Chicago Fair 10 years in a row. Medium-sized, golden-orange fruit; 2 to 2 1/2 inches in diameter; weight 7 to 8 ounces; of excellent sweet but tangy flavor. Indeterminate vine. B49, K23, K23{PL}, L7M, M27

Golden Delight: 60 days. Medium-sized, flattened globe-shaped, golden yellow fruit; 2 to 3 inches in diameter; weight 3 to 4 ounces. Very low in acid, but rich in flavor. Compact, determinate, high yielding vine. Developed at South Dakota State University. A2, K20M, LI 1, L89C

Golden Ponderosa: (Yellow Ponderosa) 85 days. Yellow beef-steak type. Large, smooth, flattened globe-shaped, golden-yellow fruit; 4 inches in diameter; weight 12 to 16 ounces. Solid, meaty,

mild-flavored flesh. Vigorous, indeterminate vine D29P, F73D, G57M, K20M, K71, M1P

Golden Queen: 80 days. Smooth, slightly flattened, bright yellow fruit; 2 to 3 inches in diameter; weight 4 to 6 ounces; low in acid, of excellent mild flavor. Prolific, indeterminate vine. One of the few yellow heirlooms still available. The most popular large-fruited yellow cultivar until Jubilee was released. Introduced in 1882. C26{PL}, F24G, F24M, I67M, J20, MO

Golden Sunrise: 78 days. Round, medium-small, golden yellow fruit; smooth, thin skin; excellent mild, sweet flavor with spicy overtones. Very prolific, indeterminate vine. Adapted to greenhouse or outdoor culture. Popular English cultivar, introduced in 1896. B49, F46, N84, O53M, PIG, R32, S17, S55

Golden Treasure:<sup>11</sup> World's first golden-yellow storage tomato. Flattened-round fruit, 2 1/2 to 4 ounces in weight. Unusually crisp, golden flesh with an excellent strongly acid flavor. Green fruit picked before frost will ripen in 1 1/2 to 2 months and will keep in storage another 1 1/2 to 2 months. Vigorous, indeterminate vine. Bred for home gardeners by Tim Peters. J9M, L89

Goldie: 90 days, Very large, slightly flattened, golden-yellow fruit with a smooth blossom end; 4 to 4 1/2 inches in diameter; weight 12 to 16 ounces; low in acid, of excellent mild flavor. Vigorous, highly productive, indeterminate vine. Attractive heirloom, dating back to the early 1800's. Possibly a yellow version of Giant Belgium. B38, D68, F73D, K20M, L77D, MO, M1P

Hugh's: 89 days, Very large, beefsteak-type fruit, 4 to 6 inches in diameter; weight 2 pounds or more; skin thin, very light yellow; interior meaty, exceedingly sweet and juicy, with very few seeds. Large, indeterminate vine, requires room and heavy stakes. Heirloom from Madison County, Indiana. Favorite of the Seed Savers Exchange. F73D, K20M, K47, L7M, MO

Ida Gold: 55 days. Medium-small, round, bright orange fruit; 1 1/2 to 2 1/2 inches in diameter; weight 2 ounces; flavorful, low in acid. Compact, determinate vine; highly productive over a long season. Developed at the University of Idaho for cold northern areas. D68, E24, F44, K20M, K49M, L77D, O89

Jubilee: (Golden Jubilee, Burpee's Orange Jubilee) 75 days. Medium-sized, globular, bright golden-orange fruit; 2 1/2 to 3 1/2 inches in diameter; weight 6 to 7 ounces; thick-walled. Solid, meaty flesh, mild and flavorful. Vigorous, high yielding, indeterminate vine. All America Selections winner in 1943. A25, C85M, E38, E53M, G79, H33M, MO, M1P, N16, R47

Nebraska Wedding: 90-100 days. Great Plains heirloom being offered commercially for the first time in over 50 years. Striking, globe-shaped, deep orange fruits; 3 inches in diameter and weighing about 8 to 10 ounces. Very meaty and flavorful with a good sugar to acid balance. Vigorous, determinate vine, sets fruit in clusters of 4 or 5. A2, D26D, E5T, 177, K10, K20M, M0, M1P, Q34

Orange Queen: 65 days. Medium-sized, slightly flattened, bright orange fruit with a small blossom scar; weight 4 to 6 ounces; resists cracking. Solid, very meaty flesh, low in acid, with few seeds, of mild flavor. Determinate vine with heavy foliage cover. Does well in northern areas. J9M, J39, K49T, L42, M0

Persimmon: 80 days, Very large, deep globe-shaped, golden-orange fruit; 4 to 4 1/2 inches in diameter; weight 16 to 24 ounces, some up to 2 pounds. Solid, meaty flesh, with few seeds, has a strong, distinctive flavor. Susceptible to blossom end rot. Excellent for slicing. Large, indeterminate vine; moderately productive. Heirloom. A2, C53, C95, E5T, F13, F73D, K10, K20M, K49M, L7M, L88J, L89, L94, M0, M1P, etc.

Sunray: (Golden Sunray) 80 days. Medium-large, globular, bright golden yellow fruit; 2 1/2 to 3 inches in diameter; weight 7 ounces; thick-walled; resists cracking. Firm, meaty flesh, of excellent mild flavor. Vigorous, indeterminate vine; widely adapted; resists fusarium wilt. For home gardens and local markets. G87, L77D, M0,

M1P, PIG

Taxi: 64 days. Medium-sized, round to slightly oblate, bright yellow fruit with a small stem scar; smooth and blemish free. Firm, meaty, sweet, flavorful interiors. Compact, determinate vine; does not require staking. Ideal for the specialty market trade. A2, C95, G6, G53M, J39, K17M, K23{PL}, K49M, L77D, L89

Valencia: Round, smooth, bright orange fruit; weight 8 to 10 ounces. Firm, meaty interior, with few seeds, has a full tomato flavor. Vigorous, indeterminate vine; requires staking. Developed by Johnny's Selected Seeds from a Maine family heirloom. F46, L11, M0

Verna Orange: 84 days, Very large, orange, heart-shaped fruit of superb flavor. Among the meatiest and most seedless of tomatoes. Resembles Yellow Oxheart except for the color, slightly ribbed shape, and tendency of seed cavities to be semi-hollow. Indeterminate vine. Indiana heirloom. F73D, L7M, M0, O89

Winter Gold:<sup>11</sup> Unique golden longkeeping tomato. Large, variable well-colored fruits, 4 to 8 ounces in weight. Gold inside and out. Tangy to somewhat tart flavor. Stores for 2 to 3 months, often longer than the well-known Long Keeper. Productive, determinate vines. Developed by Peters Seed & Research. J9M

Yellow Oxheart: 79 days, Very large, bright yellow, heart-shaped fruit; often weighing close to a pound. Interior meaty, small-cored, sweet; flavor rich, full, distinctive, very well-balanced. Suitable for slicing, salads or processing. Has less than average drought and disease tolerance. Family heirloom that originated in Willis, Virginia about 1915. K49M, L7M, MO, M1P

Yellow Perfection: 70 days. Medium-small, round, deep golden-yellow fruit; 2 inches in diameter; of excellent mild flavor. Ripens well in cool or hot weather. Vigorous, indeterminate vine; highly prolific, sets fruit in clusters of 4 to 6. Has potato-like foliage. Very popular in England. Introduced by Unwin Seedsmen. A2, C26{PL}, F46, K23, K23{PL}, K49T, K95M, L88J, M32

## OTHERS

Aunt Ruby's German Green: 80 days. Unusual, green-ripening beefsteak. Large, flat-round fruits, larger than Evergreen; pale green with a slight yellowish hue when fully ripe; weight 12 to 16 ounces. Soft, meaty interior with an excellent, sweet yet spicy flavor. Large, indeterminate vine. Popular with seed savers. Heirloom originally from Ruby Arnold of Greeneville, Tennessee. D29P, F73D, G6, K47, K57{PL}, M0

Big Rainbow: 102 days. Bicolored beefsteak type. Large to very large fruit, average weight 11/2 pounds, some 2 to 2 1/2 pounds. Green near the shoulders, yellow-orange at the midsection, pink to bright red towards the blossom end; when fully ripe gold on the stem end and red on the blossom end. Resists cracking. Indeterminate vine; resistant to alternaria leaf spot; continues to bear until frost. Heirloom from Polk County, Minnesota. B49, B75, B75{PL}, C53, F73D, G53M, J14{PL}, K23, K23{PL}, L7M, L11, M0, M1P, O89, Q34, etc.

Black Krim: (Black Crimean) 80-90 days. Large, reddish-brown fruits with heavy green shoulders; weight 10 to 12 ounces; prone to cracking. Deep, reddish-green interiors, very richly flavored with a hint of saltiness. Develops a darker brown color in hot climates. Indeterminate, high yielding vine. Popular heirloom from the Black Sea region of Russia. B49, C53, D56M, D68, E5T, E97, I18M{PL}, 177, K49M, K71, MO, M1P, M46, M65, O89, PIG, Q34, etc.

Black Prince: 70-80 days. Small to medium, smooth, oval-pointed fruits, about 2 1/2 inches in diameter; deep garnet-brown, shading to dark-brown or "blackish" brown on the shoulders. Dark-red to translucent chestnut-brown interiors; tender, very juicy; excellent, rich, fruity flavor. Indeterminate. Local heirloom from Irkutsk, Siberia. A2, C26{PL}, D68, E75{PL}, 139, 177, K10, K20M, L7M, MO, M1P, N24M, Q34

**Black Sea Man:** 89 days. Unusual, determinate potato-leaf tomato from Russia. Round, slightly flattened fruits, 3 to 4 inches in diameter; weight 5 ounces; mahogany-brown with blackish shoulders; blackish-red pulp with a delicious flavor. Excellent for slicing and salads. Grows well in Moscow suburbs, but does not develop blackish color unless weather is hot and sunny. F73D, K47

**Cherokee Purple:** 70-75 days. Medium-large, flattened globe-shaped fruit; dusky pink with darker pinkish-purple shoulders; weight 10 to 12 ounces; thin skin. Soft, purplish-pink interiors with brownish overtones; sweet, rich, very pleasing flavor. Indeterminate, very productive vine. Reportedly grown by the Cherokee people more than 100 years ago. B49, C53, E75{PL}, F24D, F13, F15{PR}, G6, H49, I39, K10, K20M, K23{PL}, K49M, K71, L7M, M0, M1P, Q34, etc.

**Elberta Girl:** Unique tomato, distinct in both fruit and plant characteristics. Small, 2 1/2 to 3 ounce fruit, resembles Tigerella but with more pronounced striping. Good acidic tomato flavor. Short vines with half the yields of Tigeiella. Very furry, white foliage reminiscent of a Dusty Miller. Developed by Tom Wagner. J9M, K20M, M1P

**Evergreen:** (Emerald Evergreen) 72 days. Medium to large fruit, golden amber green when ripe. Solid, meaty, emerald green flesh, of sweet mild flavor and very good quality. Excellent for slicing, frying, pickling or preserves. Vigorous, indeterminate vine. C53, D26D, F73D, H49, I77, K10, K23, K23{PL}, K49M, M0, M1P, M65, Q34

**Forever Green:** Roundish, medium-sized fruit, 6 to 8 ounces in weight. Will store for months and still remain firm and green. Suitable for making fried green tomatoes in the middle of winter. Vigorous, prolific, determinate vines. Developed by Tim Peters of Peters Seed & Research. J9M

**Garden Peach:**<sup>11</sup> 100 days. Excellent storage tomato, will keep 5 to 6 months if harvested before frost. Medium-sized, deep globe-shaped fruit; 2 1/2 to 3 inches in diameter. Yellow-orange skin, blushed with pale-pink, slightly fuzzy, thick. Red flesh, of mild flavor that improves with storage. Ripens slwly. Indeterminate vine; produces abundant clusters of fruit. D68, E5T, I39, K20M, K49M, L77D, L89, M0, Q34

**Georgia Streak:** 91 days. Bicolored beefsteak type similar to Old German. Eye-appealing yellow and red inside and out. Predominantly yellow with a red blush and red core on the blossom end. Especially attractive in salads. Indeterminate vine. Heirloom from Georgia. E5T, J14{PL}, L7M, M0, M1P

**Great White:** 80-85 days. Heirloom white beefsteak type. Large, smooth, pale-yellow to creamy-white fruits; weight 14 to 16 ounces; resistant to cracking. Sweet, juicy interiors, low in acidity and with few seeds. Indeterminate vine, tolerant of drought. Vigorous, heavy foliage that protects fruits. Rated highly for size, appearance and quality. D26D, F13, F63, F73D, H49, I18M, I18M{PL}, I77, J39, K10, K46T, M0, M1P, Q34

**Green Zebra:** 80 days. Medium-small, uniform, round fruit; greenish-amber, striped with yellow and deep-green when mature; 2 inches in diameter. Green flesh, with a mild but pleasing flavor. Good for relishes, jams and preserves, as well as eating out of hand or in salads. Indeterminate vine; produces heavily until frost. Very striking. Developed by Tom Wagner. A2, C53, D68, E5T, I18M{PL}, I77, K10, K17M, K20M, K23, K23{PL}, K66, L7M, L94, M0, M1P, 089, etc.

**Hillbilly:** 80-85 days. Unusual bicolor beefsteak type. Very large fruits, often weighing 1 to 2 pounds; yellow-orange, attractively streaked and mottled with red and pink. Sweet, mild, fruity flavor. Indeterminate growth habit. Ancient heirloom from the hills of West Virginia. B6, D26D, D56M, E5T, F63, F73D, G82, H49, K10, K46T, K71, M0, M1P, M65

**Mammoth German Gold:** 95 days. Very large, lobed fruit; golden-yellow, blotched with red at the blossom end; weight 1 pound or more; susceptible to cracking. Of very fine mild flavor. Resembles fresh peaches when sliced. Vigorous, indeterminate vine; requires staking. A2, F24G, F24M, F73D, K20M, M0

**Marvel Striped:** 90 days. Large, irregular, heart-shaped fruit with very thin skin; flaming orange and yellow, splashed and striped with rosy red; weight 1 pound. Very juicy. Has an intensely sweet flavor. Striking when sliced. Prolific, indeterminate vine that requires staking. Heirloom originally from Oaxaca, Mexico. A2, I18M, I18M{PL}, I77, K23, K23{PL}, K49T

**Old German:** 95 days. Large, very attractive fruit; yellow, with a red center visible on the surface and throughout the core; often weighs over a pound; of outstanding flavor. Excellent for slicing. Indeterminate vine; not a heavy producer; does not tolerate drought. Mennonite family heirloom from Virginia. Introduced by Southern Exposure Seed Exchange in 1985. D56M, F13, F73D, H49, K10, K71, L7M, M0, M1P, M46, M65

**Pineapple:** 85-95 days. Unique red and yellow-orange striped tomato that can reach 2 pounds or more. Somewhat irregular shape. Has distinctive stripes that color the meaty flesh throughout as well. Sweet and juicy. Very attractive when sliced. Excellent in salads. Indeterminate vine. Favorite of the Seed Savers Exchange. B38, D26D, D56M, E5T, F63, F73D, I39, K46T, K47, K71, M0, M1P, M65, Q34

**Pink Grapefruit:** 75 days. Medium-sized, flattened globe-shaped fruit, 2 1/2 to 3 1/2 inches in diameter; weight 4 to 6 ounces. Yellow skin, pink at the blossom end. Blushing pink, firm, juicy flesh, low in acid, of delicious mild flavor. Productive, indeterminate vine. Heirloom that was reportedly grown during the Victorian era. F24G, F73D, M0

**Prudence Purple:** (Pruden's Purple) 70 days. Large, flattened, distinctly ribbed, pinkish-purple fruit; 4 inches in diameter, 3 inches deep; weight 1 pound or more; resists cracking. Firm, meaty flesh, mild but flavorful, contains very few seeds. Vigorous, prolific, indeterminate vine with potato-like foliage. Heirloom. A2, B75, B75{PL}, C95, D29P, E5T, G6, I18M, J20, K10, K23{PL}, L88J, M0, M1P, M46, Q34, etc.

**Purple Calabash:** 75 days. Medium-sized, oblate, highly lobed, dark pinkish-purple fruit; 2 1/2 to 3 1/2 inches in diameter; weight 5 to 6 ounces; thin-skinned. Sweet, juicy, seedy flesh, of fair quality for fresh use, excellent for making vinegar. Susceptible to cracking; stores poorly. Vigorous, productive, indeterminate vine. A2, B38, C95, D29P, F73D, F80, J39, K20M, K49M, L88J, M1P, 089, PIG

**Sun & Snow:** Medium-sized, beautifully-shaped, 4 to 8 ounce fruits. Iridescent yellow skin and snow-white flesh at early ripening stages. When fully ripe, both skin and flesh may be yellow. Prolific, indeterminate vines. Resistant to some common diseases. Developed by Peters Seed & Research. J9M

**Tigerella:** (Mr. Stripey) 56 days. Medium-small, globular fruit; reddish-orange, striped with golden-yellow when ripe; 1 1/2 to 2 inches in diameter; of very fine flavor. Indeterminate vine; highly productive over a long season. Has good disease resistance. Suitable for greenhouse or outdoor culture. A2, B49, E97, F13, F63, F80, J9M, K49M, K71, L91M, M0, M1P, 089, PIG, R32, S55, etc.

**White Beauty:** (Snowball) 80 days. Medium-large, ivory white fruit; weight 8 to 12 ounces. Rrm, meaty, paper-white flesh, extremely mild and sweet due to high sugar content, contains few seeds. Excellent for slicing. Very attractive in salads. Moderately productive, indeterminate vine. Possibly known as White Apple before 1920. B38, B73M, J9M, K20M, K23{PL}, K49M, K71, L7M, L77D, M0

**White Potato Leaf:** 80 days. Medium-sized, flat, ruffled fruit; creamy white, sometimes streaked with reddish-pink; 3 1/2 inches in diameter. Solid, meaty, aromatic flesh, with a distinct fruity flavor.

Makes excellent white tomato sauce. Productive, indeterminate vine with potato-like foliage. D68, K17M, K20M, M1P

White Princess: 100 days. White beefsteak type. Laige, flattened, ribbed, ivory-white fruit; 4 inches in diameter. Solid, meaty flesh, high in sugar, mild but flavorful, contains few seeds. Large, productive, indeterminate vine; requires staking. Has sparse foliage cover. F73D

White Wonder: 85 days. Medium-sized, flattened, irregular, creamy white fruit with a large blossom scar; 2 1/2 inches in diameter; weight 4 to 8 ounces; susceptible to cracking. Very firm, sweet, white flesh, has a high sugar content. Excellent for slicing. Prolific, indeterminate vine with heavy foliage cover. Attractive and unusual as well as useful. C53, D56M, G16, K17M, L7M, L91M, M1P, M65

#### CODES FOR SPECIAL TYPES

1. Drying
2. Stuffing
3. Ultra-Sweet
4. Cold-Set
5. Dwarf
6. Stakeless
7. Climbing
8. Dwarf Indeterminate
9. Greenhouse
10. High-Vitamin
11. Storage
12. Broiling

## TURNIP {S}

### BRASSICA RAPA RAPIFERA GROUP

#### ROOT TURNIPS

Grown primarily for their roots, they also produce edible leaves, however these are generally not of the same quality as those of the foliage turnips.

#### GREEN-TOPPED

Green Globe: Medium sized, globe-shaped root; very white below, green above ground; flesh pure-white, firm in texture. Becomes spongy and often decays in autumn or early winter. Tops make very good greens. Vigorous growing, hardy plant; produces very heavy crops. Introduced before 1865. BURR; S59M, S61

Green Top Norfolk: (De Norfolk a Collet Vert) Spherical roots, 6 or 7 inches in diameter and 5 inches deep when mature; green above ground, white below; tender white flesh, somewhat watery. A very late field turnip that succeeds best in a cool, moist climate. VILMORIN; Q11M, S17

Green Top Stone: Globe-shaped roots, green on top, white on the lower part; flesh firm and tender; flavor good, mild. Keeps well. Very hardy; suitable for September sowing and spring harvesting in mild-winter areas. S75M

#### PURPLE-TOPPED

##### *Hybrid*

Royal Crown: 45-55 days. Hybrid Purple Top White Globe type with excellent uniformity. Semi-globe shaped roots, 4 to 6 inches across and averaging 14 ounces in weight; deep-purple shoulders and white bottoms; tender white flesh, resists pithiness until late in the season. Thick, deep green, cut-leaf tops are excellent for greens. Ah C28, D26D, D76, E97, F65, G27M, G87, H61,191, J20, J84, K16M, K50, K73, L42, M29, etc.

##### *Open-Pollinated*

De Milan:<sup>2</sup> (De Milan Rouge) 35 days. Small to medium-sized, quite smooth, very flat root; pure white on the underground part, and

of a lively violet-red color on the upper part. Leaves entire, erect, very short, few in comparison with the size of the root. Very rapid-growing; well adapted for forcing, even in spring. Can be picked young as "baby" turnips. Known prior to 1885. VILMORIN; E63D, F73D, G68, K49M, K66, P59M, S17, S95M

De Nancy: (Rouge de Nancy) 42 days. An attractive form of the Early Flat Purple-Top turnip, remarkable for its earliness, the regularity of its shape, and the very deep color of the upper part of the root. Globe-shaped with deep-violet necks and creamy white bottoms. Creamy flesh, sweet and mild. Pick when young and tender. Known prior to 1885. P59M, S95M

Hinona:<sup>13</sup> (Aka-Na) 40 days. Long, tapered root; 8 to 10 inches in length, 3/4 to 1 inch wide; upper one-third above the soil surface colored purplish-red, underground part pure white. Leaves upright, lobed, reddish-purple. A favorite delicacy in Japan, both the leaves and roots are pickled to remove the harshness and served as a garnish, called *sakura zuke* for its cherry-blossom color. LARK-COM 1991, TANAKA; E83T

Milan Early Red Top:<sup>2</sup> A quick-forming white globe, topped with rosy red. Successfully grown as a baby vegetable, and a nice change from the standard purple topped turnips. Q34

Purple Top Milan: (Early Purple Top Milan) 35-40 days. Bulb very flat, of medium size, quite smooth, white with a bright purple top. Leaves few, short and of light color, growing very compact and making an exceedingly small and neat top. The pure white flesh is of choice quality, hard, solid and fine-grained. An excellent keeper; keeps all winter. Introduced prior to 1888. ANONYMOUS 1888; E83T, Q11M, S55, S61

Purple Top Strap Leaved: 50 days. Bulb medium-sized, very flat, smooth, produced almost entirely above ground; skin above clear bright purple, below pure white; flesh clear white, firm, solid, sugary, mild and well-flavored. Early; hardy; very prolific. Traditionally used for New Year's dinner, served lightly mashed with butter and cream. Introduced before 1865. BURR; C20M, G57M, /59M, K20M

Purple Top White Globe: (Early Purple Top White Globe) 55 days. Smooth, globular root; bright purplish-red above ground, white below; becoming 5 to 6 inches in diameter. Flesh white, firm, fine grained and tender when young. Tops medium, compact, cut-leaved; can be used for greens. Standard home, market garden, and shipping cultivar. Introduced prior to 1895. A16, A27M, B73M, B75M, B78, C44, E24, FI, G6, G16, H33M, H61, L7M, M49

Red Tankard:<sup>1</sup> (Herbst Rube, Navet Rose du Palatinat) Long, cylindrical root; 8 or 9 inches in length, 4 or 5 inches in diameter; weight about 3 pounds; skin purple or violet-tinted red above ground, white below; flesh firm, sugary, well-flavored. Early and productive. Generally considered a field turnip, but may be used for the table when young. BURR, VILMORIN; Q11M

Yeitch's Red Globe: Round, medium-sized roots; skin white with a red top, similar to a French Breakfast radish, smooth; pure white flesh with a good flavor. Matures quickly so it can be sown as late as July and still store well. Introduced about 1882. B49, R32, S61

#### RED-SKINNED

Ohno Scarlet:<sup>3</sup> 55 days. A pale magenta skin with bright white flesh makes Ohno Scarlet an interesting addition to home gardens and an excellent specialty market item. Cook like beets (without peeling). Delicious pickled, the skin tinting the flesh a pleasant rose color. Tall, dark green, red-veined tops are an extra attraction. K49M, L77D

Red Globe: 65 days. An unusual rosy-red turnip with crisp, tender white flesh. Smooth, globe-shaped roots averaging 3 inches across, reminiscent of a large radish. Excellent storage capabilities. EST, G57M

Scarlet Ball:<sup>3</sup> (Round Red) Smooth, semi-globe shaped root with deep scarlet-red skin and white flesh. Attractive red stems and red-veined foliage. When cooked unpeeled the entire turnip is suffused with pink. If sliced and held overnight in pickling brine it will be bright scarlet. An old time Asian favorite. C20M, C95, F73D, 139, N24M, Q34, Q45M, S70

### Hybrid

Just Right: 28-60 days. A fast-growing hybrid that will produce tender, glossy greens in 28 days, and a smooth, white, flattened, globe-shaped, 5 to 6 inch diameter root in 60 days. White, tender mild flesh. A dual-purpose turnip for fresh market use in late spring and fall. All America Selections winner in 1960. B73M, E97, G1M, G13M, G27M, H33M, H95, K10, M29, S63M

Market Express:<sup>2</sup> 38 days. Small, globe-shaped, pure white roots; smooth skin; sweet flesh. The perfect cultivar for "baby" turnips, bunched like radishes, but keeps its crispness and pleasant texture into the 2 to 3 inch diameter size. Dark green, hairless tops with good flavor. Very early. For specialty and ethnic markets. K66, 053M, R32, S55

Tokyo Cross: 35-60 days. Semi-globe, perfect shaped, smooth, sweet crisp roots. Both skin and flesh are pure white. Can be harvested at 2 inches in diameter, but continues growing up to 6 inches, while holding the same excellent quality. Leaves can also be used for greens. Has good disease resistance. For spring and summer sowings. All America Selections winner in 1969. A16, C85M, D65, D76, F63, G16, J20, K10, K71, M46, S63M

### Open-Pollinated

All Seasons: 28 days. Globe-shaped, white skinned, white fleshed turnip that is ready 4 weeks after sowing regardless of the season when sown. Retains its shape long after the roots are fully formed and stays sweet even during hot and dry weather. K49M

Croissy: (Rand des Vertus) Round or slightly top-shaped roots, about 3 inches in diameter and depth; smooth, white skin; tender, very white flesh, sugary, of very agreeable flavor. Erect, medium-sized, clear green tops. Excellent for forcing. An old French heirloom, at one time a great favorite with Parisian market gardeners. VILMORIN; F73D, K49M, S95M

Gilfeather: 80 days Top-shaped, creamy white root; unusually mild, delicate, sweet flavor reminiscent of rutabaga; smooth in texture when cooked. Can be harvested at 2 1/2 inches in diameter, but will grow much larger without becoming pithy or strong-flavored. Smooth, dark-green leaves make excellent kale-like "greens" when young. Vermont heirloom developed by John Gilfeather (1865-1944) of Wardsboro, Vermont. C53, D41M, D68, F24G, G6, J9M, J20, K49M, K71, M46, 089, Q34, R47

Long Des Vertus Marteau:<sup>1</sup> (Jersey Navet) 55 days. Root white; nearly cylindrical, but swollen at the lower end; 5 or 6 inches long, and about 2 inches broad at the thickest part. Flesh white, very tender and sugary. Like radishes the roots become hollow at the center if allowed to grow too large, and are generally harvested for use when about two-thirds grown. Traditional market garden turnip of Paris. VILMORIN; C20M, E63D, G68, L3J, SI 7, S66M

Presto:<sup>3</sup> (Tokyo Market Sagami) 30 days. Very small, smooth, uniform, pure-white turnip that can be harvested when the roots are about 1 inch in diameter and used for pickles. Leaves are suitable for use as greens. Easily grown anytime except during periods of extreme heat or cold. C20M, 139

Snowball: (Early Snowball) 40 days. Bulb small to medium in size, nearly spherical, smooth and uniform, 3 to 4 inches in diameter; skin pure-white. Flesh of the young bulb white, fine-grained, tender and sweet; if overgrown or stored for long, it is liable to become dry and spongy. Rapid growing. Known prior to 1865. BURR; B49, D27, G93M, N81, 053M, FIG, Q45M, R32, R50, TIM

Suguki-Na: White, top-shaped roots, curving to a point at the base; serrated leaves. Both the leaves and roots are pickled. Grown only in the Kamigamo River region of northern Kyoto where it is the most famous pickled vegetable. For over three hundred years, it was a favorite of the nobility and clergy, eventually becoming a traditional dietary staple of all residents of Kyoto. TANAKA; G20M{PD}

Teltow:<sup>1</sup> Root entirely sunk in the ground, conical, about 3 inches long; skin grayish-white. Succeeds very well in light, sandy soil. When cooked it has a peculiar flavor, completely different from other turnips - it is milder and more sugary, and the flesh is almost floury, instead of juicy and melting. The peculiar flavor is in the outer rind, when used it should not be peeled. Used in the preparation of a German delicacy called *teltower rüebchen*, produced by browning young turnips in sugar. BURR, HEDRICK 1919, ORGAN, VILMORIN; U33

Tokyo Market: (White Tokyo, Kanamachi Forcing) 30 days. An improvement over Kanamachi, developed for growing with plastic protection or under glass, for an early spring crop. Roots are very small, about 1 1/4 inches wide and 7/8 inch deep when at their best for early marketing. White skin. Solid, white flesh, crisp and mild-flavored. C20M, C92, D55, G33, H61, K10, N52, S63M, S70

White Egg: 50 days. Medium-large, egg-shaped root with thin white skin; 3 1/2 inches long, 2 1/2 inches in diameter; keeps well. Very solid, fine-grained, clear white flesh, sweet, mild and tender. Makes attractive bunches for early market. Fast-growing. Excellent either as a late or early cultivar. Introduced before 1888. ANONYMOUS 1888; A75, C44, C97, D72, E38, F63, F80, G1M, G27M, G68, K49M, K71, L7M

Yorii Spring: 38 days. Small, slightly flattened roots. Pure white inside and out. Sweet and crisp when about 1/2 inch in diameter. Also produces an abundance of tasty greens Very early and slow bolting. Does well in cool, short-season areas. A2, E24

### YELU>W,SKMNPE

Amber Globe: (Large Yellow Globe) 60 days. Root almost round, or more usually top-shaped; pale yellow with a green neck; flesh yellow, fine-grained, sweet, tender and mild. Leaves entire, long, light-colored. Hardy and keeps well until late in the spring. Introduced before 1888. C44, Di2, F80, G57M, H54, K49M, L7M, LI0, M95M

Golden Ball: (Orange Jelly) 55 days. Root perfectly spherical when small, slightly flattened when mature; generally 4 or 5 inches in diameter. Skin very smooth and quite yellow. Flesh yellow, softish, fine flavored but slightly bitter. Highly esteemed in Scotland and northern England. Introduced before 1859. VILMORIN; A2, B49, C85M, D27, E38,139, L3J, R32, R47, SI7

Petrowski: (Petrowski Yellow) Medium-sized, flattened globe-shaped, golden yellow roots; very smooth and clean skin. Ripens in midseason. An old Alaskan favorite that is firm, shows some resistance to root maggot, and is excellent for storage. Originally from Europe. C95, C97

### FOLIAGE TURNIPS

Also called *turnip greens* and *turnip tops*, these are grown primarily for the leaves which are more succulent than those of other turnips. Some cultivars also produce good quality roots or can be used for *broccoli raab*. The best types have leaves which grow rapidly, and resprout quickly after having been cut. SCHNEIDER 1986 [Cul, Re].

### HYBRID

All Top: 35 days. Vigorous, erect, fast-growing hybrid Crawford type that is especially good for greens. Produces large, smooth, thick, strap-shaped, dark green leaves of very high quality. Regrows very quickly after being harvested. Bolt resistant. Very fibrous roots are not used. Introduced in 1979 by Abbott and Cobb. AI, A27M, A87M, C20M, C28,191, K10, K16M, K50, M29



Topper: 35 days Very heavy-yielding Shogoin type. Vigorous, upright tops, 24 to 28 inches tall. Thick, smooth, lobed, broad dark-green leaves. For greens, bunching, processing and fresh market. Resistant to turnip mosaic virus. Tolerant to aphids and downy mildew. *Al*, *A27M*, *C28*, *D11M*, *F70*, *G1M*, *G82*, *H61*, *J84*, *K10*, *K16M*, *K50*, *K73*, *L10*, *M29*, etc.

open-pollinated

Nozawa-Na: (Hakabu-Na) Long, dark-green leaves and petioles. Leaves become purplish and more tender and sweet after a frost. Used both as a fresh green vegetable and for pickling, combined with dried sardines or bonito flakes. Popular during skiing holidays in Nagano Prefecture, Japan. Vigorous, erect, fast growing plant; tolerant of heat and cold. Recommended for cold and mountainous regions. LARKCOM 1991, TANAKA, YAMAGUCHI; *D55*, *G20M{PD}*, *Q34*, *S70*

Seven Top: (Southern Prize) Fast-growing, cool-weather crop that is grown primarily for its abundant crop of greens. Grows 20 to 22 inches tall. Produces large, dark-green, very tender leaves. Can also be used for *broccoli raab*. Roots are tough and fibrous and are best used for livestock food. Very popular cultivar in the southern United States where it is used as a winter annual. *A75*, *B3M*, *C44*, *E38*, *F80*, *G1M*, *G71*, *G82*, *G93M*, *H61*, *I64*, *K71*, *K73*, *L7M*, *N16*, etc.

Shogoin: 30-70 days. Excellent dual-purpose cultivar grown both for tops and large roots. Very large tops with broad, serrated, tender leaves, resistant to aphid damage. Smooth, white, globe-shaped roots grow 5 to 6 inches in diameter and have tender, white flesh. Yields greens in 30 days; roots in 70 days. *A75*, *C92*, *G68*, *G79*, *G83M*, *I39*, *I64*, *K27M*, *K71*, *L89*, *N16*, *R47*

Turnip Tops Green: (Raapstelen) Smooth, green leaves with a distinctive taste. Grown for quick early cooking greens in spring. Cut at 6 inch stage, and they will grow back for later cuttings. Cook like spinach. *C85M*, *FI*

CODES FOR SPECIAL TYPES

1. Elongated
2. Baby
3. Pickling

## UNCLASSIFIED {S}

VARIOUS GENERA

Included here are entries that cannot be placed in the Botanical listings or under a cultivar heading, due to the incomplete nature of the descriptions given in the catalogs.

Gallito del Rio: (Little Rooster of the River) The green pods are roasted in embers and the white, flour-like substance between the immature seeds is eaten. The seeds themselves are not eaten. A large, leguminous vine to 30 or 40 feet, with almost white stems and large, smooth, glossy trifoliate leaves. Rises from a long, thick fleshy root which could probably be overwintered indoors in harsh climates. Fragrant violet-rose flowers look like little roosters. Possibly a *Canavalia* sp. THEODOROPOULOS; *F80*

Hoja del Pescado: (Leaf of the Fish) Drought resistant, herbaceous perennial of the Composite family. Grows to 10 feet tall. The leaves are cooked and eaten with fish, steamed vegetables, or in soups. THEODOROPOULOS; *F80*

Mrs. Hawkin's Spinach: Planted early, and weekly after that, the large plants produce tender leaves, large enough to use as wrappers for cabbage rolls. Originally from Australia, but not New Zealand spinach. Related to wild lamb's quarters. Does well in greenhouses or cold frames. *C82*

Schwarzwurzein: European black root vegetable grown exactly like parsnips or salsify. According to the supplier, "this is not black salsify". *C82*

## WALNUT{GR}

JUGLANS REGIA

### PERSIAN WALNUTS

Included here are cultivars primarily grown in California. They are not tolerant to extremely low winter temperatures. When fully dormant, they will withstand 12° to 15° F. without serious injury. The French cultivars are somewhat more hardy. JAYNES.

Amigo: Large, round nut; shell poorly sealed in some years; kernel 54% of nut, quality high, 80% having light-colored kernels; matures early to midseason. Tree productive, with many clusters of 4 nuts and 80% of lateral buds producing pistillate flowers. Leafs out 14 days after Payne making it a valuable pollinizer for Hartley and Tehama. BROOKS 1972; *B71M*, *K88T*

Carmelo: Open-pollinated seedling of Payne. Very large nut; shell well-filled with a kernel of good quality; ripens about with Payne. Not susceptible to blight or sunburn. Tree precocious; productive; leafs out late. Has a lateral growth habit similar to Payne. An excellent home garden and novelty cultivar. BROOKS 1972; *A88M*, *C54*, *H4*, *N20*

Chandler: Large nut; kernel 49% of nut, kernel color very good; ripens in midseason, a few days after Hartley. Tree moderately vigorous, semi-upright, similar to Vina in characteristics; leafs out 18 days after Payne. Has high fruitfulness with 80 to 90% of lateral buds being fruitful. Pollinate with Hartley and Franquette. Most promising of introductions released by the University of California breeding program. *A88M*, *B71M*, *B74*, *C54*, *D18*, *E56{DF}*, *J70D{DF}*, *K73M*, *K88T*, *LI*, *N20*

Chico: Nut round; shell seal fair to good; kernel 49% of nut, quality excellent, 90% having light-colored kernels; matures early to midseason. Tree leafs out 6 days after Payne, with 80% of lateral buds producing pistillate flowers. Sheds pollen late, making it a suitable pollinizer for early leafing cultivars such as Ashley, Serr, and Vina. BROOKS 1972; *B71M*, *K73M*, *K88T*

Cisco: Introduced as a pollinizer for Chandler and Howard. Medium to light-colored nuts, slightly larger than Franquette; texture medium; kernel color variable. Semi-upright tree, moderately vigorous. Produces a moderate pollen crop during period of peak receptivity of Chandler and Howard. Released in 1990. *B71M*, *D18*, *K73M*

Eureka: Large, attractive nut, perfectly sealed; kernel light-colored, of excellent quality. Large, vigorous tree; a good producer but slow to come into bearing. Leafs out in midseason, making it moderately susceptible to spring frost damage. Pollinate with Chico. An old California cultivar, available from nurseries since 1911; now being superseded in commercial plantings by cultivars with better yield and nut quality. JAYNES, STEBBINS, WICKSON; *A88M{OR}*, *B71M*, *B93M*, *D18*, *199M*, *K73M*, *K88T*, *N20*

Franquette: Medium to large nut with a well-sealed thin shell; of very good flavor; resists codling moth. Large tree, suitable as a shade tree; partially self-fruitful but has relatively low yields and lacks lateral-bud fruitfulness. Very late leafing; not susceptible to spring frost damage. Slow to come into bearing, but long-lived. Pollinize with Hartley or Chandler. An old French cultivar. Was the most important commercial cultivar in northern California until 1960. JAYNES, STEBBINS; *A88M*, *B93M*, *C34*, *C54*, *D18*, *H89M*, *K88T*, *L47*, *N20*, *Q30{SC}*

Hartley: Large nut with a broad, flat base and pointed tip; shell light-colored, thin, seals fairly well; kernel light-colored, not tight

in shell; flavor mild. Tree medium leafing, 2 weeks after Payne; very productive but comes into production slower than cultivars with lateral bud fruitfulness. One of the leading commercial cultivars in California, especially for in-shell nuts. BROOKS 1972, JAYNES; A63, A88M, B23M{DF}, B71M, B93M, C54, D18, G49, J70D{DF}, K73M, K88T, L47, N20

Howard: Large nut; kernel 50% of nut; kernel color excellent; ripens in midseason, slightly ahead of Hartl<sup>^</sup>. Leafing date quite late, 14 days after Payne. Tree small to medium, semi-upright, moderately vigorous; smaller than Vina and Chandler. Potentially very productive with 80 to 90% of lateral buds being fruitful. Pollinate with Hartley and Franquette. B71M, D18, K73M, K88T

Mayette: Medium to large, rounded nut, with a broad base on which the nut will sit up; shell fairly thin, white; kernel well-filled, richly flavored. Tree medium-sized, spreading; a good bearer; blooms late; moderately precocious, but tends to be biennial. Originated in France. J70D{DF}, Q30{SC}

Payne:<sup>1</sup> Medium to small nut; kernel averages 49% of nut with fair color; matures in midseason. Nuts tend to be borne on the outside of the tree and consequently are susceptible to sunburn. Early leafing and therefore quite susceptible to spring frosts and walnut blight. Leafing date of late March in the Central Valley of California is the standard by which other cultivars are compared. Small to medium tree with heavy production. The first important cultivar in California with lateral-bud fruitfulness. JAYNES, STEBBINS; A88M{OR}, B71M, C54, D18, 150D{DF}, K73M, K88T, N20

Pedro: Large nut; shell heavy, fairly well-sealed; kernel light-colored, 50% of nut; flavor excellent; matures midseason to late. Tree small; consistently produces many catkins and sheds pollen over a long period. Can be used as a pollinizer for most early cultivars such as Ashley, Serr and Vina. Very high summer temperatures can injure shell and kernel quality in hotter districts. Excellent for home plantings. BROOKS 1972; A88M, I83M, LI, N20

Placencia:<sup>1</sup> Medium-sized nut; smooth, thin, strong shell; light tan meat that fills shell; quality good; ripens in midseason. Tree large; heavy bearing; precocious; partially self-fruitful. Early leafing and therefore susceptible to spring frosts. Low chilling requirements; does best in coastal areas and southern California. STEBBINS; A88M, C54, D23M, H4, I83M, N20

Scharsch Franquette: Medium-sized, well sealed nut; high percentage of light-colored kernels; ripens late, otherwise resembles Franquette. Tree starts bearing both pistillate and staminate flowers earlier in life than Franquette, with approximately 20% of lateral buds producing pistillate flowers. Otherwise, growth characteristics similar to typical Franquette. BROOKS 1972; B71M, K73M

Serr: Nut large, similar to Payne; shell thin, seal fair to good; cracking quality good, 96% having light-colored kernels; matures early to midseason. Highly resistant to sunburn. Tree very vigorous when young, grows rapidly; leafs out 5 days after Payne. Only 50% of lateral buds produce pistillate flowers. Early leafing, with moderate danger of spring frost damage. BROOKS 1972; A88M{OR}, B71M, B93M, C54, D18, K73M, K88T, N20

Sunland: Long, smooth, oval nut; resembles Serr; kernel weight 60% of nut; quality excellent; ripens about the same time as Hartley. Very vigorous, precocious tree, highly productive. Pollinate with Chico, Tehama or Hartley. Originated in Davis, California by Harold I. R)rde. Introduced in 1979. BROOKS 1997; B71M, D18, K88T

Tehama: Nut similar to Payne; shell seal good, making it suitable for in-shell nuts and cracking; kernel 53% of nut, 70% having light-colored kernels; matures in midseason. Tree very productive, with 80% of lateral buds producing pistillate flowers. Leafs out 18 days after Payne. A pollinizer is desirable to help set heavy crops. BROOKS 1972; B71M, D18, K73M, K88T

Tulare: Nearly round nut; kernel weight 53.3% of nut, with 75% light kernels. Ripens in midseason, about the same time as Hartley. Upright, moderately vigorous tree; precocious and productive; about 75 % lateral bearing. Recommended for hedgerow or high-density plantings. Introduced in 1992. BROOKS 1997; B71M, D18, K73M, K88T

Vina: Nut pointed, somewhat similar in shape to Hartley but with a less flattened base; shell seal good; kernel 49% of nut, of high quality, 70% having light-colored kernels; matures early to mid-season. Tree a very productive and consistent bearer, with 80% of lateral buds producing pistillate flowers. Leafs out 8 days after Payne. Tolerant of high summer temperatures. BROOKS 1972; B71M, D18, K73M, K88T

#### CARPATHIAN WALNUTS

Included here are cultivars originating from seed brought from the Carpathian mountains of Poland by Reverend Paul C. Crath and other cold-hardy cultivars, including those brought by German immigrants to Pennsylvania and other states in the 1700's. When fully dormant, they can withstand temperatures of -30° to -35° F. with only minor injury. JAYNES; M39M. (J. regia 'Carpathian')

Ambassador: Very cold-hardy, has withstood extreme cold temperatures in Idaho. Produces high quality, thin-shelled, well-sealed nuts. Easy to harvest. Bears very young, often in the first year, with significant crops in 3 years. Good resistance to blight and codling moth; not drought resistant. Grows best on fertile, deep soils. A88M, E87, N20

Ashworth: Nut rather small, well-shaped; kernel sweet; ripens early. Tree strong, vigorous; very hardy, withstanding temperatures of -36° F. Seeds germinate well. Originated in Heuvelton, New York by Fred L. Ashworth, St. Lawrence Nurseries. Introduced in 1948. BROOKS 1972; E91M

Broadview: Large to medium nut; shell soft, well-sealed; cracking quality good; ripens slightly little before Franquette, beginning in early September; keeps well. Tree very productive, lateral bearing; very hardy. Originated in Westbank, British Columbia, Canada by J.U. Gellatly. Introduced in 1930. Seed brought from the ancestral home of the Utki family in Odessa, Russia. BROOKS 1972; E62{PL}, E62{DF}, E91M{PL}, 140, 081, Q30{SC}, R77

Cascade: Very heavy bearing Russian x Manregian cross. Nut large; shell thin; kernel averages 56% of nut, cracks to halves, has excellent flavor. Tree spreading; very winter-hardy; early bearing. Chambers recommended as a pollinator. Widely planted in the Pacific Northwest. Rated #1 in 1983 Northern Nut Growers Association evaluations. B74, C34, 140, J61M

Chambers: Heavy yielding Manregian stock selection from Oregon. Medium large, high quality nuts. Precocious and vigorous growing; hardy. Leafs out 10 days before Franquette or Spurgeon. Highly regarded cultivar for the Pacific Northwest. B74, I49M, J61M

Chopaka: Parent of Cascade. Quality nearly as good but the tree is harder. Nuts average 20 per pound. Tree upright in form; hardy; precocious; sets nuts in clusters of up to 6 nuts. Has a tendency toward heavy lateral bearing. A91{PL}, B74

Colby: Medium-sized nut; shell thin, well-sealed; kernel plump, of good flavor, represents 53% of nut; matures early. Tree hardy and fruitful in central Illinois. Probably best adapted to areas north of the Ohio River. Originated in Urbana, Illinois by A.S. Colby, Illinois Agricultural Experiment Station. Introduced in 1952. BROOKS 1972; 140

Fateley: Nut very large; shell rough; kernel quality good. Tree very hardy; vigorous; bears well. Originated in Franklin, Indiana by Nolan W. Fateley. Introduced in 1956 by J.F. Wilkinson, Indiana Nut Nursery. BROOKS 1972; 140, N33

Fickes: Round, slightly above average, free husking nut; shell very thin, not well sealed; kernel white, very sweet, represents 51% of

nut; ripens early. Tree comes into bearing early; prolific; easy to graft. Originated in Wooster, Ohio by W.R. Fickes. Introduced in 1951. BROOKS 1972; 140

Greenhaven: Nut averages 12.73 grams; kernel color light, flavor sweet, oil content 61 %, averages 45.8% of nut; ripens in midseason, usually late in September. Tree a consistent annual bearer. Originated in Perrington, Michigan by Lee Somers at Greenhaven Farm. Introduced in 1962. BROOKS 1972; E91M, E91M{PL}, 140

Hansen: Small to medium-sized, round nut; shell very thin, smooth; flavor mild, sweet, good; kernel 60% of nut. Tree small, essentially dwarf; very productive; self-fruitful; hardy; resistant to disease and husk maggot. Bears young and continues with early ripening crops. Of German origin, it was selected in Ohio. The most widely planted winter-hardy cultivar. BROOKS 1972, JAYNES; A91{PL}, B74, B99{PL}, E91M, E91M{PL}, E92,140,186{SC}, R77

Helmle: (Helmle #2) Nut small to medium in size, of good quality. Tree very hardy; very productive; slightly later vegetating than most. A good pollinator for most other Carpathian cultivars. Originated in Breckenridge, Illinois by Herman C. Helmle. Introduced in 1954. BROOKS 1972, JAYNES; 140

Himalaya: Medium to large, slightly oval nut; shell thin; kernel of good quality except when there is a cool summer; ripens in September. Tree upright, slightly spreading; vigorous; productive; not injured by temperatures of -42° F. Originated in Kalispell, Montana. Introduced in 1968 by David A. Lawyer, Lawyer Nursery, Plains, Montana. BROOKS 1972; E91M

Idaho: Very large, sweet, excellent eating nut with good quality. Ripens in late September. Tree vigorous; an early and heavy producer; very hardy, withstands extreme cold. Requires 700 hours of chilling. A selection from the large bijou-type nuts. Originated in Parma, Idaho. Introduced to California by E.T. Rice. BROOKS 1997; A88M, C54, L47, N20

Kentucky Giant: Nut very large; shell thin; flavor good; matures early. Tree blooms late; comes into bearing early, at about 6 years of age; tolerant of low winter temperatures. Bears heavily when well pollinated. Originated in Jefferson County, Kentucky by H.B. Briggs. Introduced in 1956. BROOKS 1972; 140,186{SC}

Korn: Nut averages 29 to 32 per pound; apex pointed, slightly longer than wide; shell quite thin, cracking quality fair to good; kernel bright, very plump, quite sweet, flavor mild; ripens early. Tree vigorous; bears annually. Originated in Berrien Springs, Michigan. Introduced in 1928. BROOKS 1972; E91M, E91M{PL}

Lake: Nut large; shell thin, easy to crack; kernel 50% of nut; quality very good; ripens in mid-season. Tree hardy, productive, starts bearing at an early age. Originated in Bluffs, Illinois by Royal Oakes. Introduced about 1954. BROOKS 1972, JAYNES; E91M, 140,186{SC}, L33

Manregian: Large, round nut; shell thin but rather hard, with a grayish cast; kernel dark in color, of excellent quality. Tree very hardy. Also used as a rootstock. Originated in Chico, California. Introduced in 1954. Seedling of a walnut collected in 1906 in the mountains north of Peiping, China by noted plant explorer Frank N. Meyer. BROOKS 1972; H89M, M39M{PL}, N0{PL}

McDermid: Large nut; shell rather thick, smooth, apex pointed; kernel sometimes astringent, in other districts kernel quality very good. Tree a vigorous grower. Usually never bears heavily being susceptible to late spring frosts; but in other locations, it bears well and appears to be hardy. Originated in Ontario, Canada. BROOKS 1972; 140

McKinster: Nut large; kernel 48% of nut; flavor and quality high. Tree very productive; self-pollinating; well adapted to the climate of Ohio and Michigan. Subject to "June drop". Originated in Columbus, Ohio by Ray McKinster. Introduced in 1952. BROOKS 1972, JAYNES; E91M, 140

Mesa: New Carpathian type from New Mexico. Large, well-sealed nut, resistant to sunburn; thin shell; plump, light-colored kernels of good flavor; ripens in early October. Self-fruitful tree; blooms late; requires 700 hours of winter chilling. Withstands cold as well as hot, dry climatic conditions. A88M{OR}, C54,N20

Metcalfe: Medium-sized nut, averages 42 to 45 per pound; shell thin, light amber; kernel 53% of nut, white, sweet, of very good quality. Tree very vigorous; hardy to -20° F; does not bear well. Originated in Webster, Nov York by Mrs. Ward H. Metcalfe. Introduced in 1952. BROOKS 1972, JAYNES; E91M, H65,140

Perry: Thin-shelled nut with light kernels; kernel weight 56% of nut; ripens the third week of September. Precocious tree, will bear 3 years after planting, a heavy bearer of large clusters; lateral bearing; has good disease resistance. Cold hardy to 34° F. with no damage or winter dieback. E92

Russian: The Russian walnut came to southern British Columbia, Canada with Russian Doukhobor immigrants. These seedlings are crosses of the Russian parent and large-fruited cultivars from a nut breeder's orchard. Used as a hardy nut producer or as a rootstock. A91{PL}

Shiawassee: Large, heavy nut with well-sealed shells; light-colored kernels, kernel weight 58% of nut; ripens the second week of September. Precocious tree, often bears 2 years after planting of seeds, lateral bearing; a heavy bearer of large clusters; has good disease resistance. Cold hardy to 34° F. with no damage or dieback. E92

Somers: Nut medium-sized, averages 11.6 grams; slightly elongated, flattened on both ends; shell attractive, cracks easily; kernel color light, averages 55.6% of nut, oil content averages 64.7%; flavor sweet, pecan-like. Ripens in early September, being noted for its early maturity. Tree a consistent annual bearer; hardy to -34° F. BROOKS 1972; A91{PL}, B74, E92,140,186{SC}

Spurgeon: Large nut; shell very thin, with a good seal; kernel light brown, flavor good; matures late. Tree moderately productive; partially self-fruitful, but production can be improved by planting Franquette as a pollinizer. Late leafing, with no danger of spring frost damage. Originated in Vancouver, Washington by John F. Spurgeon. Introduced about 1920. Considered to be a seedling of Franquette. BROOKS 1972, STEBBINS; B74, C34,149M, J61M

#### CODES FOR SPECIAL TYPES

1. Low-Chill

## WATERMELON {S}

### CITRULLUS LANATUS

#### RED-FLESHED

#### HYBRID

#### Seeded

Funbell:<sup>1</sup> 4 65 days. Unusual, extra early "icebox" type. Small, round fruit; weight about 4 1/2 pounds; attractive, light yellow rind with light green stripes; sweet, juicy, pink-red flesh. When the green stripes change from green to yellow the fruit is ripe. Widely adapted to various types of soils. Excellent for home gardens. C20M, D76, E97, Q39

Garden Baby:<sup>12</sup> 70 days. An early, short-vined watermelon with good flavor. Round fruit, 6 to 7 inches in diameter; "icebox" size, averaging 6 to 8 pounds; dark-green rind with faint striping; juicy, crisp, sweet red flesh. Seeds very small. Ripens even earlier than Sugar Baby. Prolific vine, 3 to 4 feet long; good for gardens with limited space. D65, G6, G82, J20, K57{PL}, L89, M46

Golden Crown:<sup>1 4</sup> 70-80 days. Attractive golden-rinded icebox melon. Small, oblong fruits weighing 6 to 8 pounds; golden-yellow rind, thin but tough; brilliant red flesh, very sweet, sugar content 12%; small seeds. Commonly produces 4 or more fruits per plant. Good tolerance to powdery mildew, anthracnose and viruses. All America Selections Winner for 1991. B75, D11M, D68, E91G, F70, G16, I91, N84, Q39

Kily Edible Seeded:<sup>3</sup> (Wanli) 80 days. Grown for its large, plump black seeds. Delicious eaten like squash seed, dried or roasted. Very vigorous plant; bears 5 to 6 globe-shaped fruits, each capable of producing 400 seeds or more. Disease resistant. N84, Q39

Red Shine:<sup>3</sup> 80 days. Round fruit with black rind; weight about 5 1/2 pounds. Large red seeds, good for roasting and table use. Seed count is about 5,000 seeds per kilo. Vigorous, widely adapted vine; tolerant to diseases; suitable for close spacing due to its small leaves. Q39

Sangria: 85 days. Very productive, high quality hybrid. Large, oblong fruits weighing 20 to 25 pounds; dark green rind, striped with light green; bright red flesh, very sweet and refreshing, sugar content normally in excess of 11%; dark, medium-sized seeds. Highly resistant to fusarium wilt; tolerant of anthracnose, race 1. A1, B75M, D26D, D68, E97, F63, G13M, G82, H85M, H95, I50G, J97M, K10, K50, K73, M29, etc.

Sun Torna:<sup>1 4</sup> (Sun, Sun God) 68-70 days. An unusual, yellow-rinded "icebox" watermelon. Round, medium-sized fruit; average weight 6 1/2 to 11 pounds; rind light yellow with darker yellow stripes; flesh red, juicy and sweet. Ripens extremely early. For indoor and outdoor cropping. B1M, C20M

Sweet Favorite: 80 days. One of the best oblong watermelons for cool, northern areas. Average fruit weighs about 15 pounds; rind bright green with darker stripes; flesh bright scarlet, sweet, of high quality. Small seeds. Ripens much earlier than other oblong cultivars, just after Sugar Baby. Vigorous vine; tolerant to anthracnose and fusarium. All America Selections winner in 1978. B6, C44, C85M, D11M, D68, D76, E75{PL}, F70, G6, G13M, G16, I67M, K10, K16M, L42, M29, etc.

Tiger Baby:<sup>1</sup> 75-80 days. Early icebox type for fresh markets or home gardens. Small, roundish to oval fruits weighing 7 to 10 pounds; light grayish-green rind, striped with dark-green, tough and crack-resistant; pinkish-red flesh, firm, dense, very sweet and flavorful. Semi-bush type plant; resistant to fusarium wilt. Does well in short-season areas. C85M, C92, E75{PL}, F63, G13M, G16, G82, H57M, H95, I39, K10, K50, L42, L91M, K66, M29, TIM, etc.

### Seedless

Jack of Hearts: 80 days. An early maturing "seedless" watermelon. Round oval fruit, weighs 10 to 15 pounds; bright green rind with dark green stripes; bright-red, crisp, very sweet flesh, sugar content 10 to 11%, contains very few immature seed coats. Highly disease resistant. Pollinator needed for fruit to set. Plant 2 hills of seedless cultivar to 1 hill of pollinator for best results. C20M, F63, G71, H95, J97M, L42, L79, M46

King of Hearts: 80-85 days. Blocky, slightly oblong fruit; weight 14 to 18 pounds; thick green rind with medium green stripes; firm, medium-textured, bright red flesh, crisp, sweet and delicious. Perfect for making melon balls. Vigorous, medium-sized plant gives good foliage cover to the fruit. C20M, D26D, E97, F63, G16, H49, H85M, I39, J84, N52

Laurel: 85-90 days. High quality triploid Crimson Sweet type. Medium to large, globe-shaped fruits weighing 14 to 22 pounds; tough medium-green rinds, striped with dark-green; bright red flesh, very sweet, texture and quality excellent. Well suited to long distance shipping. A87M, C20M, F63, J84, K10, K50, K73, N52, S63M

Nova: 90 days. High-quality "seedless" watermelon that also keeps well. Round fruit, weighs 15 to 17 pounds; rind thick and tough, withstand shipping well, deep green with darker green stripes. Medium firm, deep rosy-red flesh, juicy, of good flavor, has a consistently high sugar content. Vigorous, productive vine. Pollinator required. A1, C20M, F63, G13M, J84, K10, K16M, K50, K73, N52, N84, TIM

Queen of Hearts: 80-85 days. Triploid or "seedless" type. Oval-shaped fruit, weighs 12 to 16 pounds; rind light green with dark green stripes, thick, resists bruising; flesh bright red, crisp, very sweet. Suitable for shipping. As with all seedless watermelons, environmental conditions may cause partially seeded fruit. C20M, F63

Redball: 80 days. Triploid or "seedless" type. Round to slightly oval fruit, about 8 1/2 to 9 1/2 inches in diameter; weighs 10 to 12 pounds; rind dark green; flesh bright red, firm, very sweet, seedless except for a few immature seed coats. Vigorous, productive vine. Includes seeds of Crimson Sweet to be used as a pollinator. B75

Seedless Sugar Baby:<sup>1</sup> 80 days. Hybrid seedless version of the popular Sugar Baby variety. Retains all the good eating qualities of the original. Perfectly round, very dark-green fruits, 8 inches in diameter and weighing 8 to 9 pounds; deep red flesh, juicy, very sweet. Ideal for small servings. Very productive. B75

### OPEN-POLLINATED

Allsweet: 95 days. Crimson Sweet type. Oblong fruit, 18 inches long, weighs 25 to 30 pounds; medium-green rind with light-green broken stripes, thin, hard, tough; flesh bright red, firm, sweet. Small seeds. Has a longer shelf life than Crimson Sweet, Charleston Gray or Jubilee. Resistant to fusarium wilt and anthracnose races 1 and 3. A87M, B75M, F60, G1M, G71, G79, I64, J84, K5M, K10, K73, L10, M29, N16

Black Diamond: (Black Cannonball, Florida Giant) 90 days. Large oval fruit, about 15 inches long, weighs 40 to 50 pounds; rind smooth, tough, glossy, dark gray-green; flesh bright red, crisp, tender, sweet, of excellent quality; grayish-black seed. Popular shipping melon in the South. A27M, B3M, B6, B49, B73M, B75M, C92, D76, F60, G16, H85M, K5M, K71, N16

Bush Charleston Gray:<sup>2</sup> 90 days. Similar to Charleston Gray, except for the smaller size of the fruit and vine. Oblong fruit, weighs 10 to 13 pounds; rind gray-green; flesh deep red, fine-textured, sugar content high. Short-vined plant, only 3 to 5 feet across; disease resistant. Ideal for small gardens. G57M, G79

Calsweet: 90 days. A very popular shipping melon in the Southwest, especially California. Blocky-oblong fruit, about 17 inches long, weighs between 25 and 30 pounds; rind light green with dark green stripes; flesh bright red, sweet. Seeds medium-sized, brown. Resistant to fusarium wilt. A1, C20M, DIT, F60, G57M, G71M, G93M, M29, N16, N52

Carolina Cross: Long, light green fruit with darker green stripes; red flesh. Has produced the last 6 world record watermelons. Seed was selected from melons weighing 260, 226, 220, 200, 188, 185, and 181 pounds. These seed melons were chosen for size and shape. Germinates poorly in soil temperatures below 85° F. B75, B73M, C92, D26D, D65, D76, E43M, E97, G16, G27M, G71, H95, I39, I81, J97M, K10, K71, L91M, etc.

Charleston Gray: 85 days. Large cylindrical fruit, 24 inches long, weighs 30 to 35 pounds; rind thin, tough, light greenish-gray; flesh red, crisp, free of fiber, quality excellent. Vigorous, productive vine; resists sunburn, wilt and anthracnose. Standard shipping cultivar for the Mid-Atlantic states. A27M, A75, B75M, D12, D26D, D76, F60, G57M, G71, I59M, I64, I84, K5M, K71, PIG, etc.

Chilian Black Seeded: 90 days. Nearly round fruit, about 10 inches long, weighs 12 to 16 pounds; rind thick, tough, medium green striped with dark green; flesh sparkling red, very sweet,

delicious. Seeds large, almost black. Attractive market melon of very fine quality. G57M

**Cobb Gem:** (Kolb Gem) 100 days. One of the largest fruiting watermelons. Extremely large, attractive, oblong fruits often weighing 100 to 125 pounds or more; dark green rind; sweet, bright red flesh, flavor good; medium to large, grayish-black seeds. High yielding plants. Ideal for exhibiting at shows and fairs. D26D, E97, H85M, K10, K20M, K71, N16

**Congo:** 90 days. Large cylindrical fruit, 27 inches long, weighs 35 to 40 pounds; rind very tough, dark green with darker green stripes; flesh deep red, very firm, medium-grained, has a high sugar content. Seeds white to light tan. Very good shipper, but not immune to bruising. Resistant to anthracnose; susceptible to downy mildew and fusarium wilt. All America Selections winner in 1950. D1T, D74B, F60, G1M, G27M, G57M, G79, H54, I59M, L10, M95M

**Crimson Sweet:** 85 days. Fruit round to slightly elongated, 12 inches long, weighs 25 to 30 pounds; rind thick, hard, tough, light green with darker green stripes; flesh bright red, very sweet, of fine texture. Seeds medium-sized, brown. Vine vigorous and productive; widely adapted; resistant to anthracnose and wilt. Excellent for fresh market and home garden use. A27M, A75, B49, B73M, B75M, D65, F60, F82, G16, G71, G79, K73, L7M, N16, R47, etc.

**Dixie Queen:** 80 days. Attractive, blocky oval fruit; 13 inches long, weighs 25 to 35 pounds; rind very light green with narrow, dark green stripes; flesh deep red, very sweet, free from fiber, of excellent texture. Seeds white. Vine extremely vigorous and productive; resistant to fusarium wilt. Very popular home garden cultivar. D26D, G57M, G71, G79, H33M, H85M, K49M, M95M

**Early Canada:** 75 days. Nearly round fruit, about 10 inches long, weighs 10 to 15 pounds; rind grayish-green with fine green stripes and veining; flesh bright red, sweet, of very fine quality. Seeds small, reddish-brown. Very prolific. Widely grown in the Canadian prairie states. K49M

**Garrisonian:** (Rattlesnake, Georgia Rattlesnake) 90 days. Large, cylindrical fruit, about 22 inches long, weighs 35 to 40 pounds; rind hard, light green with attractive "rattlesnake" markings; flesh bright red, firm, very sweet, of good quality. White seeds with dark tips. Very uniform in size and appearance. Resistant to sunburn and anthracnose; susceptible to wilt. B75, E97, N16

**Golden Midget:**<sup>1 2 4</sup> (Early Golden Midget) 70 days. A unique, short-vine "icebox" type with golden skin. Small oval fruit, 7 to 8 inches long, weighs 6 to 7 pounds; rind thin and tough, green, turning golden-orange at the peak of ripeness; flesh bright red, crisp, very sweet. Small, dark seeds. Busty, compact vine; ideal for small gardens or container culture. Developed by Professor E.M. Meader. F73D

**Jubilee:** 90 days. A large, late-maturing shipping type for longer season areas. Fruit oblong, 24 inches long, weighs 25 to 35 pounds; rind light green with dark green stripes, medium-thick; flesh bright red, firm, sweet, quality good. Seeds large, nearly black. Vine less prolific than Charleston Gray; resists anthracnose and wilt. A27M, A75, A87M, B75M, D26D, D76, G57M, G71, G93M, K5M, K10, K20M, N16

**King and Queen:**<sup>4</sup> (Winter Queen, Winterkeeper, Christmas Melon) 85 days. Nearly round fruit, about 10 inches long, weighs 15 to 20 pounds; rind yellowish-green with faint green stripes, turns pale yellow when ripe; flesh bright scarlet, sweet, almost as firm as a citron melon. Very prolific. Excellent for storage and shipping, keeping until Christmas if picked when ripe and dipped in wax. F60, G13M, H95, I39, J25M, J73, K49M, K71, L77D, N24M, N52

**Kleckley Sweet:** (Monte Cristo) 85 days. Oblong fruit, 24 inches long and 12 inches in diameter, weighs 30 to 40 pounds; rind dark bluish-green, glossy, thin; flesh bright red, very crisp and fine-grained, extremely sweet, with a broad stringless heart; quality excellent. Large white seeds. Does not ship well. An older cultivar, very

popular with home gardeners. C44, D26D, G57M, G87, I59M, K27M, L10, M95M

**Klondike:** (Klondike Dark Green, Klondyke) 80 days. Oblong blocky fruit, 14 inches long, weighs about 25 pounds; rind tough, hard, fairly thick, light-green with irregular stripes of dark-green; flesh scarlet, juicy, sweet, sugar content very high. Small seeds. Ships well. Heavy yielding. G83M, K27M, N52, PIG, R47

**Malali:**<sup>3</sup> 100-110 days. Medium-sized, nearly round fruit; weight 8 to 10 pounds; thin, olive-green skin with fine stripes; crisp, very sweet, light red flesh; keeps well. Also produces large white seeds with black edges that have a delicious flavor. Requires a long hot summer for maximum sweetness. Popular in Israel. K49T, P75M, T27M

**Moon and Stars:**<sup>5</sup> 100 days. Legendary cultivar, rediscovered in rural Missouri by Kent Whealy of the Seed Savers Exchange. Round to oval fruit, weighs about 40 pounds; rind thin, brittle, slightly ridged, dark green with bright yellow spots resembling the "moon and stars"; flesh bright-red, very sweet and rich. Seeds brown with white tips. Foliage is also speckled. Introduced in 1926 by the Henderson Seed Co. A2, B49, D26D, D68, E7M, E24, F24G, F24M, F63, F73D, K23{PL}, K49M, K66, K71, L7M, PIG, etc.

**Moon and Stars Long Milkyway:**<sup>5</sup> 95 days. Elongated Moon and Stars type speckled with bright yellow pinpoint star-like markings resembling a panorama of the Milky Way. Large, bright yellow "moons". Large fruits weighing about 35 pounds; dark-green rind; delicious, bright-red flesh. Highly productive. Developed by Glenn Drowns. K23{PL}, K46T, L7M

**Mountain Hoosier:** 85 days. An old-fashioned cultivar that was once a local favorite in southern Indiana, Ohio, and northern Kentucky. Slightly oblong fruit, weighs 75 to 80 pounds; rind dark green; flesh deep red, sweet, crisp, of very fine flavor. White seeds with slightly black tips. Extremely productive. N16

**Navajo Sweet:** 90 days. Roundish fruits weighing 10 to 20 pounds; rind pale green, moderately splashed with dark green, thin to medium-thick; firm red flesh, unusually sweet; shiyy, dark-red seeds. Very good shelf life. Excellent for shipping and roadside markets. Can also be used as a winter melon when properly harvested. A favorite of the Navajo Indians. B75M, J73, K49M

**New Hampshire Midget:**<sup>1 2</sup> 70 days. Very early "icebox" type for cool, short season areas. Fruit nearly round, about 6 inches across, weighs 4 to 5 pounds; rind thin, light green with dark green mottling and striping; flesh orange-red, of good flavor but coarse. Seeds black, numerous. All America Selections winner in 1951. F73D, J39

**Northern Sweet:** (Early Northern Sweet, Fourth of July) 75 days. Nearly round fruit, 9 inches long, weighs between 12 and 15 pounds; rind thin, dark green with light green stripes; flesh scarlet red, crisp, tender, very sweet and fine-grained. Seeds light tan. Very early, often ripens by the Fourth of July. Highly productive. A2, C95, F80, K49M, K49T, N84, PIG

**Scaley Bark:** 98 days. Unusual variety with a tough, rough skin resembling the bark of a tree. Medium-long, oval fruits; green-striped rind, thin but tough; rich, sweet, crimson flesh. Good for eating fresh. Also excellent for preserves. An old heirloom reintroduced by Shumway's after an absence of 100 years. F73D, K71

**Small Shining Light:** 90-100 days. Round fruits, 10 to 12 inches in diameter; dark-green rind; sweet red flesh. Will ripen in the middle territories of the former Soviet Union and in northern areas of the United States. An old traditional Russian cultivar, very popular in Moscow street markets. K47

**Stone Mountain:** 90 days. Blocky nearly round fruit, about 15 inches long, weighs 30 to 35 pounds; rind smooth, thick and tough, medium green with darker green veining; flesh deep red, very sweet, all solid heart, with no white hearts or strings, sweet to the rind.

Seeds white, tipped with black, few. Very popular home garden and local market type. C69, G57M, J59M, K27M, K49M, M95M

Strawberry: 85 days. Long, medium-sized fruit; 20 inches in length, 8 inches in diameter; weight 15 to 25 pounds; rind dark green with darker green stripes. Intense red flesh, ripens to within 1/2 inch of the rind, of delicate texture and excellent, sweet, distinctive flavor. Very good disease resistance. Home garden cultivar. L7M

Sugar Baby:<sup>1</sup> (Icebox Midget) 75 days. An excellent "icebox" type with the coarse texture and sweetness of larger watermelons. Round fruit, 6 to 8 inches in diameter; average weight 8 to 10 pounds; rind thick, dark green, almost black when mature; flesh bright red, sweet, of fine texture. Seeds small, dark brown. For local markets and home gardeners. A16, A27M, A75, B73M, B78, C44, C92, F60, G6, H85M, L7M, M46, N16, R47

Super Sweet: 95 days. Medium-sized, round oval fruit; 8 inches long, weighs 10 to 15 pounds; rind, thin, tough, light green with dark green stripes; flesh bright red, extremely sweet. Small, black seeds. Resistant to anthracnose and fusarium wilt. Developed by Dr. Charles V. Hall at Kansas State University from the same breeding line that produced Allsweet and Crimson Sweet. B75M

Sweet Princess: 90 days. Charleston Gray type with extremely small seeds. Large oblong fruit, weighs about 25 pounds; rind light yellow-green with narrow medium green stripes, smooth, thick and tough; flesh light red, crisp, fine-textured. Seeds tan, unusually small, comparable to tomato seed. Resistant to anthracnose and fusarium wilt. B8M, 184, N16

Tom Watson: 90 days. Large, oblong fruit, 10 to 12 inches in diameter; weight 30 to 40 pounds; rind dark green with slight mottling, tough and elastic; flesh dark red, somewhat coarse, firm, juicy, sweet. Ships well, especially for long distances. Also a traditional home garden favorite. F24M, G57M, K71

#### WHITE-FLESHED

Cream of Saskatchewan: 85 days. Nearly round fruit, about 10 inches long, weighs 8 to 10 pounds; rind thin, brittle, pale green with dark green stripes; flesh white to creamy white or pale yellow, sweet, very flavorful, fragrant, of good quality. Seeds black. Vigorous, prolific vines. Does well in northern areas. Heirloom. D29P, D68, E24, F73D, K20M, L88J, L94, N24M, N84, 089

#### YELLOW/ORANGE-FLESHED

##### HYBRID

##### Seeded

Yellow Baby:<sup>1</sup> 75 days. Round to oval fruit, about 7 inches in diameter, weighs 8 to 10 pounds; rind thin, tough, light green with darker green stripes; flesh bright yellow, crisp, sweet, quality excellent. Seeds small, few. Has better storage qualities than other "icebox" types. All America Selections winner in 1975. C20M, E91G, H95, 191, K10, L42, Q39

Yellow Doll:<sup>1 2</sup> 65 days. A very early maturing, hybrid "icebox" type with yellow flesh. Round fruit, weighs 5 to 8 pounds; rind thin, medium green with very dark green stripes; flesh yellow, crisp, extra sweet. Seeds small, black. Semi-compact vine. B6, B73M, C85M, C92, D76, E75{PL}, G16, G93M, H33M, H85M, 139, K73, L89, M46, N16, etc.

##### Seedless

Golden Fummy: Round fruit, weighing 15 1/2 to 17 1/2 pounds; glossy green rind, with dark-green stripes; crisp, bright yellow flesh with a high sugar content; seedless. Good for long distance shipping and storage. Very vigorous vine; produces a high percentage of marketable fruit. C20M, Q88

Honeyheart: 80-85 days. Small, round fruit; weight 8 to 11 pounds; rind light gray-green with darker green stripes; flesh bright yellow, crisp, juicy, fine-grained, very sweet; seedless, or with a

few immature soft seeds. Ripens just after Jack of Hearts. For home gardens and fresh market. E75{PL}, F63

##### OPEN-POLLINATED

Black Diamond Yellow Fleshed: 90 days. Exactly like standard Black Diamond except for the color of the flesh. Round to oval fruit, weighs 60 to 70 pounds under favorable conditions; rind thin, tough, glossy, dark grayish-green; flesh yellow, tender and sweet. Seeds grayish-black, rather small. Ships well. K5M, N16

Desert King: 85 days. Round to slightly oblong fruit; rind medium thin, tough, light green; flesh deep yellow, very sweet and tender. Seeds grayish black. Holds on the vine a month or more after ripening without losing quality or becoming sunburned. A good shipper. Very drought tolerant. C20M, D26D, E97, H85M, K5M, K10, K49T, N16

Golden Honey: 85 days. Round to oval fruit, about 12 inches long, weighs 30 pounds; rind brittle, medium green with darker green stripes; flesh bright yellow, crisp, tender, of fine flavor. Seeds large, light tan. Very popular with home gardeners and local market growers. C20M, C92, G57M, K49T

Hopi Yellow Fleshed: 100 days. Small round fruit, weighs 3 to 4 pounds; exceptionally sweet, crisp, full-flavored yellow flesh. Drought resistant; traditionally dry farmed in sand dunes. Crushed seeds are used to grease the stones on which the traditional Indian *piki* bread is baked. C95, F73D, 116, N84

Moon and Stars Yellow Fleshed:<sup>5</sup> A family heirloom from Georgia. Rare white-seeded, yellow-fleshed cultivar of the Moon and Stars class. Rinds have yellow "moons" with many small yellow "stars". Excellent flavor, though not quite as sweet as the pink-fleshed Moon and Stars. Somewhat tolerant to disease and drought. B49, E7M, K23{PL}, K49M, L7M

Orangelo: 85 days. Large, cylindrical fruit, grows up to 50 pounds; rind very thin, light green with darker green stripes; flesh solid, very crisp, sweet and flavorful. Seeds cream-colored with dark rings and tips. Vigorous, productive vine. Very popular with local market growers. K20M, L77D, N16

Tendergold: (Willhite's Tendergold) 80 days. Large, cylindrical fruit; very uniform in size and shape; weighs 22 to 28 pounds; rind tough, dark green mottled with lighter green; flesh sweet, yellow, becomes more orange and sweeter as it matures. Black seeds. A good shipper for a yellow-fleshed melon. Will last 7 to 20 days longer after ripening than Tendersweet Orange Fleshed. C20M, L77D, N16

Tendersweet Orange Fleshed: 90 days. Oblong fruit, 18 inches long, weighs 35 to 40 pounds; rind light green with dark green stripes, medium-thick; flesh orange, very sweet and rich. Seeds medium-sized, off white. Of fine eating quality, but must be harvested promptly when mature. Considered sweeter than Tendersweet Yellow Fleshed. A75, B75M, C20M, D76, G57M, H85M, K5M, N16, N52

Tendersweet Yellow Fleshed: 80 days. Oblong fruit, about 18 inches long, weighs up to 30 pounds; dark green rind with light green stripes; flesh yellow, very tender, never stringy, of exceptionally high sugar content. Seeds solid white to cream with black rims and tips. A good shipper. C20M, K49M, K71

Yellow Crimson: 80 days. Nearly round fruit, very similar to Crimson Sweet in size and appearance; rind light green with darker green stripes; flesh bright yellow, of very good flavor. Seeds black. Ripens somewhat earlier than Crimson Sweet. A27M, D26D, H85M, N16

##### CODES FOR SPECIAL TYPES

1. Icebox
2. Short-Vined
3. Edible-Seeded
4. Yellow-Rinded

## 5. Spotted

## WHEAT {S}

## TRITICUM X AESTIVUM

**Arlin:** Hard white winter wheat. One of the cultivars used for *Natural s'Wheat* white wheat, a trademark of the American White Wheat Producers Association. Producers naturally white whole grain flours and breads that are much sweeter and lighter in color than those from traditional red wheats. Very productive, semi-dwarf plants; earliest maturing of the white wheats. Developed by Kansas State University. A38P{DF}, A38P{PD}

**Baart:** White spring wheat which is very drought tolerant and high in protein. Esteemed for tortillas and pastry flour. Grown as a winter wheat in California. Originally from South Africa. Was grown widely in the United States until the 1950's, when it was replaced by shorter-stemmed cultivars for machine harvest. SMITH, C.; F73D, L3J, L77D, N84

**Bronze Chief:** High-protein, hard red spring wheat of outstanding quality. Produces excellent stoneground whole wheat flour with 15% protein content. Superior for making bread and other baked goods. Developed in Montana, where it is a popular local variety. M96{DF}, M96{PD}

**Dwarf Indian:** Rather short heads, somewhat reminiscent of bottle brushes; plump, nearly round kernels. Short, very upright plant, just under 3 feet tall; very productive. Ripens in mid-July. Bred for ease of harvest. Can be sown in the fall or early spring. J39, K17M

**Early Triumph:** 260 days. A tall, high quality, hard red winter wheat, tolerant of most wheat diseases of the Central United States. Grows 36 to 40 inches tall and is a heavy straw producer, which subjects it to lodging on high nitrate soils. Yields 40 bushels per acre on good soil with no chemical fertilizer. A week earlier to ripen than Turkey Red in Salina, Kansas test plots. F73D

**Globe:** (Globe Wheat) Unique kernels that are spherical, almost round. Sturdy, dependable plants have a reputation for drought resistance. Spring growth-habit; may be autumn planted in mild-winter areas. Stiff straw; early maturity. Traditional baking wheat of pre-modern India. G47

**Hard Red Calcutta:** Hard red spring wheat. Ripens very early, 2 or 3 weeks earlier than Red Fife: Very short straw; bearded heads; not very productive. Types with white, brown, or black chaff are known. Introduced into Canada from India in the late 1800's. BULLER; F73D, K17M

**Huron:** Ladoga x White Fife. Bearded, hard red spring wheat. Ripens in mid-season, a few days earlier than Red Fife. Produces good crops. Originated by A.P. Saunders at the Central Experimental Farm, Ottawa, in the late 1800's. Still grown commercially in Quebec and Atlantic Canada. BULLER; J39

**Klasic:** Hard white spring wheat. One of the cultivars used for *Natural s'Wheat* white wheat. Produces sweet, light-colored whole-meal breads preferred by consumers. Developed by Northrup King. Released for production in California in 1981. Also an important cultivar in Colorado and the intermountain and Pacific Northwest states. A38P{DF}, A38P{PD}

**KS196:** Hard white winter wheat. One of the cultivars used for *Natural s'Wheat* white wheat. Golden-colored kernels, not as plump as those of Arlin or Oro Blanco. Tends to have a higher protein content than Rio Blanco. Moderately productive, semi-dwarf plants; very winter hardy; resistant to stem rust. Susceptible to sprouting in areas of high humidity. Developed by Kansas State University. A38P{DF}, A38P{PD}

**Ladoga:** Awnless, hard red spring wheat. Ripens about 10 days earlier than Red Fife. Produces commercial flour which is somewhat deficient in strength, coarse-textured, and very yellow in color. Originated near Lake Ladoga, north of Petrograd, Russia. Introduced into Canada in the late 1800's. BULLER; F73D, J39, K17M

**Lavras:** Notable for its very good flavor when cooked as a whole grain. Matures in mid-July. High yielding plant, grows about 3 1/2 feet tall. Can be sown in the fall or early spring. Originated in Brazil. K17M

**Maris Widgeon:** An old English cultivar that is experiencing a revival thanks to increased interest in organic gardening. The grain is of good bread making quality, and the tall straw is much in demand for thatching. Also good for sprouting. R32

**Marquis:** 115 days. Early, beardless, hard red spring wheat. Very plump, heavy, rich-red, highly uniform grains. Good milling and baking qualities. Susceptible to leaf and stem rust. Grows 28 to 48 inches tall. Principal wheat grown in western Canada during the 1920's and 1930's. Developed from Red Fife and Hard Red Calcutta by C.E. Saunders at the Central Experimental Farm, Ottawa. Introduced in 1909. BULLER; F73D, J39, K17M

**Oro Blanco:** Hard white winter wheat. One of the cultivars used for *Natural s'Wheat* white wheat. Yields sweet tasting, light-colored breads and bakery products that require less sweetener than those made from the stronger flavored red wheats. High yielding, semi-dwarf plant; matures in midseason. Developed by Kansas State University. A38P{DF}, A38P{PD}

**Pacific Blue Stem:** (White Lammas) Turn-of-the-Century heirloom from California. Soft white spring wheat. Plump, white berries. Became famous for its excellent baking qualities. Also had the reputation of being a good weed competitor, due to its height. Stem and awns are striped with blue. Susceptible to stem rust and Hessian fly. Originated in Australia. B49, F73D

**Perennial:** (Perennial Wheat) Novelty plant with good productivity and grain flavor. For fall planting. Genetically programmed to lie dormant under winter snow blanket until spring. Some of the plants will live on to produce grain in successive years. G47

**Polk:** A hard red, spring bread wheat. Not as high-yielding as winter wheat, but planted and harvested during the same growing season. Polk is a high protein, high gluten, medium-height spring wheat with superior bread baking quality. Sow in early spring as soon as ground can be prepared. G6, N84

**Prairie Gold:** (Golden 86) {DF} High-protein, hard white spring wheat. Excellent for bread as well as all other baking needs, its naturally golden color makes baked goods of outstanding appearance. Due to its low tannin content, it produces breads that are milder and sweeter tasting. Developed by Wheat Montana Farms & Bakery. E31, E31{PE}, M67, M96, M96{ED}

**Prelude:** Hard red spring wheat. Excellent baking and milling qualities. High protein content. Ripens at the very start of the wheat harvest in Canada, about 2 weeks sooner than Marquis. Short straw; bearded heads; relatively low yields. Developed by C.E. Saunders. Introduced in 1913. BULLER; J39

**Red Fife:** (Scotch Fife) Awnless, hard red spring wheat. Excellent milling and baking qualities. Mother of the North American spring wheat industry. Most popular Canadian hard red spring wheat in the 19th Century. Named after David Fife, an Ontario farmer who was the first to raise Red Fife in North America, in 1842. Originated in central or eastern Europe. BULLER; F73D, J39, K17M

**Reward:** 78 days. Marquis x Prelude: Awnless, hard red spring wheat. Short, plump kernels of good quality. Easy to hand-thresh. Early maturing cultivar tolerant of acid soils. Originated by C.E. Saunders at the Central Experimental Farm, Ottawa, Ontario, Canada. Released in 1928. U8M

Rio Blanco: Hard white winter wheat. One of the cultivars used for *Natural sWheat* white wheat. Semi-dwarf plants with good yield potential and winter hardiness; matures medium early. Has the widest range of adaptability of the white wheats approved by the American White Wheat Producers Association. Developed by AgriPro Biosciences. A38P{DF}, A38P{PD}

Roblin: Hard red spring wheat. Very early maturing, beardless type. High in gluten. Makes a superb bread flour. Popular in Maine. Should be planted as early in the spring as possible. Sow 4 to 6 pounds per 1,000 square feet. D68

Rose: A hard red, winter bread wheat, higher yielding than spring wheat. Rose is awned (bearded), medium height, and winter hardy. Developed in South Dakota. Sow August 25 to September 10 in climate similar to Maine, later further south. Grain matures July to Early August. G6

Rouge a Bordeaux: Hard red spring wheat. Awned type. Excellent for making bread. Yields well. Heirloom from France where it is esteemed for its flavor. L3J

Rough Rider: Hard red winter wheat. Selected for winter hardiness, milling and baking qualities, and medium maturity. Should be planted the first two weeks of September. To reduce the chances of winter-kill, limit growth to 4 to 6 inches. Developed in North Dakota. Released in 1975. D68

Snow White: Hard white winter wheat. Lacks the tannin in the bran that makes hard red wheats red and creates a bitter flavor in whole grain breads. Excellent for baking, producing a much sweeter loaf. Produces white bran suitable for use in breakfast and snack foods. Developed by Goertzen Seed Research. F21T{DF}, F21T{PD}

Talavera: Awnless, white spring wheat. Large, thin-skinned, very white grains. Produces fine, attractive flour. Large, plump, well-filled heads; long, stiff straw. Will not survive severe winters. Not adapted to clay soils. Selected by a Colonel Le Couteur of Bellevue Villa, Jersey, Channel Islands. Introduced in 1838. Of historical interest. KLIPPART; U8M

Turkey Red: Hard red winter wheat. Excellent bread making quality. Delicious, nutty flavor. Makes loaves that are high, light, fine-textured and nutritious, Tall and bearded. Fair producer under drought conditions. An old cultivar, originally brought to Kansas in 1874 by Mennonite families emigrating from the village of Annenfeld in Crimea. Widely used in breeding contemporary bread wheats. LEONARD, VOTH; L3J

White Sonora: Beardless spring pastry type used to breed Green Revolution wheat. Short, wedge-shaped ears. Very drought adapted. Lodges if over-watered. Once grown by the Tohono O'odham Indians, but now endangered. It was their traditional *torilla* wheat. Originated in Mexico. F73D, J25M, K17M, L3J, N84

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## WHITE SAPOTE {GR}

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### CASIMIROA EDULIS

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Bravo: Selected as having the best flavor in a blind taste test conducted by the North San Diego County chapter of the California Rare Fruit Growers. Produces over-size, yellow-green fruit in the fall. I83M

Chestnut: Medium to large, roundish fruit; up to 4 inches in diameter and 3/4 of a pound; skin greenish-yellow, thin, slightly bitter; flesh golden-yellow, of fine texture; flavor rich, but does not become overly sweet; quality very good; ripens August to September. Keeps and ships well, and has therefore been used as a commercial cultivar. Tree bears very large crops every other year, up to 3 tons. Originated in Vista, California by Wesley C. Chestnut. D57

Denzler: Small to medium-sized fruit, about 3 inches in diameter; light green skin; very smooth white flesh with a sweet, melting flavor; quality excellent fresh; seeds 2 or 3; ripens October to December, handles and ships well. Skin is peeled off and not eaten. Large, vigorous, upright tree; bears lightly. Selected at Mr. Denzler's farm in upper Kona on the Big Island of Hawaii. J22

Golden Globe: Small, attractive, rounded fruit; turns a pale yellow when ripe; has an excellent complex flavor; large seeds. Keeping qualities of ripe fruit only fair. Tree not a heavy bearer; apparently self-fertile. Recommended as a backyard variety for warmer areas. GLOWINSKI; Q93

Lemon Gold: Medium to large fruit; weight 4 to 6 ounces; skin attractive, light yellow when mature, resists blemishes. Quality very good, with a pleasant slightly acid flavor. Seeds small, usually 4. Season October to November; ripens on the tree and holds there for several weeks without much deterioration. Develops a good flavor when ripened off the tree. Keeps well. Tree bears good crops annually. A63,174,183M, Q93

Leroy's: Medium to large, flat-ovate fruit; weight 6 to 8 ounces; skin golden colored on the side exposed to the sun, when ripe; flesh sweet, with a distinct, rich butterscotch-like flavor. Ripens over a long season, from August to Christmas. Originated in Vista, California by Leroy Ross. D57,174

Louise: Large, baseball-sized, roundish fruit; skin yellow; quality high; excellent, vanilla custard-like quality. Season January to September but will ripen nearly year round in frost-free areas. Tree bears heavy crops. Originated in Chula Vista, California by Pacific Tree Farms. I83M

McDill: Very large, round to oval fruit, up to 1 1/2 pounds; skin thin, light yellowish-green when ripe; flesh sweet but not cloying, eating quality excellent; usually 1 to 3 large seeds; ripens November to December, does not keep well. Tree vigorous, precocious, prolific. D57, G49,174,183M, J22, Q93

Ortego: Oval fruit, usually with only 1 relatively small seed; average weight 4 to 5 ounces. Has good eating and keeping qualities. Ripens in late mid-season and continues for about 2 months. Tree compact, somewhat drooping; a regular and heavy bearer. Originated in Escondido, California by Orton H. Englehart. T49M{SC}

Pike: Large, rounded or oblate fruit, to 4 inches in diameter and 9 ounces; skin dark green, thin, very fragile, somewhat bitter; flesh white to yellowish, of rich, non-bitter flavor. Usually has 4 rather large seeds. Ripens September to December, keeps fairly well. Tree small, bears regularly and heavily. Has been used as a commercial cultivar. Originated in Santa Barbara, California in the late 1920's. BROOKS 1972; T49M{SC}

Reinecke Commercial: Fruit irregular in shape, weighs about 5 ounces; skin an attractive golden-orange when ripe; flavor good. Seeds moderate in number. Has excellent keeping qualities, and even if picked prematurely will soften and become fairly good eating. Tree a relatively poor yielder. Originated in San Diego, California by John M. Reinecke. Q93

Suebelle: (Hubbell) Medium to small, roundish fruit, weight 2 to 6 ounces; skin green or yellowish-green, bruises easily; flesh custard-like, melting, of excellent flavor; sugar content 22%; seeds few, rather small; ripens July to April; does not store or ship well. Tree precocious; nearly everbearing within a mile of the coast. Originated in Encinitas, California by Susan Hubbell. Introduced in 1931. BROOKS 1972, MORTON 1987a; A63, D23M, D57, G49, 174,183M

Sunrise: Medium to large, roundish to oblate fruit, weight 6 to 10 ounces; irregular in shape; skin light-green turning yellow when ripe, thin, easily bruised; flesh creamy-white, sweet but not cloying, balanced by a delicate lemon-like flavor, very well-textured; quality excellent; ripens July to October. Tree tall, upright, vigorous; very



productive, bears 2 crops some years. Originated in Vista, California. 174

Vernon: Medium to large, roundish fruit; skin relatively thin, yellow when ripe; flesh very sweet, flavor excellent; ripens November to January, keeps relatively well on the shelf. Tree very productive and dependable, bears over a long period of time. Does well in coastal areas. Originated in Vista, California by Wells W. Miller. D57,183M

Vista: Small, somewhat flattened fruit, averages about 8 ounces; skin light yellow when mature; flesh rather firm, eating quality very

good; seeds 1 to 4, depending on size; ripens October to November, keeps well. Tree bears well but has a tendency toward alternate bearing. T49M{SC}

Yolinda: Very good flavor. Taste test winner at tastings conducted by the California Rare Fruit Growers. Medium large tree. Seedling of unknown parentage originating in Yorba Linda, California. I83M

## SUPPLIERS

### DOMESTIC COMMERCIAL

- AOM Abbey Garden Cactus - P.O. Box 2249, La Habra, CA 90632-2249, (562) 905-3520. Cactus and succulent plants. CAT \$2, RET, PC/CC, M.O. \$20.
- A1 Abbott & Cobb, Inc - P.O. Box 307, Feasterville, PA 19053, 1-800-345-7333. Vegetable seed breeders and growers. CAT FREE, WHLS, CC, OVER, M.O. \$400.
- A2 Abundant Life Seed foundation - P.O. Box 772, Port Townsend, WA 98368, (360) 385-7192. Non-profit, tax exempt organization growing and collecting untreated seeds of non-hybrid vegetables, herbs, wild flowers, trees and shrubs, grains and garden flowers. CAT \$2 (OPTIONAL DONATION), R & W, PC/CC, OVER.
- A5 Adams County Nursery, Inc - P.O. Box 108, Aspers, PA 17304, (717) 677-8105. Produces finished one-year old fruit tree nursery stock, including apples, pears, peaches, plums, nectarines, apricots and cherries. Established in 1905. CAT FREE, R & W, PC, OVER.
- A6 Sharon Adams' Tropical Gems - 1016 South Ihrk Ave., Titusville, FL 32780, (407) 267-5186. Seeds of tropical fruit trees. CAT FREE, R & W, PC.
- A7 Adriana's Cararon - 409 Vanderbilt St., Brooklyn, NY 11218, 1-800-316-0820. Large selection of herbs and spices, spice mixtures, dried mushrooms, chiles, condiments, coffees and teas, oils and vinegars, gourmet ethnic food products. *Sells the following products:* sambhar, chat masala, char masala, amchoor, lalu, cinnamon sugar, berbere, panchphoran, ras el hanout, Morita peppers, basilwood-smoked Corno di Toro peppers, basil wood-smoked Pasilla peppers, canned Moroccan truffles, almond oil, roasted macadamia oil, Hoiiblanca olive oil, Souri olive oil, red palm oil, Champagne vinegar, Sherry vinegar, Chinkiang vinegar, pickled Habanero peppers, chimichurri, canned huitlacoche, fireek, Moroccan preserved lemons, acacia honey with walnuts, lychee honey, dried lotus leaves, shichimi and ambarella chutney. CAT FREE, R & W, PC/CC, OVER.
- A7M Aesop's Kitchen and Cupboard - 222 East Market, Indianapolis, IN 46204, (317) 632-0269. Specializes in Greek and Middle Eastern foods. Previously known as Athens Imported Foods. *Sells the following products:* bulghur wheat, couscous, trahanas, brined grape leaves, both red and green za'atar, retsina, Hymettus honey, and pickled Peperoncini peppers. CAT FREE, R & W, PC.
- A9 Agri Sun Nursery - 6910 East Clarkson Ave., Selma, CA 93662, 1-800-443-5355. Commercial tree nursery growing deciduous nursery stock, including peaches, nectarines, apples, plums and apricots. Prepares and ships budwood. CAT FREE, WHLS, PC, OVER, M.O. 20 TREES.
- A12G AgroForester Tropical Seeds - P.O. Box 428, Holualoa, HI 96725, (808) 324-4427. Specializes in multipurpose trees used in tropical agroforestry, especially nitrogen-fixing trees. CAT FREE, R & W, PC, OVER, M.O. \$10.
- A12M Agua Viva Seed Ranch - Route 1, Bex 8, Taos, NM 87571, 1-800-248-9080. Wildflower seeds, hardy perennials, bulbs. CAT FREE, R & W, PC/CC, OVER.
- A13M Ahler's Organic Date Garden - P.O. Box 726, Mecca, CA 92254, (760) 396-2337. Organically grown dates. CAT FREE, RET, PC.
- A15M Alaska Wild Berry Products - 5225 Juneau St., Anchorage, AK 99518, 1-800-280-2927. Mail order gift boxes featuring regional foods of Alaska. *Sells the following products:* wild salmonberrv iellv, wild lingonberrv iellv and iam, wild highbush cranberry iellv, moss berrv iellv, watermelon berrv iellv, and fireweed honev. CAT FREE, RET, PC/CC, CANADA ONLY.
- A15Z Albert Lea Seed House - P.O. Box 127, Albert Lea, MN 56007, 1-800-352-5247. Field seeds. CAT SASE, R & W, PC/CC.
- A16 Alberta Nurseries & Seeds Ltd. - Box 20, Bowden, AB TOM 0K0, Canada, (403) 224-3544. Complete listing of early maturing garden seed cultivars for short season or high altitude areas. CAT FREE, R & W, PC/CC, OVER.
- A18 Aldrich Berry Farm & Nursery, Inc. - 190 Aldrich Rd., Mossyrock, WA 98564, (360) 983-3138. Specializes in highbush blueberry plants. Also sells Christmas trees and conifer seedlings and transplants. CAT FREE, R & W, PC, M.O. \$25.
- A19 Aldridge Nuisery, Inc - P.O. Bex 1299, Von Orrry, TX 78073, 1-800-531-5580. Fruit trees, figs, grape vines, nut trees, shade and ornamental trees, palms, native plants and tropical and foliage plants. CAT FREE, WHLS.
- A20M Alfred's Brewing Supply - P.O. Box 5070, Slidell, LA 70469, 1-800-641-3757. Large selection of beer and wine making supplies. *Sells the following products:* Curacao bitter orange peel, Sweet orange peel, American white oak barrels, toasted Oaqghips^IpirOh beer ext rapt, ^nd Ouillaja bark extract heading liquid. CAT \$1, R & W, CC, OVER.
- A21 Alfrey Seeds - P.O. Box 415, Knoxville, TN 37901, (423) 524-5965. Small, single proprietor company selling seed of rare and hard to find peppers, tomatoes and okra. CAT SASE, RET, PC, OVER.
- A24 Allen Plant Company - P.O. Box 310, Fruitland, MD 21826-0310, (410) 742-7122. Strawberry plant specialists for over 100 years. Also supplies raspberries, blackberries, blueberries and asparagus. CAT FREE, RET, PC/CC.
- A25 Allen, Sterling & Lothrop - 191 U.S. Route No. 1, Falmouth, ME 04105-1385, (207) 781-4142. Packet and bulk seed supplier of vegetable, herb and flower seeds. CAT \$1 REFUNDABLE, RET, PC/CC.

- A25G Allergy Resources - 557 Burbank St., Ste. K, Broomfield, CO 80020, 1-800-873-3529. Natural food products, mostly organically grown. Specializes in foods that are non-allergenic. *Sells the following products: puffed amaranth, puffed Kamut, almond and oat milks, Rice Dream, Dacona, kudzu noodles, wild rice and rye pastas, beet sugar, almond, hemp, black currant seed and macadamia nut oils, Jerusalem artichoke, pearl millet and milo flours, guar and ^nth^, gum.s\_ and poi* CAT FREE, RET, PC/CC, CANADA ONLY.
- A26 Allies - P.O. Box 2422, Sebastopol, CA 95473, 1-800-873-3529. Rare tropical ethnopharmacological plants and seeds including tribal medicines, vegetables, herbs and fruits. Succeeded Of the Jungle. CAT \$2, RET, PC, OVER.
- A27M Alma Farm Supply, Inc - P.O. Box 820, Alma, AR 72921, (501) 632-3194. Vegetable seeds adapted to the Southwest. CAT FREE, R & W, PC.
- A28 Aloha Tropicals - 1247 Browning Court, Vista, CA 92083, (760) 941-0920. Exotic tropicals including bananas, ginger, passionfruits, guavas and papayas. CAT \$3, R & W, PC/CC, M.O. \$20.
- A33M Alton Spiller, Inc. - P.O. Box 696, Los Altos, CA 94023, (415) 941-8288. Specializes in dried sourdough starter cultures. *Sells the following products: dried barm, dried barm kits, and sprouted wheat flour*. CAT FREE, R & W, PC, OVER.
- A34 Amberg's Nursery - 3164 Whitney Road, Stanley, NY 14561-9550, (716) 526-5405. Growers of size controlled apple and pear trees available on a wide range of rootstocks. Also offers a custom-budding service. CAT FREE, R & W, PC.
- A36 The American Ginseng Gardens - 404 Mountain Meadow Lane, Flag Pond, TN 37657, (423) 743-3700. Ginseng seeds and roots. CAT \$1, RET, PC/OC, OVER.
- A38M American Spoon Foods - P.O. Box 566, Petoskey, MI 49770-0566, 1-800-222-5866. Authentic American foods from the Upper Peninsula of Michigan. *Sells the following products: black raspberry butter and preserves, Marionberry preserves, Black Mission fig preserves, Redhaven peach preserves, Earliglow strawberry preserves, and Heritage raspberry preserves*. CAT FREE, R & W, PC/CC, OVER, M.O. \$10.
- American Takii, Inc. - 301 Natividad Rd., Salinas, CA 93906, (408) 443-4901. American subsidiary of Takii & Co., Ltd., Japan, which see.
- A38P American White Wheat Producers Association - P.O. Box 326, Atchison, KS 66002, 1-800-372-4422. Farmer-owned marketing cooperative acting as sole grower and distributor of hard white winter wheat varieties developed by the Kansas Agricultural Experiment Station. *Sells the following products: white whole wheat flour, patent flour, bran, bulghur, flakes and cracked wheat*. CAT FREE, R & W, PC/CC, OVER.
- A39 Ames' Orchard & Nursery - 18292 Wildlife Rd., Fayetteville, AR 72701, (501) 443-0282. Small family-owned nursery specializing in disease and pest resistant fruit trees and berry plants adapted to the Ozarks. CAT FREE, R & W, PC/CC.
- A40 A.G. Ammon Nursery - Rt. 532, P.O. Box 488, Chatsworth, NJ 08019, (609) 726-1370. Commercial grower of certified highbush blueberry plants. CAT FREE, WHLS, PC, OVER, M.O. 50 PLANTS EACH CULTIVAR.
- A41 Amycel, Inc - P.O. Box 1360, San Juan Bautista, CA 95045, 1-800-995-4269. Large commercial producer of mushroom spawn. CAT FREE, WHLS.
- A41G J.D. Andersen Nursery - 2961 Calle Frontera, San Clemente, CA 92673, (714) 361-3652. Good selection of bananas, tropical fruit trees, palms, cycads, and tropical exotics. CAT FREE, RET, PC/CC, M.O. \$60.
- A41M Anderson's Seed Co. - 20253 Elfin Forest Rd., Escondido, CA 92029, (760) 471-1464. Seeds of trees and shrubs, palms, eucalyptus, tropical foliage plants. Previously known as Seedco. CAT FREE, WHLS, OVER.
- A45 Ann's Dutch Imports - 4357 Tujunga Ave, Studio City, CA 91604, (818) 985-5551. Exotic foods from Holland and Indonesia. *Sells the following products: canned Holland Capuciniers peas, keluwak nuts, peteh asin, selassie (sweet basil seeds), krupuk emping, canned witloof, sambal grandaria, sambal kemiri, durian jam and jelly, grass jelly kolang, makapuno and nata de coconut*. CAT FREE, R & W, PC / CC, OVER.
- A47 The Antique Rose Emporium - 9300 Lueckemeyer Rd., Brenham, TX 77833-6453, 1-800-441-0002. Specializes in old roses. CAT \$5, RET, PC/CC.
- A49D Apothecary Rose Shed - P.O. Box 194, Pattersonville, NY 12137, (518) 887-2035. Dried herbs and spices. *Sells the following products: Jamaican allspice, celery flakes, celery seed, and seedless rosehips*. CAT FREE, RET, PC.
- A50 Appalachian Gardens - P.O. Box 87, Waynesboro^ PA 17268-0087, 1-888-327-5483. Ornamental trees, shrubs and perennials both scarce, unusual and rare and old favorites. CAT FREE, RET, PC/CC.
- A51M Appalachian Wildflower Nursery - 723 Honey Creek Rd., Reedsville, PA 17084, (717) 667-6998. Offers plants not usually cultivated. Mid-Appalachian natives, with emphasis on shale barrens and pine barrens. Also natives of central and N.E. Asia. CAT \$2, R & W, PC, OVER.
- A52M Apple Valley Market - 9067 U.S. 31, Berrien Springs, MI 49103, 1-800-237-7437. Natural food items. *Sells the following products: canned gandules, com nuts, sov nuts, TVP soy cheese, rice cheese, almond milk, almond butter, Cafix, Vegit, Spike, guanabana juice, and soy, filbert, pecan and pistachio butters* CAT FREE RET, PC/CC.
- A53 Applesource - 1716 Apples Rd., Chapin, IL 62628, 1-800-588-3854. Unique service offering a wide selection of apples for tasting, approximately 100 varieties. Home gardeners can sample apples of the different cultivars before deciding which to plant. CAT FREE, RET, PC/CC, CANADA ONLY, M.O. \$22.
- A53M Applewood Seed Co. - 5380 Vivian St., Arvada, CO 80002, 1-800-232-0666. Wildflower seeds and seed mixtures, native grasses. CAT FREE, R & W, PC/CC, M.O. \$10.
- A54 Aqua Mart, Inc - P.O. Box 547399, Orlando, FL 32854-7399, 1-800-245-5814. Water lilies, lotus and other aquatic plants. CAT \$3, RET, PC/CC, OVER.
- A57 Arena Rose Ca - P.O. Box 3096, Paso Robles, CA 93447, (805) 227-4094. Antique and modern roses. Succeeded Roses of Yesterday & Today, Inc. CAT \$5, R & W, PC.
- A61 Arrowhead Alpines - P.O. Box 857, Fowlerville, MI 48836, (805) 227-4094. Rare and unusual perennials and rock garden plants. Previously known as Life-Form Replicators. CAT \$2, R & W, PC.

- A61M Artemis International Inc - 4646 West Jefferson Blvd., Ste. 280, *Fori* Wayne, IN 46804, (219) 436-6899. Specializes in chokeberry and elderberry foods. *Sells the following product/s: chokeberry juice concentrate and elderberry juice concentrate, in both liquid and dry forms.* CAT FREE, R & W, PC, OVER.
- A62 Artistic Fkrms - P.O. Box 262, lynden, WA 98264-9618, 1-800-869-0560. Grower and distributor of exotic fruits and vegetables from Chile and other areas, many originating from their own patented research and development. *Sells the following product/s: du-kon, chilaereenos, peereenos, and pickled Cuke-Asaurus.* CAT FREE, WHLS, OVER, M.O. 1 PALLET.
- A63 Atkins Nursery - 3129 Reche Road, Fallbrook, CA 92028, (760) 728-1610. Large selection of fruit and nut trees. Specializes in Citrus and avocados. CAT FREE, WHLS, PC.
- A65 Aubin Nurseries - P.O. Box 1089, Carman, MB R0G 0J0, Canada, (204) 745-6703. Hardy fruit trees, berry plants, grape vines, ornamental trees and shrubs. CAT FREE, R & W, PC/CC, CANADA ONLY.
- A66 Aurora Farm - Box' 697, Porthill, ID 83853, (250) 428-4404. Heirloom and open-pollinated vegetable, herb and flower seeds, biodynamically grown. CAT \$3, RET, PC, OVER.
- A67M The Australian Catalogue Co. - 7605 Welbom St., Suite 112, Raleigh, NC 27615-4115, 1-800-808-0938. Specializes in foods from Australia. *Sells the following product/s: Anzac biscuits with wattleseed, orange wattleseed tea, coolibah honey, and leatherwood honey* CAT FREE, RET, PC/CC, OVER.
- A69 Aztekakti - P.O. Box 26126, El Paso, TX 79926, (915) 858-1130. Cactus and succulent seeds. CAT FREE, R & W, PC, OVER.
- A70 B & D Lilies - P.O. Box 2007, Ibrt Townsend, WA 98368, (360) 385-1738. Haidy, long lasting hybrid lily bulbs, species lilies, day lilies. CAT \$3, R & W, PC/CC, OVER, M.O. \$20.
- A71 B & Z Nursery, Inc. - 1850 South Newcomb, Porterville, CA 93257, 1-800-495-4769. Citrus trees, seeds, rootstocks and budwood. CAT FREE, WHLS, PC, OVER.
- A71G B-West Outdoor Specialties - 5132 East Pima, Tucson, AZ 85712, 1-800-293-7855. Outdoor cooking supplies from South Africa. *Sells the following product/s: Cape smoke wine-barrel shavings.* CAT FREE, R & W, PC/CC, OVER.
- A72M Bacchus & Barleycorn, Ltd. - 6633 Nieman Rd., Shawnee, KS 66203, (913) 962-2501. Supplies and equipment for the home wine and beer maker. CAT FREE, R & W, PC/CC.
- A73M Bag o'Beans - 4200 Rewana Way #503, Reno, NV 89502, 1-800-782-3267. Specializes in gourmet popping com and bean mixes. CAT FREE, R & W, PC, M.O. \$15.
- A74 Bailey Nurseries - 1325 Bailey Road, Saint Paul, MN 55119-6199, 1-800-829-8898. Hardy northern grown fruit trees, ornamental trees and shrubs, garden perennials, conifers, roses. CAT FREE, WHLS, CC.
- A75 Bakker Brothers Seeds cf Idaho - P.O. Box 1964, Twin Falls, ID 83303, (208) 733-0015. Vegetable seed growers and marketers worldwide. Specializes in beans. CAT FREE, WHLS, PC/CC, OVER, M.O. \$250.
- A76 Balducci's - Shop-from-Home Service; P.O. Box 10373, Newark, NJ 07193, 1-800-225-3822. Mail order branch of the famous Greenwich Village, New York gourmet food emporium. *Sells the following product/s: sauteed broccoli raab, marinated baby artichokes with stems, and braised finocchio.* CAT FREE, RET, PC/CC, CANADA ONLY.
- A78 A Bamboo Shoot Nursery - P.O. Box 121, Rrtter Valley, CA 95469, (707) 743-1710. Large selection of hardy and tropical bamboos, both runners and dumpers. CAT \$1, R & W, PC, OVER, M.O. \$50.
- A79 Bamboo Sourcery - 666 Wagnon Road, Sebastopol, CA 95472, (707) 823-5866. Small nursery specializing in a wide range of bamboos including a collector's list. CAT \$2, R & W, PC, OVER.
- A79M The Banana Tree - 715 Northampton St., Easton, PA 18042, (610) 253-9589. Wide selection of rare and uncommon tropical seeds and bulbs, banana corms, palms, oriental vegetables, ornamentals. CAT \$3, R & W, PC/CC, OVER, M.O. \$8.
- A80M Barber Nursery - Rt. 3, Box 205, Willis, TX 77378, (409) 856-8074. Seedling trees and shrubs. Previously known as Mountain Mist Nursery. CAT FREE, R & W, PC, OVER, M.O. \$25.
- A82 Vernon Barnes & Son Nmsery - P.O. Box 250, McMinnville, TN 37111, (931) 668-8576. Over 250 varieties of fruit and nut trees, shrubs, shade and flowering trees, evergreens, wild flowers and perennials. CAT FREE, R & W, PC/CC.
- A83M Barney's Ginseng Patch - 433 Highway B, Montgomery City, MO 63361, (573) 564-2575. Ginseng and goldenseal seed and planting roots. Also other native plants. CAT FREE, R & W, PC, OVER, M.O. \$25.
- A84 Barrel Builders, Inc - P.O. Box 268, St. Helena, CA 94574, (707) 942-4291. Wine barrels from France and Hungary, barrel shaving and toasting services, cooperage supplies. *Sells the following product/s: durmast oak barrels, American white oak barrels and chips, French oak chips, and Oregon white oak chips.* CAT FREE, R & W, PC
- A84M Barwacz Farm - 05146 59th St., Grand Junction, MI 49056, (616) 253-4419. Blueberries, cranberries, lingonberries. CAT FREE, R & W, PC.
- A85M Bass Pecan Ca - P.O. Box 42, Lumberton, MS 39455-0042, 1-800-732-2671. Large selection of pecan trees and pecans for eating. Also other fruit trees, including apple, pear, persimmon, plum and fig. CAT FREE, R & W, PC/CC, OVER.
- A86 Bates Nut Farm - 15954 Woods Valley Rd., Valley Center, CA 92082, (760) 749-3333. Dried fruits and nuts, candies, gift packs. CAT FREE, R & W, PC/CC, CANADA ONLY.
- A87M Baxter Seed Co., Inc - 416 South Missouri Ave., Weslaco, TX 78596, 1-800-822-2767. Full line of vegetable seeds. CAT FREE, WHLS, OVER.
- A88M Bay Laurel Nursery - 2500 El Camino Real, Atascadero, CA 93422, 1-800-847-6473. Large selection of fruit and nut trees, berry plants, grape vines, kiwi, perennial vegetables, flowering trees and shrubs. CAT FREE, R & W, PC/CC.
- A90M The Bean Bag - P.O. Box 221430, Sacramento, CA 95822, 1-800-845-2326. Growers and shippers of specialty beans, gourmet rice, organically grown beans and ancient grains. *Sells the following product/s: red lentil flour, Pinto bean flour, black bean flour, and Treasure*

- State barley grits and flakes. CAT FREE, R & W, PC/CC, OVER.
- A91 **Bear Creek Nursery** - P.O. Bex 411, Northport, WA 99157, (509) 732-4417 (fax). Extensive selection of fruit and nut trees for northern temperate areas, multi-purpose trees and shrubs, apple scionwood, fruit tree rootstocks for home grafting, edible perennials, berry plants. CAT FREE, R & W, PC/CC, OVER.
- A93M **Beaver Creek Nursery** - 7526 Pelleaux Road, Knoxville, TN 37938, (423) 922-3961. Specializes in rare, unusual or uncommon ornamental plants. Many are native to the Southeast. CAT \$1, RET, PC/CC, M.O. \$20.
- A94M **Beaverton Foods Inc** - P.O. Box 687, Beaverton, OR 97075, 1-800-223-8076. Gourmet and specialty horseradish, mustards and sauces. *Sells the following products: prepared horseradish, horseradish sauce, whipped horseradish, cream style horseradish, Maui onion mustard, and green peppercorns.* CAT FREE, R & W, PC/CC, OVER.
- A95 **Becker's Seed Potatoes** - R.R. #1, Trout Creek, ON P0H 2L0, Canada, (705) 724-2305. Small, family operated seed potato farm offering a large selection of hard to find, old and new potato cultivars exclusively for home gardeners and hobbyists. CAT FREE, RET, PC/CC, CANADA ONLY.
- A97 **Bee Riddle Farm** - 2380 Ole King St., Conw<sup>^</sup>, SC 29526, (803) 365-0280. Herb plants, scented geraniums, everlasting and perennial flowers. CAT FREE, RET, PC/CC.
- A98 **Beer & Wine Crafts** - 450 Fletcher Pkwy., Ste. 112, El Cajon, CA 92020, (619) 447-9191. Supplies and products for homebrewers and winemakers. *Sells the following products: Bovsenberrv, Loganberry and Marionberry fruit concentrate wine bases.* CAT FREE, RET, PCC/CC.
- A99 **Beer and Wine Hobby** - P.O. Bex 3104, Wakefield, MA 01880-0772, (617) 933-8818. Complete line of home wine and home beermaking supplies and equipment. *Sells the following products: flaked oats, Scotch heather liqueur extract, white oak barrels.* CAT FREE, RET, PC/CC, OVER.
- B0 Beersheba Wildflower Garden** - P.O. Box 551, Beersheba Springs, TN 37305, (615) 692-3575. Native ferns and wild flowers. CAT FREE, R & W, PC.
- B1 Behm and Hagemann, Inc** - 3021 West Farmington Road, Ifeoria, IL 61604, 1-800-798-5153. Vegetable seeds. CAT FREE, WHLS, PC, OVER.
- BIG Beilstein's Blueberry Patch** - 1285 West Hanley Rd., Mansfield, OH 44904, (419) 884-1797. Specializes in highbush blueberries. CAT FREE, R & W, PC/CC.
- B1M **Belche Herb Company** - P.O. Box 1305, Schenectady, NY 12301. Small company specializing in culinary herbs and gourmet vegetables. CAT \$3, R & W, PC/OC, OVER.
- B2 Graham Bell Industries** - P.O. Box 9339, Brea, CA 92822, (714) 996-2040. Specializes in varietal bee pollens from Australia. Subsidiary of Great Health. *Sells the following product: marri, wandoo and jarr<sup>^</sup>h pollens.* CAT FREE, RET, PC/CC, OVER, M.O. \$15.
- B3M Bentley Seeds, Inc.** - 16 Railroad Ave., Cambridge, NY 12816, (518) 677-2603. Vegetable, herb and flower seeds, mostly open-pollinated. CAT FREE, RET, PC.
- B4 Bergeson Nursery** - Rt. 1, Box 184, Fertile, MN 56540, (218) 945-6988. Fruit trees, berry plants, perennial vegetables, vines, shade and ornamental trees. CAT FREE, RET, PC.
- B6 **Berlin Seeds** - 5371 County Rd. 77, Millersburg, OH 44654-9104, (330) 893-2030 (no telephone orders). Vegetable and flower seeds, fruit trees, berry plants, perennial vegetables. Succeeded Raber's Greenhouse & Nursery. CAT \$1, RET, PC, CANADA ONLY.
- B8 **Berton Seeds Co. Ltd.** - 4260 Weston Rd., Weston, ON M9L 1W9, Canada, (416) 745-5655. Large selection of vegetable seeds, all of which are imported from Italy. Specializes in chicory. CAT FREE, R & W, PC, U.S. ONLY, M.O. \$10.
- B8M **The Bethlehem Seed Ca** - P.O. Box 1351, Bethlehem, PA 18018, 1-888-545-7333. Vegetable, herb and flower seeds. Also garden perennials and seeds for edible landscaping. CAT FREE, RET, PC/CC.
- B8P **The Beverage People** - 840 Piner Rd., #14, Santa Rosa, CA 95403, 1-800-544-1867. Beer, wine, mead and cider making supplies. *Sells the following products: French oak chins, Rauch malt, rice extract, Belgian candi sugar, and flaked oats.* CAT FREE, R & W, PC/CC, OVER.
- B9M **Bigelow Nuiseries** - P.O. Box 718, Northboro, MA 01532, (508) 845-2143. Perennials, herbs, native ferns and wild flowers, roses, vines, trees and shrubs. CAT FREE, R & W, PC/CC.
- B13 **Bishop Seeds** - P.O. Box 338, Belleville, ON K8N 5A5, Canada, 1-800-411-2062. Field and farm seeds, forages, grasses. CAT FREE, R & W, PC/CC, CANADA ONLY.
- B15M **Bitterroot Nuisery** - 521 Eastside Hwy., Hamilton, MT 59840, (406) 961-3806. Growers of fruit trees, berry plants, perennial vegetables, shade and ornamental trees, and conifers suitable for planting in the intermountain region. CAT FREE, R & W, PC/CC, OVER.
- B19 **The Black Diamond Nursery** - 21226 Mount Gaylor Dr., Winslow, AR 72959, (501) 369-4043. Specializes in small fruits including raspberries, blackberries, blueberries, grapes, currants and gooseberries. CAT FREE, R & W, PC.
- B19M **Black Jewell Popcorn Inc.** - R.R. #1, St. Francisville, IL 62460, 1-800-948-2302. Specializes in Black Jewell popping corn. CAT FREE, R & W, PC/CC.
- B20 **Black Shield, Inc.** - 5356 Ihn American Fwy. N.E., Albuquerque, NM 87109, 1-800-653-9357. Specializes in gourmet popcorn. CAT FREE, R & W, PC, OVER, M.O. 6 LBS.
- B21M **Bland Farms** - P.O. Box 506, Glennville, GA 30427-0506, 1-800-843-2542. Fresh sweet Vidalia onions, Vidalia onion food products, farm fresh blueberries, Elephant garlic. *Sells the following products: Vidalia onions, "babv" Vidalia onions, Vidalia onion bits, relish and onion rings.* CAT FREE, RET, PC/CC, OVER.
- B21P **Blessed Herbs** - 109 Barre Plains Rd., Oakham, MA 01068, 1-800-4372. Family owned and operated business specializing in bulk herbs and herbal products, mainly organically grown or wildcrafted. CAT FREE, R & W, PC/CC, OVER, M.O. \$10.
- B22 **Blossomberry Nursery** - Rt. 2, Box 28F, Clarksville, AR 72830, (501) 754-6489. Specializes in table grape cultivars adapted primarily to the Eastern United States. Also muscadine grapes. CAT FREE, R & W, PC, M.O. \$10.

- B23M Blue Heron Fhrm - P.O. Box 68, Rumsey, CA 95679, (916) 796-3799. Certified organically grown oranges and walnuts. CAT FREE, R & W, PC, OVER.
- B23P Blue Heron Fruit Shippers - P.O. Box 936, Sarasota, FL 34230, 1-800-237-3920. Gourmet citrus from Florida's Indian River, tropical fruits, specialty foods, gift baskets. *Sells the following products: Cabernet Sauvignon and White Zinfandel wine jellies.* CAT FREE, RET, PC/CC, CANADA ONLY.
- B26 Blueberry Hill - R.R. 1, Maynooth, ON KOL 2S0, Canada, (613) 338-2535. Specializes in native lowbush and highbush blueberry plants. Also lingonberry, currants and gooseberries, perennial vegetables. CAT FREE, R & W, PC, CANADA ONLY.
- B27M Bluebird Orchard and Nursery - 4711 Three Mile Rd. N.E., Grand Rapids, MI 49525, (616) 361-0919. Antique and choice apple cultivars available as scionwood. CAT FREE, RET, PC.
- B28 Kurt Bluemel, Inc. - 2740 Greene Lane, Baldwin, MD 21013-9523, (410) 557-7229. Field grown ornamental grasses and grass-like plants, bamboos, aquatic plants, perennials, groundcovers and ferns. CAT FREE, R & W, PC/CC, OVER, M.O. \$50.
- B29 Bluestem Prairie Nursery - 13197 East 13th Rd., Hillsboro, IL 62049, (217) 532-6344. Native Illinois wildflower seeds and plants. CAT FREE, RET, PC.
- B30 Bluestone Perennials - 7211 Middle Ridge Rd., Madison, OH 44057, 1-800-852-5243. Hardy perennials offered as small, started plants. CAT FREE, R & W, PC/CC.
- B31 Bob's Red Mill - 5209 S.E. International Way, Milwaukie, OR 97222, (503) 654-3215. Natural stone ground whole grain flours, cereals, meals, bulk grains, seeds, beans. *Sells the following product is: diastatic malt, chana dal, red lentil flour, corn nuts, corn bran, corn pasta, graham flour, hazelnut flour, wheat nuts, white rice flour, brown rice flour, Oatrim, artichoke pasta, teff flour, guar gum, and chili pepper flour.* CAT FREE, R & W, PC/CC.
- B32 Bobtown Nursery - 16212 Country Club Rd., Melfa, VA 23410, 1-800-201-4714. Native, wetland and ornamental plants. CAT FREE, R & W, PC/OC, OVER, M.O. \$100.
- B38 Boone's Native Seed Co - P.O. Box 10363, Raleigh, NC 27605-0363, 1-800-201-4714. Small family owned company specializing in seeds native to the Americas. Also carries a selection of heirloom and traditional tomatoes and peppers. CAT FREE, RET, PC, OVER.
- B39M Boothe Hill Wildflowers - 921 Boothe Hill Rd., Chapel Hill, NC 27514, (919) 967-4091. Plants and seeds of native and naturalized wild flowers and grasses. All plants are nursery propagated and organically grown. Succeeded Passiflora Wildflower Co. CAT \$1, R & W, PC, M.O. \$10.
- B41 Bordier's Nursery, Inc. - 7231 Irvine Blvd, Irvine, CA 92618, 1-800-854-7487. Bamboo, palms, ferns, ornamental trees and shrubs. CAT FREE, WHLS.
- B43M Boston Mountain Nurseries - 20189 North Hwy. 71, Mountainburg, AR 72946, (501) 369-2007. Family-owned and operated nursery specializing in small fruits, including raspberries, blackberries, strawberries, grapes, and blueberries. CAT FREE, R & W, PC.
- B45M Bottoms Nursery & Vineyard - 360 Pullians Rd., Concord, GA 30206, 1-800-368-0385. Specializes in muscadine grape vines. Also fruit trees and berry plants. CAT FREE, R & W, PC, OVER.
- B46M Bouchard Family Farm - Route 1, Box 690, Fort Kent, ME 04743, (207) 834-3237. Specializes in authentic French Acadian pancake mixes. *Sells the following products: ploygs mix, and Acadian Light buckwheat flour.* CAT FREE, R & W, PC/CC.
- B47 Boughen Nurseries Valley River Ltd. - P.O. Box 12, Valley River, MB R0L 2B0, Canada, (204) 638-7618. Hardy fruit trees, berry plants, grape vines, ornamental trees and shrubs, garden perennials. Established in 1912. CAT \$2, RET, PC/CC, CANADA ONLY, M.O. \$20.
- B49 Bountiful Gardens - 18001 Shafer Ranch Rd., Willits, CA 95490-9626, (707) 459-6410. Non-profit company offering open-pollinated, untreated seeds of vegetables, herbs, grains, flowers and green manures. Publishes a separate Rare Seeds catalog. CAT FREE, R & W, PC/CC, OVER.
- B51 Bowman's Hill Wildflower Preserve - Washington Crossing Historical Fhrk, P.O. Box 685, New Hope, PA 18938-0685, (215) 862-2924. Seed of wildflowers native to Pennsylvania. CAT \$1, RET, PC, OVER.
- B52 Boyd Nursery Co - P.O. Box 71, McMinnville, TN 37111, (615) 668-9898 or 668-4747. Nut trees, wildflowers, flowering shrubs, shade trees. CAT FREE, WHLS.
- B53 Boyer Nurseries & Orchards, Inc. - 405 Boyer Nursery Road, Biglerville, PA 17307, (717) 677-8558 or 677-9567. Fruit and nut trees, grape vines, ornamental trees and shrubs. CAT FREE, R & W, PC, M.O. \$20.
- B53M Brandt's Fruit Trees - P.O. Box 10, Parkei, WA 98939, (509) 877-3193. Commercial grower of fruit trees. CAT FREE, WHLS.
- B54M Brewers Beer Gear - 2633 State St., Carlsbad, CA 92008, (760) 434-0435. Complete line of homebrewing supplies. One of the owners is a professional brewer and a graduate of the Siebel Institute's Diploma Course in Brewing Technology. *Sells the following products: black button sage, avocado, cherry, raspberry, blackberry, star thistle, and buckwheat honeys.* CAT FREE, RET, PC/CC, OVER.
- B55M Bridgeview Beer & Wine Supply - 624 Main St., Oregon City, OR 97045, 1-888-650-8342. Large selection of beer and wine making equipment and ingredients including 150 strains of yeast. Also sells over 1000 beers from around the world and many rare wines. CAT FREE, RET, PC/CC.
- B58 Brittingham's Plant Fhrms - P.O. Box 2538, Salisbury, MD 21802, (410) 749-5153. Specializes in virus-free strawberry plants propagated from foundation stock. Also sells asparagus, raspberries, blackberries, blueberries and grape vines. CAT FREE, R & W, PC/CC.
- B58M Brokaw Nursery Inc - P.O. Box 4818, Saticcy, CA 93007, (805) 647-2262. Specializes in certified avocado trees, seed, budwood and rootstocks. Also sells citrus, kiwi and cherimoya. CAT FREE, WHLS, PC, OVER.
- B60M Brooks Tropicals - P.O. Drawer 9, Homestead, FL 33090, 1-800-437-7381. Grower, packer and shipper of a large selection of exotic tropical fruits and vegetables. Previously known as J.R. Brooks & Son. *Sells the following products: water coconut, green papava, malanea coco, eddoe and fresh winged bean pods.* CAT FREE, WHLS, OVER, M.O. 100 BOXES OF EACH.
- B61M Joseph Brown Wild Seeds and Plants - 7327 Hoefork Lane, Gloucester Ibint, VA 23062, (804) 642-0736. Seeds and plants of North American natives, garden perennials, hardy African species. Previously known as

- Mid-Atlantic Wildflowers. CAT \$1, R & W, PC, OVER, M.O. \$10.
- B63M Bruno Pepper Co. - 11291 North Ham Lane, Lodi, CA 95242, (209) 477-0066. Processors of gourmet pickled vegetables. Specializes in peppers including rare types from the Sierra Nevada mountains of California and Nevada. *Sells the following product/s: pickled Sierra Nevada Chileno. Italian White Wax and Sweet Banana peppers. and pickled asparagus.* CAT FREE, R & W, PC, M.O. 1 CASE.
- B65 Bryant Preserving Coi - P.O. Box 367, Alma, AR 72921, 1-800-634-2413. Old fashioned pickles, preserves and relishes. *Sells the following product/s: pickled watermelon rind. pickled muskmelon. pickled honeysuckle melon, and tomatillos.* CAT FREE, R & W, PC.
- B68 Buddies Nuisery - P.O. Box 14, Birdsboro, PA 19508, (610) 582-2410. Shade trees, conifers, flowering shrubs, native species for wetland restoration and landfill reclamation. CAT FREE, WHLS.
- B70 Buffalo Creek Honey Farm - Rt. 1, Box 147, Nahunta, GA 31553, (912) 462-5068. Gourmet honey collected from mostly organic sources in Florida, Georgia and the Blue Ridge Mountains. *Sells the following product/s: orange blossom. tupelo. gallberry. and sour wood honeys.* CAT FREE, R & W, PC, M.O. 6 JARS.
- B71G Buonitalia- 75 Ninth Ave., New York, NY 10011, (212) 633-9090. Gourmet foods imported from Italy. *Sells the following product/s: Caciotta cheese. pickled caperberries. frozen blood orange puree. Mostarda di Cremona. Mostarda mantovana. cotognata. Mortadella with pistachios. Pane carasau. Carta da musica. acacia honey. tangerine juice. and puntarelle.* CAT FREE, R & W, PC/CC.
- B71M The Burchell Nuisery, Inc - 4201 McHenry Avenue, Modesto, CA 95356, 1-800-828-8733. Large commercial grower of fruit and nut trees. CAT FREE, WHLS.
- B73M Burgess Plant & Seed Co. - 905 Four Seasons Road, Bloomington, IL 61701, (309) 663-9551. Vegetable and flower seeds, fruit and nut trees, berry plants, grape vines, perennial vegetables, ornamental trees and shrubs. CAT \$1, RET, PC/CC.
- B73T Burns Farms - 16158 Hillside Circle, Montverde, FL 34756, (407) 469-4490. Specializes in huitlacoche. Also Mexican herbs. *Sells the following product/s: both fresh and frozen huitlacoche.* CAT FREE, R & W, PC/CC.
- B74 Burnt Ridge Nursery - 432 Burnt Ridge Rd., Onalaska, WA 98570, (360) 985-2873. Specializes in unusual trees, shrubs and vines that produce edible nuts or fruits. Also offers nuts for eating including chestnuts, walnuts, filberts, heartnuts and hickory nuts. CAT SASE, R & W, PC/CC, CANADA ONLY.
- B75 W. Atlee Burpee & Co. - 300 Fhrk Avenue, Warminster, PA 18991-0001, (215) 674-4900. One of the oldest and B92 best known seed companies in the United States. Offers a wide variety of vegetable, herb and flower seeds, berry plants, grape vines, bulbs and roots. CAT FREE, R & W, PC/CC, OVER.
- B75M D.V. Burrell Seed Growers Ca - P.O. Box 150, Rocky Ford, CO 81067-0150, (719) 254-3318. Vegetable and flower seed growers specializing in muskmelon, watermelon, pepper, squash and tomato. CAT FREE, RET, PC/CC, OVER, M.O. \$7.50.
- B76 Burt Associates Bamboo - P.O. Box 719, Westford, MA 01886, (508) 692-3240. Bamboo plants and bamboo craft items. CAT \$2 REFUNDABLE, RET, PC/CC, CANADA ONLY.
- B76M Bush Dreams - P.O. Box 336, Pickering, ON L1V 2R6, Canada, (905) 686-1375. Specializes in native Australian bushfoods. CAT FREE, R & W, PC.
- B77 Busse Gardens - 5873 Oliver Ave. S.W., Cokato, MN 55321-4229, 1-800-544-3192. Specializes in herbaceous perennials with emphasis on Hosta, daylilies, Siberian irises and hard to find selected perennials. CAT \$2 DEDUCTIBLE, R & W, PC/CC, M.O. \$25.
- B77M The Butchart Gardens - P.O. Box 4010, Victoria, BC V8X 3X4, Canada, (250) 652-4422. Offers many popular and old fashioned varieties of flowers. CAT \$1 REFUNDABLE, RET, PC/CC, OVER.
- B78 Butterbrooke Farm Seed - 78 Barry Road, Oxford, CT 06478, (203) 888-2000 (no telephone orders). Traditional and heirloom, non-hybrid vegetable seeds produced organically and chemically untreated. Sold in economical packets. CAT SASE, R & W, PC, OVER.
- B83 C & O Nuisery - P.O. Box 116, Wenatchee, WA 98807-0116, 1-800-232-2636. One of the oldest and largest fruit tree nurseries in Washington. Established in 1906. CAT FREE, RET, PC/CC, OVER.
- B84 Cactus By Dodie - 934 East Mettler Rd., Lodi, CA 95242, (209) 368-3692. Cactus and succulent plants. CAT FREE, R & W, PC/CC, OVER, M.O. \$20.
- B86 The Cactus Farm - Route 5. Box 1610, Nacogdoches, TX 75961, (409) 560-6406. Cactus and succulent plants. CAT FREE, RET, PC, M.O. \$15.
- B89M Cal's Homy - P.O. Box 28, Calvary, GA 31729, 1-800-704-0278. Authentic tupelo honey from the banks of the Apalachicola River in Florida. *Sells the following product/s: white tupelo honey.* CAT FREE, R & W, PC.
- B90 Cal/West Seeds - P.O. Box 1428, Woodland, CA 95776, 1-800-824-8585. Sprouting and forage seeds. CAT FREE, WHLS, PC, OVER.
- B91 California Asparagus Seed and Transplants, Inc. - 2815 Anza Ave., Davis, CA 95616, (530) 753-2437. Specializes in hybrid asparagus, many developed from material obtained from the University of California breeding program. CAT FREE, R & W, PC.
- B91P California Carnivores - 7020 Trenton-Healdsburg Rd., Forestville, CA 95436, (707) 838-1630. Carnivorous plants. CAT FREE, RET, PC.
- B91T California Cuisine - P.O. Box 596, Maumee, OH 43537, 1-800-753-8558. Gourmet foods, San Francisco sourdough starter culture. *Sells the following product/s: yellow sun-dried tomato pesto. pickled snap peas. red bell pepper sauce. and cassoulet.* CAT FREE, RET, PC/CC, OVER.
- California Flora Nuisery - P.O. Box 3, Fulton, CA 95439, (707) 528-8813. Specializes in unusual and hard to find perennials, herbs and shrubs from Mediterranean climates including California, South Africa, Mediterranean Europe, Australia and Chile. CAT FREE, R & W, PC.
- B92M California Grapevine Nursery - 1085 Galleron Rd., St. Helena, CA 94574-9790, 1-800-344-5688. Specializes in certified #1 dormant grape rootstock. Also certified dormant grafted vines on a custom-ordered basis. CAT FREE, WHLS, M.O. 50 OF EACH.

- B93M California Nursery Co. - Niles District, Box 2278, Fremont, CA 94536, (510) 797-3311. Large selection of fruit and nut trees, grape vines, citrus and avocados, bamboo. One of the oldest nurseries in California. Established in 1865. No longer publishes a catalog. Call for availability. CAT FREE, RET, PC, OVER, M.O. \$100.
- B94 Callahan Seeds - 6045 Foley Lane, Central Point, OR 97052, (541) 855-1164. Tree and Shrub seed. Specializes in Western North American species. CAT SASE, R & W, PC, OVER.
- B94M Callaway Gardens Country Store - P.O. Box 2000, Pine Mountain, GA 31822, 1-800-280-7524. Regional specialty foods. *Sells the following products: muscadine sauce, jelly, juice, cider and preserves, and peach cider.* CAT FREE, RET, PC/CC, OVER.
- B96 Camellia Forest Nursery - 125 Carolina Forest Rd., Chapel Hill, NC 27516, (919) 967-5529. Small nursery specializing in Camellias and uncommon plants from Japan and China. Also carries kiwi. CAT FREE, RET, PC, OVER, M.O. \$25.
- B98T Campanula Connoisseur - 702 Traver Trail, Glenwood Springs, CO 81601, (919) 967-5529. Specializes in Campanulas. CAT FREE, RET, PC.
- B99 Campberry Farms - R.R. #1, Niagara-on-the-Lake, ON L0S 1J0, Canada, (905) 262-4927 (no telephone orders). Small nursery offering trees of unusually hardy, specialty fruit, nut and ornamental plants. CAT \$2, R & W, PC, OVER, M.O. \$25.
- C2 Canyon Creek Nursery - 3527 Dry Creek Road, Oroville, CA 95965, (916) 533-2166. Small, family operated nursery specializing in uncommon perennials. CAT \$2, RET, PC/CC.
- C3 Capriland's Herb Farm - 534 Silver St., Coventry, CT 06238, (860) 742-7244. Large selection of herb seeds and plants, scented geraniums and herbal products. Owned by well-known herbalist and author Adelma Grenier Simmons. Does not ship plants. CAT SASE, RET, PC, OVER, M.O. \$5.
- C3M Cardullo's Gourmet Shop - 6 Brattle St., Cambridge, MA 02138, (617) 491-8888. Gourmet foods from around the world. *Sells the following products: amnberry, borage, manuka, rata, kamahi, and viper\*s bugloss honeys.* CAT (CALL FOR PRICES), RET, PC, OVER.
- C4 Carhart Feed and Seed, Inc - P.O. Box 55, Dove Creek, CO 81324, (970) 677-2233. Grains, legumes, seed of native plants for revegetation and reclamation work. CAT FREE, R & W, PC.
- C4M Caribbean Island Imports - 4253 Park Place, Crown Point, IN 46307, 1-800-246-4639. Gourmet foods from St. Lucia, Jamaica, Grenada and Dominica. *Sells the following products: manly, sorrel and SQuorsop concentrates, nutmeg jam, jellv and svrup, and grapefruit marmalade.* CAT FREE, RET, PC/CC.
- C6M Carmel Valley Seed Ca - P.O. Bck 582, Carmel Valley, CA 93924, 1-800-246-4639. California native wildflowers and grasses, regional seed mixes. CAT FREE, R & W, PC, OVER.
- C7M Carolina Biological Supply Ca - 2700 York Road, Burlington, NC 27215, 1-800-334-5551. Complete line of biological supplies including live cultures of fungi, bacteria, algae and blue-green algae. Also plants and seeds. CAT \$17.95, R & W, PC/CC, OVER.
- C9 Carroll Gardens - 444 East Main St., Westminster, MD 21157-5540, 1-800-638-6334. Broad selection of rare and unusual herbs, trees and shrubs, vines, roses, evergreens and perennials. CAT \$3, R & W, PC/CC, M.O. \$25.
- C9M Carter Seeds - 475 Mar Vista Drive, Vista, CA 92083, (760) 724-5931. Bulk distributor of tree and shrub seed, ornamental grasses, herbs, wild flowers, palms and hybrid flowers. CAT FREE, R & W, PC/CC, OVER.
- C11G Casados Farms - P.O. Box 1269, San Juan Pueblo, NM 87566, (505) 852-2433. Specializes in Southwestern foods. *Sells the following products: panocha flour, chicos, blue com atole, and combusks.* CAT FREE, R & W, PC, OVER.
- C11J Cascade Bulb & Seed - P.O. Box 271, Scotts Mills, OR 97375, (503) 873-2218. Small nursery specializing in seeds and plants of Alliums, lilies, and daylilies for the discriminating gardener and hybridizer. Previously known as Dr. Joseph C. Halinar. CAT SASE, R & W, PC, OVER.
- CUM Cascade Forestry Nursery - 22033 Fillmore Rd., Cascade, IA 52033, (319) 852-3042. Seedlings and transplants of northern grown fruit and nut trees, evergreens, ornamental shrubs, timber trees and windbreaks. CAT FREE, R & W, PC, OVER, M.O. \$35.
- CUT Cascade Mushroom Co. - 223 S.E. Thiid Ave., Portland, OR 97214, (503) 233-5881. Fresh and dried wild mushrooms, fresh wild produce. *Sells the following product/s: both fresh and dried mushrooms (all species), fresh, flash-frozen and canned Perigord truffles.* CAT FREE, R & W, PC, OVER.
- C13T Cattail Meadows - P.O. Box 39391, Solon, OH 44139, (216) 248-4581. Specializes in native perennials. CAT FREE, RET, PC.
- C14 Caudill Seed Ca - 1201 Story Avenue, Louisville, KY 40202, 1-800-626-5357. Large selection of sprouting seeds for commercial sprout growers. Also specialty beans and a small selection of organic sprouting seeds and beans. CAT FREE, WHLS, OVER.
- C15M Cedar Valley Nursery - 3833 McElfresh Rd. S.W., Centralia, WA 98531, (360) 736-7490. Specializes in tissue culture propagation of small fruits, vegetables and ornamentals. Large selection of blackberries and raspberries. CAT FREE, R & W, PC, OVER, M.O. \$25.
- C16 Cedarbrook Herb Farm - 986 Sequim Ave. South, Sequim, WA 98382, (360) 683-7733. Seed of culinary herbs, herbs for tea, everlastings and other flowers for drying, herbal products, elephant garlic for planting or eating. CAT FREE, RET, PC/CC.
- C17 The Cellar Homebrew - P.O. Box 33525, Seattle; WA 98133, 1-800-342-1871. Beer and wine making supply company. Also known as Beer & Winemaking Cellar. *Sells the following product/s: Curacao bitter orange peel, and the following liqueur extracts - Poire Williams, Triple Sec, Drambuie, Irish Cream, Kahlua, Tia Maria and Creme de Cassis.* CAT FREE, RET, PC/CC, OVER.
- C17M Central Grocery Co. - 923 Decatur St., New Orleans, LA 70116, (504) 523-1620. Italian and Cajun food specialties. *Sells the following product/s: chicory coffee and-filelPQwdSL* CAT FREE, RET, PC, OVER.
- C19 Cernitin America Inc - P.O. Box 544, Utica, OH 43080, 1-800-831-9505. Nutritional supplements. Specializes in flower pollen extracts. *Sells the following product/s: Cemilton, and VentruX.* CAT FREE, R & W, PC/CC.



- C20M Champion Seed Co - 4630 West Jennifer, Ste. 103, Fresno, CA 93722-6415, (209) 275-1101. Extensive selection of vegetable, herb and flower seeds. Specializes in Oriental vegetables. CAT (CALL FOR PRICES), WHLS.
- C21M Char-Broil - P.O. Box 1300, Columbus, GA 31902, 1-800-241-8981. Barbecue and grilling supplies. *Sells the following product/s:* maple, apple, cherry, hickory and mesquite smoking woods. CAT FREE, RET, PC/CC, OVER.
- C22 Charleston Tea Plantation - 6617 Maybank Hwy., Wadmalaw, SC 29487, 1-800-443-5987. Producers of American Classic Tea, the only tea grown in America. *Sells the following product/s:* Governor Gray tea, tea jelly, tea honey, and Benne Wafers. CAT FREE, R & W, PC/CC, OVER.
- C22M Chater Pomegranates - 343 Gaidenia Ave., Camarillo, CA 93010, (805) 484-0696. Large selection of pomegranate cultivars developed by John Chater. CAT FREE, RET, PC.
- C24 Chesnok Garlic Farm - 2141 Marshland Rd., Apalachin, NY 13732, (607) 687-7013. Organically grown garlic bulbs for planting or eating. Specializes in Carpathian garlic. *Sells the following product/s:* Carpathian garlic braids and bouquets. CAT FREE, RET, PC.
- C25 Chestnut Hill Nursery - 15105 N.W. 94th Ave., Alachua, FL 32615, (904) 462-4330. Specializes in Dunstan hybrid chestnut plants. Also offers more than 15 cultivars of figs and oriental persimmons. CAT FREE, R & W, PC/CC, OVER.
- C25M Cheyenne Gap Amaranth - 19385 Highway 18, Lurty, KS 67649-9217, (913) 698-2457. Specializes in amaranth seed and amaranth foods. Has small amounts of seed of several experimental lines developed at the Rodale Research Center. Previously known as Arris A. Sigle. *Sells the following product/s:* whole grain amaranth and amaranth flour. CAT \$2, R & W, PC, OVER.
- C25P Chicagoland Winemakers - 689 West North Ave., Elmhurst, IL 60126, 1-800-226-2739. Complete line of beer and winemaking supplies. *Sells the following product/s:* dried dandelion flowers, canned Loganberry and Marionberry fruit, and white oak barrels. CAT FREE, R & W, PC/CC, OVER.
- C26 The Chile Woman - 1704 South Weimer Rd., Bloomington, IN 47403, (812) 332-8494. Extensive selection of pepper plants, more than 150 varieties. Also tomatoes and tomatillos. All organically grown and open-pollinated. CAT FREE, RET, PC/CC, M.O. 6 PLANTS.
- C26M Chinook Plante - P.O. Box 78462, Seattle; WA 98178, 1-800-765-4408. Specializes in wood planks for cooking. *Sells the following product/s:* cedar baking planks, and alder baking planks. CAT FREE, R & W, PC/CC.
- C27 Choice Edibles - 584 Riverside Park Rd., Carriotta, CA 95528, (707) 768-3135. Produces and sells kits and spawn for many types of fungi, including morels. Actively involved in research and advanced growing techniques. CAT SASE, R & W, PC, OVER.
- C27G Chong Imports - 838 Grant Ave., San Francisco, CA 94108, (415) 982-1433. Specializes in Chinese foods. *Sells the following product/s:* dried red and black watermelon seeds, canned winter melon soup, lychee nuts, lychee tea, honey and wine, cellophane noodles, Tientsin fen pi, water chestnut flour, bok choy kan, one hundred unities, lilv-root flour, golden needles, canned Red-in-Snow, dried mandarin peel, prepared sufu, pidan, canned dung sun, Chinese black vinegar, canned ginkgo nuts, mung bean, Szechuan prepared vegetable, canned Mooi Ts'oi, salted tumps, LPfcUgfl ceto, jasmine, lea, Dragro Well tea\*, ShaQhging wine, Kaoliang and Mpptai spirits\*, Mei-kuei-lu, ginseng liqueur, and ling chih liqueur. CAT (CALL FOR PRICES), R & W, PC/CC.
- C27T The Christian Homesteading Movement - R.D. #2G, Oxford, NY 13830-1003, (415) 982-1433. Scion wood for grafting. Specializes in insect and disease resistant fruits, nuts and berries. More than 350 apple cultivars. CAT 2 STAMPS, R & W, PC, OVER.
- C28 Alf Christianson Seed Co - P.O. Box 98, Mount Vernon, WA 98273, (206) 336-9727. Commercial grower of vegetable seeds. CAT FREE, WHLS.
- C29 Chukar Cherry Co - P.O. Box 510, Piossei; WA 99350-0510, 1-800-624-9544. Gourmet dried fruits and nuts, preserves, sauces. Fresh cherries in season. Specializes in cherry products. *Sells the following product/s:* Bing cherry preserves, Rainier cherry relish, chocolate-covered Bing cherries, Montmorency cherries, cranberries and blueberries, and chocolate-covered Espresso coffee beans. CAT FREE, R & W, PC/CC, OVER.
- C29M Citrus Clonal Protection Program - University of California, Department of Plant Pathology, Rubidoux Laboratory for Citrus Research, Riverside, CA 92521, (909) 684-8580. Offers limited quantities of budwood intended for production of nursery increase blocks which can be used by the wholesale nursery industry in California as a source of scions for growing certified nursery stock. Some budwood is available to non-participants in this certification program. CAT FREE, R & W, M.O. \$27.
- C29T Clambake Celebrations - 9 West Road, Skaket Comers, Orleans, MA 06253, 1-800-423-4038. Specializes in lobster Clambakes-To-Go. *Sells the following product/s:* clambake kits., tot, inciwte fresh bladder wrack.....for sieaming, and flaying, cat free, ret, pc/cc.
- C30M Classical Fruits - 8831 Alabama Hwy. 157, Moulton, AL 35650, (205) 974-8813. Fruit and nut trees, berry plants, grape vines. Also gift boxes of jams and jellies, syrup, pickles and relish. *Sells the following product/s:* proscadine hull preserves, and ppm cob jelly cat free, r & w, pc.
- C33 Clifty Mew Nursery - Rt. 1, Box 509, Bonners Ferry, ID 83805, (208) 267-7129. Northern grown, cold hardy seedlings and transplants for timber and reforestation. CAT FREE, WHLS, PC, CANADA ONLY.
- C34 Cloud Mountain Farm - 6906 Goodwin Rd., Everson, WA 98247, (360) 966-5859. Specializes in fruit and nut trees that have been carefully selected to perform well and ripen consistently in the maritime Northwest. Also offers berry plants, and ornamental trees and shrubs. CAT \$1, RET, PC/CC, M.O. \$10.
- C34G The CMC Company - P.O. Box 322, Avalon, NJ 08202, 1-800-262-2780. Gourmet ethnic foods from around the world. *Sells the following product/s:* canned Gijero peppers, salsa verde de Habanero, salsa Cholula, Mexican chocolate., ganged hafflacoche, dried amcado leaves\*, lemon, gmss-RQwfc, lemon grass hearts, namtaatL Chinkiang vinegar, Sichuan preserved vegetable, .ate\* Tellicherr and Muntok peppers, black salt, and Kev Lime juice. CAT FREE, R & W, PC/CC.
- C34M Coachella Valley Date Co. - P.O. Box 27, Coachella, CA 92236, (760) 398-6171. Organically and conventionally

- grown dates, date products. Previously known as Great Date in the Morning and Jim Dunn Organic Date Co. *Sells the following product/s: date pieces and date paste.* CAT FREE, R & W, PC.
- C36 Coastal Gardens & Nursery - 4611 Socastee Blvd., Myrtle Beach, SC 29575, (803) 293-2000. Hostas, bulbs, ornamental grasses, ferns, rare and unusual perennials. CAT FREE, RET, PC/CC, OVER, M.O. \$35.
- C37M Cold Hollow Cider Mill - Rt. 100, Bax 420, Waterbury Center, VT 05677-9704, 1-800-327-7537. Gourmet foods from New England. Specializes in apple products. *Sells the following product/s: apple cider iellv and svrup. beach plum iellv. and maple butter and sugar.* CAT FREE, R & W, PC/CC, OVER.
- C38 Cold Stream Farm - 2030 Free Soil Rd., Free Soil, MI 49411-9752, (616) 464-5809. Specializes in hybrid poplar. Also sells conifers, deciduous trees and shrubs, fruit and nut trees. CAT FREE, R & W, PC, M.O. \$5.
- C41 Coltsfoot - P.O. Box 5205, Grants Pass, OR 97527, 1-800-736-8749. Specializes in non-tobacco herbal chews. *Sells the following product/s: wintergreen. hibiscus, cinnamon and licorice mint herbal chews.* CAT FREE, R & W, PC/CC, OVER.
- C41M Columbia Basin Nursery - P.O. Box 458, Quincy, WA 98848, 1-800-333-8589. Apples, pears, peaches, plums, cherries, apricots, and nectarines for the commercial grower or home orchardist. CAT FREE, R & W, PC, OVER.
- C43M Companion Plants - 7247 North Coolville Ridge Rd., Athens, OH 45701, (614) 592-4643. Extensive collection of common and exotic herb plants and seeds, over 600 varieties. Also edible and medicinal mushroom plugs. CAT \$3, R & W, PC/CC, OVER (SEEDS ONLY).
- C43V Comstock Seed - 8520 West 4th St., Reno, NV 89523, (702) 746-3681. Seeds of native plants, mostly from the Great Basin area. Also grasses and forages. CAT FREE, R & W, PC.
- C44 Comstock, Ferre & Ca - 263 Main St., Wethersfield, CT 06109, (860) 571-6590. Vegetable, herb and flower seeds for northern gardeners, both older traditional cultivars and newer improved types. Established in 1820. CAT FREE, R & W, PC/CC.
- C45M Concord Nurseries Inc. - 10175 Mile Block Road, North Collins, NY 14111-9770, 1-800-223-2211. Large selection of table and wine grapes, over 75 cultivars including American, French hybrid and Vinifera types. Also fruit trees, berry plants, ornamental trees and shrubs. Incorporating Foster Nursery Co., Inc. CAT FREE, WHLS, PC, OVER.
- C47 Congdon & Weller Wholesale Nursery, Inc - P.O. Box 1507, North Collins, NY 14111, 1-800-345-8305. Fruit trees, berry plants, grape vines, ornamental trees and shrubs. CAT FREE, WHLS, OVER.
- C53 The Cook's Garden - P.O. Bax 535, Londonderry, VT 05148, 1-800-457-9703. Seeds of gourmet vegetables, culinary herbs and edible flowers for home gardeners and specialty market growers. Specializes in lettuce, salad greens and mesclun. CAT FREE, R & W, PC/CC, OVER.
- C54 L.E. Cooke Co. - 26333 Road 140, Visalia, CA 93292, 1-800-845-5193. Commercial grower of deciduous fruit, nut and ornamental trees, shrubs, grapevines, and small fruits and perennial vegetables. CAT FREE, WHLS, PC.
- C55M Cooley's Strawberry Nursery - P.O. Box 472, Augusta, AR 72006, (870) 347-2026. Specializes in strawberry plants. CAT FREE, R & W, PC, M.O. 100 PLANTS.
- C56G Cooper's Mill - 1414 North Sandusky Ave., Bucyrus, OH 44820, (419) 562-4215. Large selection of jams and jellies, pickles, chutneys, no sugar added fruit spreads, and fruit butters. Also customized gift boxes. *Sells the following product/s: com cob iellv. dandelion iellv. banana jam. rhubarb iam and pumpkin butter.* CAT FREE, R & W, PC/CC, CANADA ONLY.
- C57 John Cope's Food Products, Inc - P.O. Box 419, Rheems, PA 17570-0419, (419) 562-4215. Specializes in gourmet food items made from corn. Established in 1900. *Sells the following product/s: dried sweet com, canned dried sweet corn.* CAT FREE, RET, PC.
- C58 Com Hill Nursery Ltd. - Rural Route 5, Petitcodiac, NB EOA 2H0, Canada, (506) 756-3635. Historical, scab free and commercial cultivars of apples, small fruits, hardy fruit trees, hardy kiwi, ornamentals, hardy roses. CAT \$2, R & W, PC/CC/OC, OVER.
- C59M Corns - Rt. 1, Box 32, Tuipin, OK 73950, (405) 778-3615. Non-profit organization dedicated to growing and preserving open-pollinated and heirloom cultivars of com. Seed is organically grown and untreated. CAT \$1, RET, PC, CANADA ONLY.
- C60 Corrin Farming - 1442 I Street, Reedley, CA 93654, (209) 638-0032. Specializes in Corinthian or Champagne grapes, both fresh and dried. CAT FREE, WHLS.
- C60D Corti Brothers - P.O. Box 191358, Sacramento, CA 95819, 1-800-509-3663. Unique selection of very high quality gourmet specialty foods, many personally collected or discovered by proprietor Dariell F. Corti. *Sells the following product/s: Mission and Taggiasca olive oils. Taggiasca olive paste, canned Muscat of Alexandria grapes, canned Okubo peaches, acacia, maple and fireweed honeys. Mission del Sol wine (Angelica), Maraschino liqueur, Morlacco (Ratafia), eau de vie de baie de houx, Longiing tea, pear wafers. Seville orange marmalade. Pimenton de la Vera, grano, and Sierra plum preserves, wine iellv and svrup.* CAT FREE, R & W, PC/CC, OVER.
- C60G Coteau Connoisseur - 218 West Warren, Luverne, MN 56156, 1-800-509-3663. Offers four distinctly different types of premium wild rice hand harvested in the Upper Midwest. CAT FREE, R & W, PC.
- C61 Country Carriage Nurseries & Seed - P.O. Box 548, Hartford, MI 49057-0548, (616) 621-2491. Family owned and operated business offering a complete line of fruit and nut trees, small fruits, grapevines and perennial vegetables, plus a small selection of vegetable seeds. Succeeded Dean Foster Nursery. Previously known as Country Heritage Nurseries. CAT FREE, R & W, PC/CC, OVER.
- C61G The Country Cupboard - P.O. Box 345, Ripon, WI 54971, 1-800-535-5437. Direct factory outlet for Lost Acres and Dickinson's brands of jams, jellies, preserves, marmalades, honeys, and other gourmet foods. Subsidiary of JMS Specialty Foods, Inc. *Sells the following product/s: basswood and white clover honeys, and Willamette raspberry preserves.* CAT FREE, RET, PC/CC.
- C64 Country Variety Store - 6263 U.S. Route 68 North, Bellefontaine, OH 43311, (937) 468-7733. Amish specialties, natural foods. Previously known as Amish Country Store. *Sells the following product/s: dried sweet com.* CAT FREE, RET, PC.

- C67 Cream Ridge Winery - P.O. Box 98, Cream Ridge, NJ 08514-0098, (609) 259-9797. Specializes in fruit wines. *Sells the following product/s: Mavwine. Chancellor. Chambourcin and Catawba grane wines, and cranberry. Heritage red raspberry, black raspberry. Montmorency cherry, blackberry, and plum wines.* CAT FREE, RET, PC/CC.
- C67M Cricket Hill Herb Farm, Ltd. - Glen Street, Rowley, MA 01969, (508) 948-2818. Over 300 varieties of common and uncommon herb plants, seeds, herbal products and crafts, dried herbs and teas. CAT (CALL FOR PRICES), RET, PC/CC.
- C68M Crookham Company - P.O. Box 520, Caldwell, ID 83606-0520, (208) 459-7451. Commercial breeder and grower of vegetable seeds. Specializes in com. CAT FREE, WHLS.
- C69 Crosman Seed Corp. - P.O. Box 110, East Rochester, NY 14445, 1-800-444-7333. Vegetable, herb and flower seeds. Publishes a packet seed listing for home gardeners. Established in 1838. CAT FREE, R & W, PC, M.O. \$3.
- C69D Cross Country Nuiseries - P.O. Box 170, Rosemont, NJ 08556, 1-800-444-7333. Large selection of organically grown chile plants, nearly 150 varieties. CAT FREE, R & W, PC, M.O. 12 PLANTS.
- C73P Crusoe Island Natural & Organic Foods - 267 Route 89 South, Sawannah, NY 13146, 1-800-724-2233. Verified organically grown grains, beans, seeds, flours, cereals. Previously known as Community Mill & Bean and Clear Eye Natural Foods. *Sells the following product/s: durum wheat flour, sweet brown rice flour. Red Zinger tea. Canola mayonnaise, oat milk, and watermelon juice.* CAT FREE, R & W, PC/CC, OVER, M.O. \$10.
- C74 Crystal Palace Perennials - P.O. Box 154, St. John, IN 46573, (219) 374-9419. Large selection of hardy and tropical water plants, ornamental grasses, bamboo. CAT FREE, R & W, PC/CC, OVER.
- C74M Culinary Imports - 100 Schillhammer Rd., Jericho, VT 05465, 1-800-958-7678. Specialty vinegars and mustards from Limburg, Holland. *Sells the following product/s: sugar beet vinegar, mustards flavored with sugar beet vinegar.* CAT FREE, R & W, PC/CC.
- C75M Cumberland Valley Nuiseries - P.O. Box 471, McMinnville, TN 37110, 1-800-492-0022. Specializes in peach, plum and nectarine trees. Also grows apple, pear, apricot, and cherry. CAT FREE, R & W, PC, OVER, M.O. \$30.
- C76 The Cummins Garden - 22 Robertsville Rd., Marlboro, NJ 07746, (732) 536-2591. Specializes in dwarf and unusual Rhododendron hybrids and species, dwarf conifers, evergreen and deciduous azaleas, and companion plants. CAT \$2, RET, PC/CC, M.O. \$15.
- C76M Cummins Nursery - 18 Glass Factory Bay Rd., Geneva, NY 14456, (315) 789-7083. Small, family run nursery specializing in disease resistant, antique, unique and cold-hardy varieties of fruit trees. Also apple rootstocks and custom grafting. CAT FREE, R & W, PC.
- C78 Cycad Gardens - 4524 Toland W^, Los Angeles, CA 90041, (213) 255-6651. Cycad seedlings. CAT SASE, R & W, PC, M.O. \$30.
- C81 Da Vail Date Gardens - 82-375 Avenue 52, Coachella, CA 92236, (760) 398-4600. Dates and date products. Originators of the Empress and Honey dates. *Sells the following product/s: date butter and date nibbles.* CAT FREE, RET, PC, OVER.
- C81M Dabney Herbs - P.O. Box 22061, Louisville, KY 40252, (502) 893-5198. Herb plants and seeds, native wildflowers, herbal products. Succeeded Rutland of Kentucky. CAT \$2, R & W, PC/CC, CANADA ONLY.
- C82 Dacha Barinka - 46232 Strathcona Rd., Chilliwack, BC V2P 3T2, Canada, (604) 792-0957 (no telephone orders). Large selection of garlic and rocambolè, herb plants and seeds, grape vines, unusual and oriental vegetables, everlasting flowers, and perennial vegetables. CAT SASE, RET, PC/OC, OVER.
- C84 Daisy Farms - 91098 60th Street, Decatur, MI 49045, (616) 782-6321. Commercial grower specializing in certified strawberry plants. Also sells raspberry, asparagus, rhubarb and horseradish. CAT FREE, WHLS, PC, OVER.
- C85M William Dam Seeds Lid. - P.O. Box 8400, Dundas, ON L9H 6M1, Canada, (905) 628-6641. Vegetable and flower seed supplier dedicated to selling untreated seed. Specializes in European and unusual cultivars. CAT FREE, RET, PC/CC, OVER.
- C87 Dat'Ido-it - 3255 Parker Dr., St. Augustine, FL 32095, 1-800-468-3285. Specializes in Datil peppers including seeds for planting. *Sells the following product/s: Datil pepper hot sauce, salsa, relish, powder and jellv. pickled Datil peppers.* CAT FREE, RET, PC/CC.
- C87M The Date Ibople - P.O. Box 2328, Borrego Springs, CA 92004, (760) 767-4677. Certified organic dates and date products. *Sells the following product/s: khalal dates (yellow Barhisi. Deglet Noor bread dates.* CAT FREE, R & W, PC.
- C89 Simon David - 7117 Inwood at University, Dallas, TX 75209, 1-800-648-4355. Fresh produce, gourmet food items. Produce usually available as gift baskets, inquire for individual items. *Sells the following product/s: nopales cactus leaves.* CAT FREE, RET, PC/CC, OVER.
- C89M Davidson-Wilson Greenhouses - R.R. 2, Box 168, Crawfordsville, IN 47933-9426, (765) 364-0556. Extensive listing of herbs, unusual house plants, African violets, and scented geraniums. Caters to small commercial growers and homeowners who have hobby greenhouses. CAT \$3.50, R & W, PC/CC, OVER, M.O. 25 PLANTS.
- C92 De Giorgi Seed Company - 6011 "N" Street, Omaha, NE 68117, (402) 731-8475. Vegetable, herb and flowers seeds, garden perennials, ornamental grasses, tree and shrub seed. Established in 1905. CAT FREE, RET, PC/CC, OVER.
- C93 De Grandchamp's Nursery - 15575 77th Street, South Haven, MI 49090, 1-888-483-7431. Specializes in highbush blueberry plants, cranberries and lingonberries. CAT FREE, R & W, PC/CC, OVER.
- C93Z De Stefano Nursery - 107 Main Rd., Hammonton, NJ 08037, (609) 561-3986. Blueberry plants including hard to find types. CAT FREE, R & W, PC, OVER.
- C94M Dean & Deluca - Catalog Center, 2526 East 36th North Circle, Wichita, KS 67219, 1-800-221-7714. Gourmet and specialty food items. *Sells the following product/s: African Bird pepper powder, dried Chipotle peppers, dried Prune d'Agen plums. Agen prune chutney, both Black and White truffle oil, paste and powder, both Black and White canned truffles, herbes de Provence. Kalamata vinegar, verius, elderberry vinegar, fines herbes, gumbo file, fleurs d'ail, blood orange preserves, gooseberry chutney, and lavender, raspberry, chestnut, sunflower, and leatherwood honeys.* CAT \$3, RET, PC/CC, CANADA

ONLY.

- €95 Deep Diveisity - P.O. Box 15700, Santa Fe, NM 87506-5700, (503) 438-7052 (fax). Extensive collection of useful and diverse plants, including heirloom and high nutrition vegetables, herbs, natives, medicinals and endangered species. Most are organically grown or wildcrafted. Previously known as Peace Seeds. Subsidiary of Seeds of Change. CAT \$4, RET, PC, OVER.
- C95M Deer Valley Farm - R.D. 1, Guilford, NY 13780, (607) 764-8556. Natural and organically grown foods. *Sells the following products: Kaffree tea and Red Zinger tea.* CAT FREE, R & W, PC/CC.
- C96 Delftree Farm - 234 Union St., North Adams, MA 01247, 1-800-243-3742. Supplier of organically grown fresh shiitake mushrooms to the finest chefs in America. Now available to home consumers. Also exotic dried mushrooms. CAT FREE, R & W, PC/CC.
- C97 Denali Seed Co - P.O. Box 111425, Anchorage, AK 99511, (907) 344-0347. Specializes in short season varieties of vegetable, herb and flower seed for arctic and sub-arctic growing conditions. CAT FREE, R & W, PC/CC, CANADA ONLY, M.O. \$5.
- C98 Desert Enterprises - P.O. Box 23, Morristown, AZ 85342, (602) 388-2448. Seeds of native Southwestern wild flowers, cacti, grasses, trees and shrubs, other drought resistant plants. CAT FREE, WHLS, PC, M.O. 1 LB.
- C98M Desert Moon Nursery - P.O. Box 600, Veguita, NM 87062, (505) 864-0614. Seeds and plants of desert wildflowers, trees and shrubs, cacti and succulents. CAT FREE, RET, PC, M.O. \$15.
- C99 Desert Nursery - 1301 South Copper, Deming, NM 88030-5028, (505) 546-6264. Specializes in winter-hardy cacti and succulents. CAT FREE, RET, PC.
- D1T Dessert's Gal Seed - P.O. Box 499, Seeley, CA 92273, (760) 353-7822. Vegetable, herb, and flower seed. CAT FREE, WHLS, OVER, M.O. \$200.
- D2 Dharma Farma - 131 CR 9652, Green Forest, AR 72638, (870) 553-2550. Certified organically grown apples and pears. CAT FREE, R & W, PC/CC.
- D3M Diamond Organics - P.O. Box 2159, Freedom, CA 95019, 1-888-674-2642. Organically grown fruits and vegetables, herbs, baby vegetables, sprouts, edible flowers, mesclun, dried fruits and nuts. CAT FREE, R & W, PC/CC.
- D4 Dietary Specialties - P.O. Box 227, Rochester, NY 14601, 1-800-544-0099. Specializes in non-allergenic foods—gluten free, wheat free, lactose free, milk free, egg free, and low protein. *Sells the following products: rice bread, rice bread mix, rice flour, wheat starch bread, wheat starch bread mix, low protein wheat starch, tapioca flour, com pasta, guar gum, plantain chips, and peanut butter flavor.* CAT FREE, RET, PC/CC.
- D6 Howard Dill Enterprises - 400 College Rd., Windsor, NS BON 2T0, Canada, (902) 798-2728. Giant pumpkin and squash seeds. Specializes in Dill's Atlantic Giant squash, producer of the World's Largest Squash since 1979. CAT \$1, R & W, PC/OC, OVER.
- D7 Discovery Kitchen - P.O. Box 6325, Woodland Hills, CA 91365-6325, 1-800-367-6865. Regional and gourmet foods from across America, gift baskets. *Sells the following products: shagbark hickory svrup made from hickory bark, roasted Nonpareil almonds, Loganberry jam, star thistle honey, Greek style Mission olives, Mission olive oil, bull whin kelp pickles, Dry Monterey Jack cheese,*
- Mission fig jam, avocado honey, avocado salad dressing, Tavberry jam, and corncob-smoked pheasant. CAT \$2, RET, PC/CC, OVER.
- D8M Dixondale Farms - P.O. Box 127, Carizzo Springs, TX 78834, (830) 876-2430. Specializes in onion plants for home gardeners. Established in 1913. CAT FREE, RET, PC/CC.
- D10 Doc's Cellar - 855 Capitolio Way, Ste. #2, San Luis Obispo, CA 93401, 1-800-286-1950. Home beer and winemaking supplies. CAT FREE, RET, PC/CC.
- D11M Dominion Seed House - Box 2500, Georgetown, ON L7G 5L6, Canada, 1-800-784-3037. Vegetable, herb and flower seeds, bulbs, perennial vegetables, ornamentals, berry plants, grape vines. Established in 1928. CAT FREE, RET, PC/CC, CANADA ONLY.
- D11T Donaroma's Nursery and Landscape - P.O. Box 2189, Edgartown, MA 02539, (508) 627-8366. Large selection of hardy perennials, native wild flowers. CAT FREE, R & W, PC/CC, OVER, M.O. 5 PLANTS.
- D12 Dorsing Seeds, Inc - P.O. Box 2552, Nyssa, OR 97913, (208) 674-1020. Vegetable, herb and flower seeds. CAT FREE, WHLS, M.O. \$100.
- D13 Dos Rios Citrus Nuisery - 2 West 6th Stieet, Yuma, AZ 85364, (520) 726-5183. Specializes in citrus adapted to desert areas. Previously known as S & S Nuisery. CAT FREE, WHLS.
- Dow Seeds Hawaii Ltd. - P.O. Box 30144, Honolulu, HI 96820-0144, (808) 531-4463. American subsidiary of Peter B. Dow & Co., New Zealand, which see.
- D17 Draper's Super Bee Apiaries - R.R. 1, Box 97, Millerton, PA 16936-9737, 1-800-233-4273. Honey and honey related products, pollen, maple syrup, molasses. *Sells the following products: tulip poplar, alfalfa, basswood and goldenrod honey.* CAT FREE, R & W, PC.
- D18 Driver Nuisery - 2737 North Avenue, Modesto, CA 95358, (209) 523-2811. Commercial grower of fruit and nut trees including almonds, cherries, cling peaches, walnuts and seedling walnut rootstocks. CAT FREE, WHLS.
- D19 Duarte Nursery, Inc. - 1555 Baldwin Rd., Hughson, CA 95326, 1-800-472-3833. Commercial grower of grapevines and grape rootstocks. CAT FREE, WHLS.
- D19M Jim Duggan Flower Nursery - 1452 Santa Fe Dr., Encinitas, CA 92024, (760) 943-1658. Specializes in South African bulbs. Succeeded BioQuest International. CAT \$2, RET, PC.
- D23M Durling Nuisery, Inc. - 40401 De Luz Rd., Fallbrook, CA 92028, (760) 728-9572. Containerized stock of citrus and avocado trees, deciduous nuts, sub-tropical fruits, low-chill deciduous fruits, espalier citrus and avocado. CAT FREE, WHLS, PC, M.O. \$400.
- D24 Dutch Gardens - P.O. Box 200, Adelphia, NJ 07710, 1-800-818-3861. Dutch bulbs, shallots, onion sets. CAT FREE, R & W, PC/CC, OVER.
- D26 Dymple's Delight - Rt. 4, Box 53, Mitchell, IN 47446, (812) 849-3487. Regional specialty foods. *Sells the following products: canned American persimmon pulp.* CAT FREE, RET, PC, M.O. 2 CANS.
- D26D E & R Seed - 1356 East 200 South, Monroe, IN 46772, (812) 849-3487. Vegetable, herb and flower seeds. CAT \$1, R & W, PC.

- D26G E.O.N.S., Inc - P.O. Box 4604, Hallandale, FL 33008, (954) 455-0229. Rare and unusual seeds. CAT FREE, RET, PC/CC, OVER.
- D26M Eagle Agricultural Products - P.O. Box 1451, Huntsville, AR 72740, (501) 738-2203. Organically grown grains and grain products. *Sells the following products: brown Basmati rice flour, bran, and cream cereal.* CAT FREE, R & W, PC.
- D27 Early's Farm & Garden Centre - 2615 Lome Ave, Saskatoon, SK S7J 0S5, Canada, (306) 931-1982. Vegetable, herb and flower seed, potato tubers. Founded in 1907. CAT FREE, R & W, PC/CC, U.S. ONLY.
- D27M Early's Honey Stand - P.O. Box 908, Spring Hill, TN 37174, 1-800-523-2015. Specializes in Southern foods. *Sells the following products: tomolives, hoppin' John, sourwood honey, and white clover honey.* CAT \$1, R & W, PC/CC, OVER.
- D28J Earth's Rising Trees - P.O. Box 334, Monroe, OR 97456, (541) 847-5950. Organically grown apples, pears, peaches, plums, cherries and figs. CAT FREE, RET, PC.
- D28M Earhrise Company - 424 Payran St., Petaluma, CA 94952, 1-800-949-7473. Specializes in spirulina and other green food supplements. CAT FREE, R & W, PC/CC, OVER.
- D29P Eastern Native Seed Conservancy - P.O. Box 451, Great Barrington, MA 01230, (413) 229-8316. Non-profit organization dedicated to the conservation of food and medicinal plants adapted or endemic to the northeastern United States, with special consideration to plants of Native American origin. CAT FREE, RET, PC/CC.
- D33 ECHO (Educational Concerns for Hunger Organization) - 17430 Durrance Road, North Fort Myers, FL 33917-2200, (941) 543-3246. Non-profit research and education organization specializing in seeds and plants of underexploited but important tropical food crops. CAT \$1, RET, PC/CC, OVER.
- D34 EcoGenensis Seeds - 32266 Yonge St., Unit 1929, Toronto, ON M4N 3P6, Canada, (941) 543-3246. Insect and disease-resistant vegetable varieties for organic gardens. CAT \$5, R & W, PC/OC, OVER.
- D34M Ecology Sound Farms - 42126 Road 168, Orosi, CA 93647, (209) 528-2276. Organically grown oranges, kiwi, Asian pears, persimmons and plums. CAT FREE, R & W, PC, OVER.
- D35 Jack Edelman - P.O. Box 400737, Brooklyn, NY 11240, (209) 528-2276. Single proprietor company specializing in chayote squash. CAT FREE, R & W, PC, OVER.
- D35G Edge of the Rockies Nathe Seeds - P.O. Box 1218, Bayfield, CO 81122, (209) 528-2276. Seeds of plants native to the mountains, foothills, mesas and canyons of the southern Rocky Mountain Region. CAT \$2.50, RET, PC, OVER.
- D37 Edible Landscaping - P.O. B<x 77, Afton, VA 22920, 1-800-524-4156. Extensive list of fruit and nut trees for edible landscaping. Specializes in hardy kiwi but also sells mulberries, figs, gooseberries and currants, berry plants, grapes and persimmons. CAT FREE, R & W, PC/CC, OVER.
- D40G Elixir Farm Botanicals - Elixir Farm, Brixey, MO 65618, (417) 261-2393. Specializes in certified organically grown seeds of medicinal plants native to the Ozarks region. Also a large selection of Chinese medicinals. CAT FREE, RET, PC/CC, M.O. \$10.
- D41M Elysian Hills - R.R. 5, Box 452, Brattleboro, VT 05301, (802) 257-0233. Specializes in Gilfeather turnip seed. Owns the trademark for Gilfeather which cannot be used without permission. CAT FREE, R & W, PC, OVER, M.O. 1 LB. BULK.
- D42M Enchanted Seeds - P.O. Box 6087, Las Cruces, NM 88006, (505) 233-3033. Specializes in peppers including unusual South American varieties and varieties developed at New Mexico State University. CAT FREE, RET, PC, OVER, M.O. 5 PKTS.
- D43 Endangered Species - P.O. Box 1830, Thstin, CA 92781-1830, 1-800-709-5568. Large collection of unusual and hard-to-find bamboo, palms, cycads, ornamental grasses, and tropical foliage plants. CAT \$5, R & W, PC/CC, OVER.
- D43G Ener-G Foods Inc - P.O. Box 84487, Seattle; WA 98124-5787, 1-800-331-5222. Specializes in gluten-free, wheat-free, low protein, low sodium and other non-allergenic foods. *Sells the following products: rice, tapioga an<Lp.9i,hrgrads,..rigns. aud tapioca fread, mires\* fiQpr\$ and baked gopds, rise and potato pastes., potato flom) dehydrated poi and xantfran.gm. cat free,r & W, PC/CC, OVER.*
- D43M Enoch's Berry Farm - Rt. 2, Box 227, Fouke, AR 71837, (501) 653-2806. Specializes in upright blackberry cultivars developed at the University of Arkansas Experiment Station. CAT FREE, R & W, PC, M.O. 20 PLANTS.
- D45 The Environmental Collaboration - P.O. Box 539, Osseo, MN 55369, (501) 653-2806. Seedling and transplant nut trees, fruiting shrubs, conifers and hardwoods. CAT FREE, R & W, PC.
- D46 Environmental, Inc. - Box 730, Cutchogue, NY 11935, (516) 734-6439. Ornamental trees and shrubs, dwarf conifers, Northeastern natives. CAT FREE, R & W, PC.
- D47 A.I. Eppler Lid. - P.O. Box 16513, Seattle; WA 98116, (206) 932-2211. Extensive selection of currants and gooseberries, the ordinal Bauer jostaberry, improved cultivars of Cornelian cherry. CAT \$3 REFUNDABLE, R & W, PC, OVER.
- D47M Ernst Conservation Seeds - 9006 Mercer Pike, Meadville, PA 16335, 1-800-873-3321. Grains, legumes, cover crop and forage seeds. Also a large selection of native species used for reclamation and conservation. CAT \$3, R & W, PC/CC, OVER.
- D55 Evergreen Y.H. Enterprises - P.O. Box 17538, Anaheim, CA 92817, (714) 637-5769. Good selection of oriental vegetable seeds, over 150 varieties. CAT \$1, R & W, PC, OVER.
- D56M Exotic Seeds from Around the World - 1814 N.E. Schuyler, Portland, OR 97212, (503) 282-1235. Vegetables, fruits and nuts, palms, cacti, rain forest natives, rare seeds. CAT \$4, RET, PC, OVER.
- D57 Exotica Rare Fruit Nuisery - P.O. Box 160, Vista, CA 92085, (760) 724-9093. Wide selection of organic and bio-dynamically grown tropical and sub-tropical fruit trees and nuts, bamboo, exotic tropical flowering shrubs, trees and vines, fragrant plants, palms, tropical herbs, spices and vegetables. CAT SASE, R & W, PC/CC, OVER.
- D59 FairacreFarm and Nursery - Rt. 1, Box 1068, Prosser, WA 99350-9788, (509) 786-2974. Certified grape nursery stock. Succeeded Lewis & White. CAT FREE, WHLS, PC, OVER, M.O. 100 PLANTS.

- D60 Fall Creek Farm & Nuisery, Inc. - 39318 Jasper-Lowell Rd., Lowell, OR 97452, (541) 937-2973. Grower and propagator of blueberry plants for commercial fruit growers and wholesale and retail nurseries. Rare and uncommon cultivars, new releases. CAT FREE, WHLS, PC/CC, OVER, M.O. \$100.00.
- D61 Fancy Fronds - P.O. Box 1090, Gold Bai; WA 98251-1090, (360) 793-1472. Temperate ferns, all raised from spores or vegetatively. Specializes in English Victorian cultivars and xeric ferns. CAT \$2 REFUNDABLE, R & W, PC, OVER, M.O. \$20.
- D65 Farmer Seed & Nursery - 1706 Morrissey Dr., Bloomington, IL 61704, (507) 334-1623. Vegetable, herb and flower seed, fruit trees, berry plants, perennial vegetable plants, ornamental trees and shrubs. CAT FREE, RET, PC/CC/OC, OVER.
- D68** Fedco Seeds - P.O. Box 520, Waterville, ME 04903-0520, (207) 873-7333 (no telephone orders). Regional seed co-op specializing in vegetable seeds for northern areas such as the Northeast, parts of the Rocky Mountains and the Pacific Northwest. Incorporating Moose Tubers. CAT \$2, R & W, PC.
- D69 Fedco Trees - P.O. Box 520, Waterville, ME 04903-0520, (207) 873-7333 (no telephone orders). Regional co-op nursery specializing in unusual and cold-hardy fruit and nut trees, chosen specifically for Maine's climate. CAT \$2, RET, PC.
- D71 Fern Hill Fhrm - P.O. Box 185, Clarksboro, NJ 08020-0185, (207) 873-7333 (no telephone orders). Specializes in certified, hand selected, Dr. Martin pole lima bean seeds. CAT FREE, RET, PC, CANADA ONLY, M.O. \$5.
- D74B Ferry-Morse Seed Ca - P.O. Box 488, Fulton, KY 42041-0488, 1-800-283-6400. Vegetable, herb and flower seeds. One of America's oldest seed companies, having been founded in 1856. CAT FREE, R & W, PC/CC, OVER.
- D74M Fiddler's Green Farm - P.O. Box 254, Belfast, ME 04915, 1-800-729-7935. Certified organically grown grains, flours and cereals, New England foods. *Sells the following products: Baldwin apple butter, and raspberry honey.* CAT FREE, RET, PC/CC.
- D75 Fiddyment Farms Inc. - 5000 Fiddyment Rd., Roseville, CA 95678, 1-800-859-4038. Specializes in pistachio foods. *Sells the following products: inshell pistachios, flavored pistachio kernels, and pistachio butter.* CAT FREE, R & W, PC/CC, OVER.
- D75M TimothyD. Field - 395 Newington Rd., Newington, NH 03801, (603) 436-0457. Native ferns and wild flowers. Succeeded Francis M. Sinclair. CAT FREE, R & W, PC, M.O. \$25.
- D75T Field & Forest Products - N3296 Kozuzek Road, Peshtigo, WI54157, 1-800-792-6220. Mushroom growing kits and spawn, supplies and equipment. Large selection of shiitake strains. CAT FREE, R & W, PC/CC, OVER.
- D76 Henry Field's Seed & Nursery Co. - 415 North Burnett, Shenandoah, IA 51602, (605) 665-9391. Vegetable, herb and flower seed, fruit and nut trees, berry plants, ornamental trees and shrubs, perennial vegetable plants. Established in 1892. CAT FREE, R & W, PC/CC.
- D77M Fig Tree Nuisery - P.O. Box 124, Gulf Hammock, FL 32639, (352) 486-2930 (no telephone orders). Large selection of fig trees. Also muscadine grapes, pears and persimmons. CAT \$1, R & W, PC, OVER, M.O. \$5.
- D78 Filaree Farm - 182 Conconully Hwy., Okanogan, WA 98840, (509) 422-6940. Specializes in organically grown garlic, over 100 strains collected from sources around the world. Also fresh garlic for eating and other foods. *Sells the following products: rocambole garlic powder, dried garlic nuggets and chips, and garlic braids.* CAT \$2, R & W, PC/CC.
- D79M Finch Blueberry Nuisery - P.O. Box 699, Bailey, NC 27807, 1-800-245-4662. Specializes in rabbiteye blueberry plants. CAT FREE, R & W, PC/CC/OC, OVER.
- D81 Firman Pollen Co., Inc - 301 North 1st Ave, Yakima, WA 98902, 1-800-322-8852. Fruit and nut tree pollen for controlled pollination, including pollen of individual cultivars of apples, cherries, pears, plums, apricots, and almonds. CAT FREE, R & W, PC, OVER.
- D81M FirmYield Pollen Services Inc - P.O. Box 238, Selah, WA 98942, 1-800-779-8036. Hand-collected fruit and nut tree pollen for controlled pollination of orchards, including Rome, Jonathan and Gala apple pollen. CAT FREE, R & W, PC, M.O. \$100.
- D81P Fischer & Wieser Specialty Foods - 431 South Lincoln, Fredericksburg, TX 78624, 1-800-880-8526. Specialty foods including a unique selection of jams, jellies and preserves. *Sells the following products: agrito, mustang grane, mavhaw, Texas Supersweet onion, wassail, Sauvignon Blanc and Cabernet Sauvignon jellies, and dewberry and green grape preserves.* CAT FREE, R & W, PC/CC.
- D81T Fisher Scientific - 485 South Frontage Rd., Burr Ridge, IL 60521, 1-800-955-1177. Complete line of biological supplies, including live cultures of algae, bacteria and fungi. Sells mostly to schools. CAT \$25, R & W, PC/CC, OVER.
- D82 Fisher's Garden Store - P.O. Box 236, Belgrade, MT 59714, (406) 388-6052. Small seed company specializing in short season vegetables and flowers. Breeders and introducers of some unusual cultivars. CAT FREE, RET, PC.
- D87D Flora, Inc - P.O. Box 73, lynden, WA 98264, 1-800-446-2110. Fresh, cold pressed and unrefined oils, food supplements, herbal products. *Sells the following products: flax^pumpkin seed, walnut and almond oils, and Swedish bitters.* CAT FREE, R & W, PC/CC, OVER.
- D87E Floribunda Palms & Erotics - P.O. Box 635, Mountain View, HI 96771, (808) 966-8002. Palms, cycads, tropical exotics. CAT FREE, R & W, PC, OVER, M.O. \$50.
- D87G Florida Keys Native Nuisery, Inc. - 102 Mohawk St., Tavernier, FL 33070, (305) 852-2636. Specializes in native plants of the Florida Keys. CAT FREE, R & W, PC, OVER.
- D87M Florida Mycology Research Center - P.O. Box 8104, Pensacola, FL 32505, (850) 327-4378. One of the largest mushroom spore and live culture banks. Also sells mushroom growing supplies and equipment. CAT \$10, R & W, PC, OVER.
- D92M The Flowery Branch Seed Co. - P.O. Box 1330, Flowery Branch, GA 30542, (770) 536-8380. Specialty seed company featuring over 1800 varieties of heirloom and everlasting flowers, culinary, medicinal and decorative herbs, and rare and unusual annuals and perennials around the world. Previously known as Catnip Acres Herb Farm. CAT \$4, R & W, PC/CC, OVER.
- D93M Foodways - W.J. Clark & Company, 5400 West Roosevelt Rd., Chicago, IL 60650, 1-800-229-0090.

- Gourmet specialty foods, Woodland Pantry mushroom products. *Sells the following products:* champignon, porcini and morel caviar, and yellow sun-dried tomatoes. CAT FREE, RET, PC/CC.
- D95 Forest Farm - 990 Tetherow Rd., Williams, OR 97544-9599, (541) 846-7269. Extensive selection of affordable containerized starter plants, including fruit trees, ornamentals, perennials, native plants, wild fruits, fragrant plants, plants for birds and wildlife. CAT \$4, RET, PC, CANADA ONLY.
- D96 Forest Seeds of California - 1100 Indian Hill Road, Placerville, CA 95667, (916) 621-1551. Forest tree seeds for reforestation, woodlots and ornament. CAT FREE, R & W, PC, OVER.
- D97 The Forge Mountain Company Store - P.O. Box 1055, Flat Rock, NC 28731, 1-800-823-6743. Specializes in Southern foods including a large selection of jams, jellies and preserves. *Sells the following products:* corncob jellv, dewberry jellv and preserves, huckleberry jam and jellv, sassafras tea concentrate, sourwood honey, sourwood honey mustard dressing, hoiehound candv, garlic jellv, horseradish jellv, rhubarb butter, and sweet potato butter. CAT FREE, R & W, PC/CC.
- E1 Foundation Plant Materials Service - University of California, Davis, CA 95616-8600, (530) 752-3590. Certified disease-free propagating material intended for the California wholesale nursery industry. Available to non-commercial users in California on a limited basis as resources allow. CAT FREE, RET, PC, OVER.
- E1G Four Apostles' Ranch - 80-70 Avenue 38, Bermuda Dunes, CA 92203, (760) 345-6171. Small family farm producing certified organically grown Medjool dates. CAT FREE, R & W, PC.
- E1M Four Chimneys Farm Winery - 211 Hall Road, Himrod-on-Seneca, NY 14842, (607) 243-7502. Organically grown grape wines, fruit wines, wine vinegar, cooking wines. *Sells the following products:* Cavuga, Catawba, Pinot Noir and Niagara wines, and Aurore ice wine. CAT FREE, RET, PC.
- E2M Four Seasons Health Products - 1013 Pico Blvd., Santa Monica, CA 90405, 1-800-290-6393. Specializes in Chinese Herbs. CAT FREE, R & W, PC/CC, M.O. \$15.
- E3 Four Seasons Nursery - 1706 Morrissey Dr., Bloomington, IL 61704, (309) 663-9551. Fruit and nut trees, berry plants, grape vines, ornamental trees and shrubs. CAT FREE, RET, PC/CC.
- E3M Four Winds Growers - P.O. Box 3538, Fremont, CA 94539, (415) 656-2591. Specializes in grafted, true-dwarf citrus including oranges, mandarins, lemons, limes, grapefruits, tangelos and kumquats. CAT SASE, R & W, PC/CC, OVER.
- E4 Fowler Nurseries - 525 Fowler Rd., Newcastle, CA 95658, 1-800-675-6075. Growers of fruit and nut trees for commercial orchardists. Also rootstock seedlings and E15 liners. CAT \$3, WHLS, OVER.
- E5T Fox Hollow Seed Co - P.O. Box 148, McGrann, PA 16236, 1-888-548-7333. Open-pollinated heirloom vegetable, flower, and herb seeds, many certified organically grown. CAT \$1, RET, PC/CC, OVER.
- E7 Fragrant Fields - P.O. Box 160, Dongola, IL 62926, 1-800-635-0282. Herb plants, annuals, perennials and everlasting plants. CAT FREE, R & W, PC, M.O. 20 FLATS.
- E7M The Fragrant Rith - P.O. Box 328, Fort Calhoun, NE 68023, 1-800-635-0282. Seeds of fragrant plants, herbs, prairie flowers, rare and old-fashioned perennials, vines, trees and shrubs. CAT \$2, RET, PC, M.O. \$5.
- E8M Frankie's Nursery - 41-999 Mahiku Place; Waimanalo, HI 96795, (808) 259-8737. Specializes in tropical and sub-tropical fruits. CAT FREE, R & W, PC, OVER.
- E9 Fraser-Morris - 1264 Third Ave., New York, NY 10021, 1-800-423-3571. Famous New York food shop offering gourmet foods from around the World. *Sells the following products:* Confiture de Bar-le-Duc, fraise des bois, black fig and Clementine preserves, Ouetsches in svrup, Mirabelles in svrup, Green Gage plums in svrup, and canned petis pois. CAT FREE, R & W, PC/CC, OVER.
- E9M Fred's Plant Farm - 4589 Ralston Rd., Martin, TN 38237, 1-800-550-2575. Specializes in sweet potato plants. CAT FREE, R & W, PC/CC.
- E11 French's - P.O. Box 565, Pittsfield, VT 05762-0565, 1-800-286-8198. Specializes in imported bulbs. CAT FREE, RET, PC/CC, M.O. \$10.
- E11M Fresh Dates by Anderson - 59-777 Calhoun, Thermal, CA 92274, (760) 399-5017. Certified organically grown dates including rare varieties. CAT FREE, R & W, PC.
- E12 Freshops - 36180 Kings Valley Hwy., Philomath, OR 97370, 1-800-460-6925. Raw hop flowers for brewing, hop rhizomes for planting. *Sells the following products:* hop oil. CAT FREE, R & W, PC/CC, OVER, M.O. 12 OZ.
- E13 Frey Scientific - 100 Paragon Parkw<sup>^</sup>, Mansfield, OH 44903, 1-888-222-1332. Biological supplies including living cultures of algae, bacteria and fungi. CAT FREE, R & W, PC/CC.
- E13G Frieda's, Inc. - 4465 Corporate Center Dr., Los Alamitos, CA 90720-2561, 1-800-241-1771. Exotic gift baskets and fresh fruits and vegetables from Frieda's Finest, one of the nation's leading marketers and distributors of unusual produce. *Sells the following products:* cocktail avocados, Chile Pasado, pickled Maui onions, kimchee, coquitos, shallot braids, fresh baby corn, canned babv com, yellow sun-dried tomatoes, corn husks, and piloncillo. CAT FREE, RET, PC/CC.
- E14T Frontier Cooperathe Herbs - P.O. Box 299, Norway, IA 52318, 1-800-786-1388. Large selection of botanicals, herbs and spices, coffees and teas, herbal products, food supplements. *Sells the following products:* Jamaican allspice, cream of tartar, dried Cape jasmine fruits, guar gum powder, Spanish paprika, seedless rosehips, rosehips powder, dried sloe berries, camu-camu tablets, Red Zinger tea, herbal chews, black currant, borafe, hempseed, evening primrose and pecan nut oils, bav-rum, rosewood, palmarosa, fennel, Balsam of Peru, Balsam of Tolu, and Siam benzoin essential oils. CAT FREE, R & W, PC/CC, OVER.
- Frosty Hollow Ecological Restoration - P.O. Box 53, Langley, WA 98260, (360) 579-2332. Seeds of Pacific Northwest and Intermountain species of wildflowers, trees and shrubs. Consultants in restoration of disturbed or damaged land. CAT SASE, R & W, PC, OVER, M.O. \$20.
- E20M Fun Guy Farm - R. R. #1, Goodwood, ON L0C 1A0, Canada, (416) 963-5520. Supplier of mushroom spawn and cultures to commercial and hobby growers. Also fresh and dried certified organic mushrooms. CAT FREE, R & W, PC/CC, OVER.

- E21 Fungi Perfecti - P.O. Boc 7634, Olympia, WA 98507, 1-800-780-9126. State-of-the-art equipment for the cultivation of exotic mushrooms, cultures and spawn, professional advice and consultation, and the latest information on new technologies. CAT FREE, R & W, PC/CC, OVER, M.O. \$10.
- E21B Fungus Foods, Inc - P.O. Box 6035, St. Louis, MO 63139, 1-800-299-1352. Mushroom terrarium kits, dried mushrooms. CAT FREE, RET, PC, OVER.
- E21D Future Forests Nursery & Design - P.O. Box 428, Holualoa, HI 96725, (808) 322-8442. Tropical trees used in forestry and agroforestry including multipurpose and nitrogen-fixing species, high value hardwoods, windbreak and shade trees. CAT FREE, R & W, PC, OVER, M.O. \$25.
- E22 G.E.M. Cultures - 30301 Sherwood Rd., Fort Bragg, CA 95437, (707) 964-2922 (no telephone orders). Most complete selection of starters for home culturing, including tempeh, misos, shoyu, amazake, kombucha, sourdough, kefir, barm and viili. *Sells the following product/s: sprouted wheat flour*. CAT FREE, R & W, PC, OVER.
- E23M Gaeta Imports - 141 John St., Babylon, NY 11702-2903, 1-800-669-2681. Gourmet Italian foods. *Sells the following product/s: capers in sea salt, caponata, black olive tapenade, sun-dried tomato tapenade*. CAT FREE, R & W, PC/CC, OVER.
- E23T Gallina Canyon Ranch - P.O. Box 2334, Twin Falls, ID 83303, 1-800-424-8881. Specializes in heirloom and unusual varieties of beans for eating. Also known as Cassoulets U.S.A. and Good Taste of Idaho. CAT FREE, R & W, PC.
- E23Z Garcia River Nursery - P.O. Box 235, Point Arena, CA 95468, (707) 882-2523. Small, family-operated nursery specializing in certified organically grown heirloom fruit trees. CAT FREE, RET, PC.
- E24 Garden City Seeds - 778 Highway 93 North, Hamilton, MT 59840, (406) 961-4837. Non-profit organization specializing in open-pollinated vegetable, flower, herb and farm seeds. Also roots and tubers of perennial vegetables. CAT FREE, R & W, PC/CC, OVER.
- E28M Garden Medicinals and Gilinaries - P.O. Box 320, Earlysville, VA 22936, (804) 973-4703. Herb plants and seeds, herbal products. Subsidiary of Southern Exposure Seed Exchange. CAT \$1, R & W, PC/CC, CANADA ONLY.
- E29 Garden of Delights - 14560 S.W. 14th St., Davie, FL 33325, (954) 370-9004. Extensive selection of tropical and sub-tropical fruit and nut trees, seeds and seedlings, fruiting palms. CAT \$2, R & W, PC, OVER, M.O. \$60.
- E30 Garden Place, Inc - P.O. Box 388, Mentor, OH 44061, (440) 255-3059. Field grown, bare root perennials, ground covers, herbs and ornamental grasses. CAT \$1, RET, PC/CC, CANADA ONLY, M.O. \$20.
- E31 Garden Spot Distributors - 438 White Oak Road, New Holland, PA 17557, 1-800-829-5100. Organically grown natural food items. Exclusive East Coast distributor for Shiloh Farms. *Sells the following product/s: whole grain quinoa, quinoft flour, whole grain spelt, spelt pretzels, whole grain Kamut, Kamut pastry flour, Prairie Gold wheat flpur, almond butter, artiphoke pasta, tupelo and alfalfa honeys, and aloe vera gd and juice*. CAT FREE, R & W, PC/CC.
- E32 Gardener's Supply Co. - 128 Intervale Road, Burlington, VT 05401, 1-800-863-1700. Home mushroom growing kits, garden supplies, gourmet foods. CAT FREE, RET, PC/CC.
- E33 Gardenimport Inc - P.O. Box 760, Thornhill, ON L3T 4A5, Canada, (905) 731-1950. Vegetable seeds, bulbs, unusual plants. North American agents for Suttons Seeds of Great Britain. CAT \$5, R & W, PC/CC, OVER.
- E33M Gardens of the Blue Ridge - P.O. Box 10, Pineola, NC 28604, (704) 733-2417. One of the oldest nurseries supplying native wildflowers, trees and shrubs. Established in 1892. CAT \$3 DEDUCTIBLE, R & W, PC/CC, OVER, M.O. \$25.
- E34M Garlicsmiths - 967 Mingo Mountain Rd., Kettle Falls, WA 99141, (704) 733-2417. Certified, organically grown gourmet garlics. CAT FREE, RET, PC.
- E38 Gaze Seed Co. - P.O. Box 640, St. John's, NF A1C 5K8, Canada, 1-800-972-7333. Vegetable, herb and flower seeds, bulbs, trees and shrubs. Selected for their adaptability to the Newfoundland climate. CAT FREE, R & W, PC/CC, OVER.
- E38M Gazin's - P.O. Box 19221, New Orleans, LA 70179, 1-800-262-6410. Specializes in gourmet cajun and creole foods. *Sells the following product/s: file powder, brined green peppercorns, cassoulet, walnut oil, Jack Daniel's bourbon coffe^and Pgyghaud bitters*. CAT FREE, RET, PC/CC, OVER.
- E39 Ge-No's Nursery - 8868 Road 28, Madera, CA 93637, (209) 674-4752. California certified vinifera grape vines, both for table and wine. Also supplies resistant grape rootstocks and scion wood. CAT FREE, R & W, CC, OVER, M.O. \$50.
- E42M Giant Artichoke - 11241 Merritt St., Castroville, CA 95012, (408) 633-2778. Specializes in Green Globe artichokes, both for planting and eating. *Sells the following product/s: babv artichokes, marinated artichoke hearts, marinated artichoke crowns, and ..mrinatd brussels sprouts*. CAT FREE, R & W, PC/CC.
- E43M Giant Watermelons - P.O. Box 141, Hope, AR 71802, (408) 633-2778. Seeds of extra large watermelons and muskmelons. Also sells a growers guide which includes a history of record watermelons grown between 1917 and 1987. CAT FREE, RET, PC, OVER.
- E45 Gill Nursery - 100 County Road 1595, Bailey ton, AL 35019, (205) 796-5618. Deciduous fruit trees, grape vines, shade trees, flowering shrubs. CAT FREE, WHLS.
- E45M Gillespie County Fruit Growers Cooperative Association - P.O. Box 281, Stonewall, TX 78671, 1-800-694-2772. Growers cooperative specializing in peaches and peach products. CAT FREE, R & W, PC/CC.
- E47 Girard Nurseries - P.O. Box 428, Geneva, OH 44041, (440) 466-2881. Flowering trees and shrubs, ground covers, vines, perennials, berry plants, nut trees, tree and shrub seed. CAT FREE, R & W, PC/CC, OVER, M.O. \$20.
- E47M Glaser Farms - 19100 S.W. 137th Ave., Miami, FL 33177, (305) 238-7747. Organically grown natural foods including dried fruits, nuts and seeds, grains, beans, sea vegetables, nut butters. Specializes in raw food cuisine. *Sells the following product/s: apricot kernels, essene rve bread, essene wheat bread, sprouted hummus, and raw sauerkraut*. CAT FREE, R & W, PC.
- E48 Glasshouse Works - P.O. Box 97, Stewart, OH 45778-0097, 1-800-837-2142. Large collection of unusual, hard to find tropical and sub-tropical plants, hardy



- perennials, rare tropical herbs and spices. Specializes in forms with variegated foliage or dwarf habit. CAT \$2, RET, PC/CC, OVER, M.O. \$10.
- E50 Glendale Enterprises - 297 Railroad Ave., Rt. 3, DeFuniak Springs, FL 32433, (904) 859-2141. Specializes in chufa tubers. CAT FREE, R & W, PC, OVER.
- E53 Globe Seed & Feed Co., Inc - P.O. Box 445, Twin Falls, ID 83303-0445, (208) 733-1373. Seed grains, cover crop and green manure seeds, native grasses and forbs. CAT FREE, R & W, PC.
- E53M Fred C. Gloeckner & Co. - 600 Mamaroneck Ave., Harrison, NY 10528, (914) 698-2300. Seed of vegetables, herbs and flowers, garden perennials, tropical foliage plants, exotic trees and shrubs. CAT FREE, WHLS, PC, OVER.
- E55M Going Bananas - 24401 S.W. 197th Ave., Homestead, FL 33031-1174, (305) 247-0397. Large selection of banana plants, including many rare types. Succeeded W.O. Lessard Nursery. CAT FREE, RET, PC.
- E56 Gold Mine Natural Food Co. - 3419 Hancock St., San Diego, CA 92110-4307, 1-800-475-3663. Full-line of hard to find macrobiotic foods including Ohsawa America products, starter cultures. *Sells the following product/s: umeboshi plums and ume products, ko-umeboshi, kuzu starch, mugwort mochi, mugwort soba, vuzu vinegar, dried daikon and daikon pickles, dried burdock and burdock pickles, dried lotus roots and seeds, Kamut flakes and pasta, green Kamut juice powder, dried wheat gluten, seitan mix, Spelt couscous, pasta and flakes, quinoa flakes and pasta, rice pasta, Ponzu sauce, pickled shiso leaves, shiso powder condiment, iinenjo soba, rakkvo-zuke, canned black soybeans, mesquite meal, tororo kombu, finger kombu pickles, bull whip kelp pickles, toasted sea nalm and oat milk.* CAT FREE, R & W, PC/CC, OVER.
- E59Z Good Seed Co - P.O. Box 1485, Tonasket, WA 98855, (509) 486-1047. Open-pollinated, heirloom and homestead seeds, especially adapted for northern gardens. CAT FREE, RET, PC.
- E60P GoodEats - 5 Louise Dr., Warminster, PA 18974, 1-800-490-0044. Large selection of natural organic, kosher and macrobiotic foods, sprouting seeds. *Sells the following product/s: Kaffee and Yannoh grain coffees, high-ivisine cornmeal, sweet potato chips, Mu #16 tea, greenmagma, instant black bean and Pinto bean flakes, green tea pasta, Verte du Puv lentil soup, garlic balls, tekka and buckwheat miso.* CAT FREE, RET, PC/CC, M.O. \$20.
- E61 Goodwin Creek Gardens - P.O. Box 83, Williams, OR 97544, 1-800-846-7359. Organic growers of herb plants and seeds, nursery propagated native American herbs, an extensive list of seeds for hard to find everlastings. CAT \$1 REFUNDABLE, RET, PC/CC, CANADA ONLY (SEEDS).
- E62 John H. Gordon Jr. Nursery - 1385 Campbell Blvd., Amherst, NY 14228-1404, (716) 691-9371. Grower of hardy and early ripening nut trees, pawpaw, native American persimmons. Also sells seeds, scionwood, and in-shell nut samples of individual cultivars for tasting before purchasing. CAT FREE, R & W, PC, OVER (SEEDS ONLY).
- E63 Gossler Farms Nursery - 1200 Weaver Rd., Springfield, OR 97478-9691, (541) 746-3922. Rare and unusual ornamental trees and shrubs. Specializes in magnolias. CAT \$2, R & W, PC/CC, CANADA ONLY.
- E63D The Gourmet Gardener - 8650 College Blvd., Overland Park, KS 66210-1806, (913) 345-0490. Gourmet vegetable seeds imported from France, culinary herb and edible flower seeds, herbal crafts, creation garden seeds. Succeeded Herb Gathering, Inc. CAT FREE, RET, PC/CC, OVER.
- E63G Gourmet Mushrooms, Inc - P.O. Box 515, Graton, CA 95444, (707) 829-7301. Good selection of mushroom kits for home gardeners. Also a unique collection of gourmet mushrooms for eating. CAT FREE, R & W, PC/CC, OVER.
- E63I Gowan's Oak Tree Fruit Stand - 6600 Highway 128, Philo, CA 95466, (707) 895-3353. Fresh apples and pears in 20, 25 and 40 pound boxes. CAT FREE, R & W, PC.
- E63J Gracewood Grows - P.O. Box 2590, Vero Beach, FL 32961, 1-800-427-2380. Fresh Florida citrus, gourmet foods and gifts. CAT FREE, RET, PC/CC, OVER.
- E63K Grafton Village Apple Co - 703 Main St., Weston, VT 05141-5501, 1-800-843-4822. Regional foods of New England. *Sells the following product/s: apple svrup, maple butter, maple sugar, black raspberry preserves, pear butter, peach butter, apple cider iellv, and Sage cheese.* CAT FREE, RET, PC/CC, OVER.
- E63M Russell Graham, Purveyor of Plants - 4030 Eagle Crest Rd. N.W., Salem, OR 97304, (503) 362-1135. Specialty bulbs, lilies, native wild flowers, ornamental grasses, hardy ferns. CAT \$2 DEDUCTIBLE, R & W, PC, CANADA ONLY, M.O. \$30.
- E65P Grandmother's House - Box 151, Dryden, TX 78851, (915) 753-2343. Regional specialty foods. Specializes in mesquite products. *Sells the following product/s: mesquite bean iellv, mesquite bean fruit butter, and mesquite bean brittle.* CAT FREE, RET, PC.
- E66M GraniteSeed - 1697 West 2100 North, Lehi, UT 84043, (801) 768-4422. Native wild flowers and forbs, reclamation grasses, trees and shrubs, green manures, regional wild flower mixes. Specializes in custom blended seed mixtures. Succeeded Ibrter-Walton. Previously known as Native Plants, Inc. CAT FREE, WHLS, OVER, M.O. \$50.
- E66T Granum Inc. - 2901 N.E. Blakeley St., Seattle, WA 98105, 1-800-882-8943. Specializes in macrobiotic foods. Also starter cultures for natto and other soyfoods. *Sells the following product/s: pickled shiso leaves, umeboshi plums, ume plum vinegar, paste and concentrate, daikon pickles, dried daikon, iinenjo soba, kuzu starch, dried wheat gluten, dried lotus roots, camellia seed oil, and Mu #16 tea.* CAT FREE, R & W, PC/CC, OVER, M.O. \$20.
- Gray's Grist Mill - P.O. Box 422, Adamsville, RI02801, (508) 636-6075. Specializes in freshly ground, whole grain food items. The country's oldest continually operating grist mill, established in 1675. *Sells the following product/s: ionnveake meal made from Rhode Island White Cap corn, ionnveake meal frv mix, New England brown bread mix.* CAT FREE, RET, PC/CC, M.O. \$25.
- E67T Great Basin Natives - P.O. Box 114, Holden, UT 84636, (435) 795-2303. Native plants of the Great Basin area including wildflowers, trees, shrubs. CAT \$2 REFUNDABLE, R & W, PC, M.O. 3 PLANTS.
- E68 Great Fermentations - 136 Belam, San Rafael, CA 94901, 1-800-570-2337. Home winemaking and home brewing supplies, beer and wine yeasts, vinegar cultures, hop rhizomes. CAT FREE, RET, PC/CC, OVER.

- E68M The Great Valley Mills - 1774 County Line Rd., Barto, PA 19504, 1-800-688-6455. Gourmet and natural foods, Amish specialties. *Sells the following products: dried whole-kernel corn, oatmeal flour, oatmeal pancake mix, ri-£Q.-Pailcakg\_mjx\_ Dam\$Qn.,gJymJ^^ spjnachpasta flgur, andJQmaIQ..pa\$£3-.fljQUL* CAT FREE, RET, PC/CC.
- E69 Greater Galilee Gourmet, **Inc.** - 2118 Wilshire Blvd., Ste. 829, Santa Monica, CA 90403, 1-800-290-1391. Gourmet specialty foods from Israel and the Eastern Mediterranean. *Sells the following products: Souri olive PiL\_\_g\_rggP-Q££cked\_and\_\_treg-rjpe\_\_Spuri\_\_olives green-cracked\_and\_tree-ripe\_Nabali\_olives,,pickled caperberries. za'tar. and za'tar pesto.* CAT FREE, R & W, PC/CC.
- E74 Green Knoll Fhrm - P.O. Box 434, Gridley, CA 95948, (916) 846-3431. Organically grown kiwi. CAT FREE, R & W, PC, M.O. 1 TRAY.
- E75 Green Mountain Transplants - R.R. #1, Box 6C, East Montpelier, VT 05651, (802) 454-1533. Vegetable transplants, certified seed potatoes, lily bulbs, herb plants, annual and perennial flowers. CAT FREE, R & W, PC/CC.
- E78M Green: Plant Research - P.O. Box 597, Kaaawa, HI 96730, (808) 237-8672. Specializes in Hoyas and other Asclepiads. CAT \$1, RET, PC, OVER, M.O. \$25.
- E81M Greenfield Herb Garden - P.O. Box 9, Depot and Harrison, Shipshewana, IN 46565, 1-800-831-0504. Herb plants and seeds, herbal products, crafts. CAT FREE, RET, PC/CC.
- E82 Greenhaven Farm Nursery - 3426 Grenlund Rd., Rt. #1, Perrinton, MI 48871, (517) 682-4162. Seednuts of hardy Carpathian walnuts. CAT FREE, R & W, PC.
- E83T Greenleaf Seeds - P.O. Box 98, Conway, MA 01341, (413) 628-4750 (no telephone orders). Seeds of unusual edibles, including a large selection of oriental vegetables. CAT FREE, RET, PC.
- E84 Greenmantle Nursery - 3010 Ettersburg Rd., Garberville, CA 95442, (707) 986-7504. Wide range of old-fashioned and rare fruit trees and nuts. Also a large listing of unusual roses. Features cultivars developed by pioneer California hybridizer, Albert Etter. CAT \$3, RET, PC.
- E87 Greer Gardens - 1280 Goodpasture Island Rd., Eugene, OR 97401-1794, 1-800-548-0111. Rare and unusual ornamentals, fruit and nut trees, hardy kiwi, genetic dwarfs. Specializes in azaleas and rhododendrons. CAT \$3, R & W, PC/CC, OVER.
- E89G Grey Owl Foods - P.O. Box 88, Grand Rapids, MN 55744, 1-800-527-0172. Wild rice, wild rice products, gift baskets. Wholly owned by Indian people from 72 Indian Reservations in Saskatchewan, Canada. *Sells the following products: hand harvested Canadian Lake wild rice, pre-cooked canned wild rice, cracked wild rice, and wild rice pilaf.* CAT FREE, R & W, PC/CC, OVER.
- E91G G.S. Grimes Seeds **Inc.** - 11335 Concord-Hambden Rd., Concord, OH 44077, 1-800-241-7333. Seeds and plants of vegetables, herbs and flowers primarily for the bedding plant and nursery industry. Previously known as H.G. German Seeds. CAT \$15, WHLS, PC/CC.
- E91M Grimo Nut Nursery - R.R. #3, Lakeshore Rd., Niagara-on-the-Lake, ON LOS 1J0, Canada, (905) 935-6887. Family business providing a wide range of tested, northern hardy, grafted and seedling nut trees from superior strains and selections. Also sells unusual fruit trees. CAT \$1 REFUNDABLE, RET, PC, U.S. ONLY.
- E91T Grinnell Botanical Conservatory - White Oak Creek Rd., Burnsville, NC 28714, (704) 459-7069. Specializes in improved cultivars of groundnut (*Apios americana*). CAT (CALL FOR PRICES), RET, PC.
- E92 Grinnell Nursery - 14495 Morrice Rd., Perry, MI 48872, (517) 625-7176. Custom grafted nut and fruit trees. CAT FREE, WHLS, PC, M.O. 10 TREES.
- E94 GTC Nutrition Ca - 1400 West 122nd Ave. #110, Westminster, CO 80234, 1-800-522-4682. Specializes in nutritional supplements. *Sells the following products: NutraFlora.* CAT FREE, R & W, PC.
- E97 Gurney Seed & Nursery Ca - 110 Capital St., Yankton, SD 57079, (605) 665-1930. One of the oldest and largest seed and nursery companies in the United States. Offers vegetable, herb and flower seed, fruit and nut trees, perennial vegetable plants, berries, trees and shrubs. Established in 1866. CAT FREE, RET, PC/CC/OC.
- E97M H & K Products, Inc - P.O. Box 37, Columbus Grove, OH 45830, (419) 659-5110. Specialty food products. *Sells the following products: Pappy's saffrafras tea concentrate.* CAT FREE, R & W, PC, OVER, M.O. 1 CASE.
- E97P Hadley Fruit Orchards - P.O. Box 495, Cabazon, CA 92230, 1-800-854-5655. Dried fruits and nuts, gift assortments. CAT FREE, R & W, PC/CC, OVER.
- E99G Hale Indian River Grows - P.O. Bck 217, Wabasso, FL 32970-0217, 1-800-289-4253. Fresh produce including citrus and tomatoes, gourmet food items. *Sells the following products: Ismjg., orange, marmalade and tangelo marmalade.* CAT FREE, RET, PC/CC, CANADA ONLY.
- E99M Haley Nursery Co. - 1207 Haley Rd., Smithville, TN 37166, 1-800-251-1878. Specializes in peaches. Also offers apples, pears, plums, cherries, nectarines, Asian pears and apricots. CAT FREE, R & W, PC, M.O. \$25.
- FI Halifax Seed Ca - P.O. Box 8026, Station A, Halifax, NSB3K 5L8, Canada, (902) 454-7456. Vegetable, herb and flower seeds suitable for Atlantic Canada. Established in 1866. CAT \$1, R & W, PC/CC, OVER.
- F6 Hammons Pantry -414 North St., Stockton, MO 65785, 1-800-872-6879. Specializes in black walnuts and other gourmet food items. Previously known as Missouri Dandy Pantry. *Sells the following products: black walnut kernels, black walnut svrun, black walnut brittle, chocolate covered black walnuts, black walnut fudge and black walnut taffy.* CAT FREE, RET, PC/CC, OVER.
- F10 Hardscrabble Enterprises - P.O. Box 1124, Franklin, WV 26807, (304) 358-2921. Shiitake mushroom spawn starter kits, shiitake food products, mushroom growing supplies. CAT FREE, R & W, PC.
- F11 Harmony Fhrm Supply - P.O. Box 460, Graton, CA 95444, (707) 823-9125. Wild flower seeds, garlic, shallots, green manure and cover crop seeds. CAT \$7, R & W, PC/CC.
- F13 Harris Seeds - P.O. Box 22960, Rochester, NY 14692-2960, 1-800-514-4441. Vegetable, herb and flower seeds, garden perennials, wild flowers, berry plants. CAT FREE, R & W, PC/CC.
- F15 Harry and Dswid - P.O. Box 712, Medford, OR 97501, 1-800-547-3033. Fresh produce in season, gourmet and specialty food items. CAT FREE, RET, PC/CC, OVER.

- F15M Hartman's Herb Farm - 1026 Old Dana Rd., Barre, MA 01005, (978) 355-2015. Herb plants and seeds, perennials, scented geraniums, dried herbs and spices, botanicals. *Sells the following products:* Raia's Cup. CAT \$2, R & W, PC/CC, OVER, M.O. \$15.
- F16 Hartmann's Plantation, Inc - P.O. Box E, Grand Junction, MI 49056-0805, (616) 253-4281. Extensive collection of highbush, lowbush, rabbiteye and ornamental blueberry plants. Also lingonberries, raspberries, hardy kiwi, citrus and other exotic fruiting plants. CAT FREE, R & W, PC/CC, OVER.
- F17 Harvest Direct - P.O. Box 988, Knoxville, TN 37901-0988, 1-800-835-2867. Vegetarian foods, soyfoods, milk substitutes. *Sells the following products:* TVP, tofu, soy butter, soy cheese, soynuts, soy flour, soymilk, tofuo, tofomilk (Better Than Milk), Vance's DariFree, vegelicious, rice milk, Wonderslim, and artichoke pasta. CAT FREE, RET, PC/CC, OVER, M.O. \$10.
- F20M Hauser's Superior View Farm - Rt. 1, Box 199, Bayfield, WI 54814, (715) 779-5404. Hardy field grown herbs, garden perennials, rhubarb and asparagus. CAT FREE, R & W, PC, CANADA ONLY, M.O. \$25.
- F21M Hawaiian Fhiit Specialties - P.O. Box 637, Kalaheo, Kauai, HI 96741-0637, (808) 332-9333. Hawaiian food specialties. Previously known as Hawaiian Fruit Preserving Co. *Sells the following products:* poha preserves, and passionfruit juice, preserves and svrup. CAT FREE, R & W, PC, OVER.
- F21P Hawaiian Vintage Chocolate Ca - 4614 Kilauea Ave., Ste. 435, Honolulu, HI 96816, 1-800-429-6246. Specializes in organically grown vintage, varietal chocolates. The only commercial producer of cacao in the United States. *Sells the following products:* Ke'au Estates (Kilauea) and Hodge's Estate (Kona) vintage chocolates, and Snows of Mauna K'a Hawaiian white chocolate. CAT FREE, R & W, PC/CC.
- Hazera (1939) Ltd. - 1369 East Ave., Chico, CA 95926, 1-800-429-6246. American subsidiary of Hazera (1939) Ltd., Israel, which see.
- F21T Heartland Mill, Inc. - Rt. 1, Box 2, Marienthal, KS 67863, (316) 379-4472. Certified organic grains, beans, seeds and flours. *Sells the following products:* Snow White whole wheat flour. CAT FREE, R & W, PC/CC.
- F22 Heaths and Heathers - East 502 Haskell Hill Rd., Shelton, WA 98584-8429, 1-800-294-3284. Specialists in hardy heaths and heathers. CAT SASE, RET, PC/CC, CANADA ONLY, M.O. \$15.
- F23M Heintzman Farms - R.R. 2, Box 265, Onaka, SD 57466, 1-888-333-5813. Specializes in flax seeds. Sells a kit that includes seeds, a mini electric grinder and a cholesterol testing kit. CAT FREE, R & W, PC/CC.
- F24D Heirloom Gardens - P.O. Box 5277, Lancaster, PA 17601, 1-888-333-5813. Organically grown, hand-harvested vegetable, herb and flower seeds. CAT FREE, RET, PC.
- F24G Heirloom Seed Project - Landis Valley Museum, 2451 Kissel Hill Road, Lancaster, PA 17601-4899, (717) 560-2147 (fax). Non-profit organization offering open-pollinated heirloom vegetables, herbs and ornamentals with a Pennsylvania Dutch history. Also field crop seed and fruit tree scionwood. CAT \$4, RET, PC/CC, OVER.
- F24M Heirloom Seeds - P.O. Bex 245, West Elizabeth, PA 15088, (412) 384-0852. Small, family run seed business specializing in standard, open-pollinated vegetables, herbs and flowers. Some selections date back to the 1700's and 1800's. CAT \$1 REFUNDABLE, RET, PC/CC.
- F27 Helen's Tropical Exotics - 1017 Lees Mill Rd., Atlanta, GA 30349, 1-800-544-5375. Gourmet and specialty foods with a Caribbean flavor. *Sells the following products:* Scotch Bonnet pepper hot sauce. CAT FREE, R & W, PC/CC.
- F32D The Herb Garden - P.O. Box 773, Pilot Mountain, NC 27041, 1-800-544-5375. Herb plants, wildflowers, everlastings, unusual perennial flowers. Also botanicals and cruelty-free herbal products. *Sells the following products:* apricot kernel oil, sweet almond oil, avocado oil, Balsam of Peru and Balsam of Tolu essential oils, and organic vanilla beans. CAT \$4, RET, PC, M.O. \$15.
- F35M The Herbfarm - 32804 Issaquah-Fall City Rd., Fall City, WA 98024, 1-800-866-4372. Over 600 varieties of herb plants and perennials, including many unusual selections, herbal products. Also 150 classes each year on gardening, crafts and cooking with herbs. Previously known as Fall City Herb Farm. *Sells the following products:* chocolate pansies, sparkling elderflower non-alcoholic beverage, elderflower concentrate. CAT FREE, RET, PC/CC, OVER.
- F37T Herbs-Liscious - 1702 South Sixth St., Marshalltown, IA 50158, (515) 752-4976. Family owned business selling 250 varieties of herb plants, dried herbs and spices, herb craft materials, dried herb bunches and flowers. CAT \$2 REFUNDABLE, R & W, PC/CC, CANADA ONLY.
- F40M Heritage Seed Ca - P.O. Bex 505, Star City, AR 71667, 1-800-628-9669. Large selection of perennial onions, shallots and garlic. CAT FREE, R & W, PC/CC.
- F42M Hickin's Mountain Mowings Farm and Greenhouses - R.F.D. # 1, Box 293, Brattleboro, VT 05301, (802) 254-2146. Fresh produce, New England gourmet regional food items. *Sells the following products:* elderberry jellv, Sparkle strawberry jam, black, purple and yellow rasperry jams, rasperry and blueberry honevs, dilled fiddleheads, dried grggp toiuatoes in Olive oil, dijii Lemon cucumber, Sagg cheese, indgQrnpQb-smQked meats, CAT FREE, RET, PC.
- F43M Hidden Springs Nursery - 170 Hidden Springs Lane, Cookeville, TN 38501, (931) 268-2592. Specializes in unusual fruit and nut trees for edible landscaping, including medlar, mayhaw, autumn olive, sea buckthorn, juneberry, chestnuts, persimmons and pawpaw. CAT \$1, RET, PC.
- F44 High Altitude Gardens - P.O. Box 1048, Hailey, ID 83333, (208) 788-4363. Regional seed company dedicated to making available seeds of vegetables, herbs, wild flowers and native grasses adapted to short season, high altitude climates around the world. Specializes in Siberian tomatoes. Also known as Seeds Trust. CAT \$3, R & W, PC/CC, OVER.
- F44M High Country Gardens - 2902 Rufina St., Santa Fe, NM 87505-2929, 1-800-925-9387. Drought tolerant perennials, native plants, and ornamentals adapted to growing in states west of the Mississippi. CAT FREE, R & W, PC/CC, M.O. 6 PLANTS.
- F45 High Country Roses - P.O. Box 148, Jensen, UT 84035, (435) 789-5512. Specializes in old garden, shrub and species roses for cold mountain climates. Subsidiary of High Country Rosarium. CAT \$2, RET, PC/CC.
- F46 High Mowing Oiganic Seed Farm - R.D. 1, Box 95, Derby Line, VT 05830, (802) 895-4696 (no telephone

- orders). Dedicated to the preservation, distribution and breeding of organically grown heirloom vegetables for New England farmers and gardeners. CAT FREE, R & W, PC, CANADA ONLY.
- F48 Highlander Nursery - P.O. Box 177, Pettigrew, AR 72752, (501) 677-2300. Specializes in highbush blueberry plants. Previously known as Shanti Gardens. CAT FREE, R & W, PC, CANADA ONLY.
- F51 Hillis Nursery Co., Inc. - 92 Gardner Rd., McMinnville, TN 37110, (931) 668-4364. Nut trees, native wild flowers and ferns, vines, bulbs, flowering trees and shrubs. CAT FREE, WHLS, PC/CC, OVER.
- F51M Hillside Organic Farm - 141 Carrolls Grove Rd., Trey, NY 12180, (518) 279-9637. Specializes in hardneck varieties of garlic for both planting and eating. CAT FREE, R & W, PC.
- F53 Hilltop Nurseries - P.O. Box 578, Hartford, MI 49057, 1-800-253-2911. Apple, peach, nectarine, pear, cherry, plum and apricot trees, many certified virus-free. Previously known as Hilltop Orchards & Nurseries. CAT FREE, R & W, PC/CC/OC, OVER, M.O. 10 TREES.
- F53M Hines Nurseries - P.O. Box 11208, Santa Ana, CA 92711, 1-800-444-4499. Berry plants, citrus, grape vines, palms, cacti and succulents, ornamental grasses, flowering trees and shrubs. CAT FREE, WHLS.
- F54 Historical Roses - 1657 West Jackson St., Painseville, OH 44077, (216) 357-7270. Old garden roses, species roses. CAT SASE, RET, PC.
- F56 Hoegger Supply Company - 160 Providence Rd., Fayetteville, GA 30215, 1-800-221-4628. Goat keeping supplies including cheesemaking cultures. CAT \$1, R & W, PC/CC.
- F59 Holland Wildflower Farm - P.O. Box 328, Elkins, AR 72727, 1-800-684-3734. Seeds of wild flowers native to Arkansas and other states in the Ozark region, including prairie, mountain and wetland species. CAT FREE, RET, PC/CC, OVER.
- F60 Hollar & Co., Inc - P.O. Box 106, Rocky Ford, CO 81067, (719) 254-7411. Commercial vegetable seed grower specializing in cucumber, melon, squash, gourd, and watermelon. CAT FREE, WHLS, PC, OVER.
- F61M Hollydale Nursery - P.O. Box 68, Pelham, TN 37366, 1-800-222-3026. Growers and sellers of fruit trees, primarily for commercial orchards in the Southeast. Specializes in peaches, plums and nectarines. CAT FREE, R & W, PC, OVER, M.O. \$50.
- F63 Holmes Seed Co. - 2125 46th St. N.W., Canton, OH 44709, (330) 492-0123. Complete line of vegetable seeds for commercial growers. CAT FREE, WHLS, PC/CC.
- F63M Homan Brothers Seed - 1540 Happy Valley Rd., Phoenix, AZ 85027, (602) 787-8036. Specializes in seed native to the southwestern United States. Previously known as Hubbs Brothers Seed. CAT FREE, R & W, PC/CC, OVER, M.O. \$25.
- F64 The Home Brewery - P.O. Box 730, Ozark, MO 65721, 1-800-321-2739. Wine and beer making supplies for the home brewer. *Sells the following product/s: sorghum svrup. and brewer's licorice.* CAT FREE, RET, PC/CC.
- F65 Home Sweet Homebrew - 2008 Sanson St., Philadelphia, PA 19103, (215) 569-9469. Beer and wine making supplies. *Sells the following product/s: agave nectar.* CAT FREE, RET, PC/CC.
- F66T Honey Grove Farm - P.O. Box 49, Alsea, OR 97324, (541) 487-7274. Tilth certified Elephant garlic, for both planting and eating. CAT FREE, R & W, PC.
- F67 Honeywood Lilies and Nuisery - P.O. Box 68, Parkside, SK S0J 2A0, Canada, (306) 747-3296. Lilies and daylilies, ornamental shrubs, fruit trees, berry plants, hardy perennials, roses, Asiatic bulbs. Dr. A.J. Porter, one of the owners, has developed many cultivars now in common use in the prairie provinces and other northern regions. CAT \$2, R & W, PC, OVER (LILIES ONLY), M.O. \$30.
- F67T Hop Tech - 3015 Hopyard Rd., Ste. E, Pleasanton, CA 94588, 1-800-379-4677. Homebrewing supplies, hop rhizomes. *Sells the following product/s: beechwood-smoked malt. Kent Golding hop oil. and Cascade hop oil.* CAT FREE, RET, PC/CC, OVER.
- F68P Hoppin' John's - 30 Pickney St., Charleston, SC 29401, (803) 577-6404. Specializes in Lowcountry foods from the coastal regions of South Carolina and Georgia. *Sells the following product/s: whole-grain. stone-ground. mountain-grown com grits. cornmeal and corn flour. dilly beans. chowchow and piccalilli.* CAT FREE, RET, PC/CC.
- F68T Horizon Herbs - P.O. Box 69, Williams, OR 97544-0069, (541) 846-6704. Organically grown and wild harvested seeds and roots of medicinal plants, including Chinese and Ayurvedic. CAT \$1, R & W, PC/CC, OVER.
- F69 Jerry Home Rare Plants - 10195 S.W. 70th St., Miami, FL 33173, (305) 270-1235. Small family business selling rare collectors items, especially ferns, aroids, platyceriums and cycads. CAT SASE, RET, PC, OVER.
- F70 HortiClub - 2914, boul. Labelle, Ville de Laval, PQ H7P 5R9, Canada, (514) 682-9071. Vegetable, herb and flower seeds, fruit trees, berry plants, grape vines, perennial vegetables, ornamental trees and shrubs. Previously known as W.H. Perron. Subsidiary of Dominion Seed House. CAT FREE, R & W, PC/CC/OC, CANADA ONLY.
- F71M Horticultural Enterprises - P.O. Box 810082, Dallas, TX 75381-0082, (514) 682-9071. Large selection of chile pepper seed, other hot peppers, Mexican and Southwestern vegetables. CAT FREE, RET, PC.
- F73 Horticultural Systems, Inc - P.O. Box 70, Parrish, FL 34219, 1-800-771-4114. Growers of native plants for beach, saline, wetlands and freshwater habitats. Also design, install and maintain revegetation and erosion control projects. CAT FREE, WHLS.
- F73D Horus Botanicals - HCR 82, Box 29, Salem, AR 72576, 1-800-771-4114. Large selection of ethnic herbs and vegetables, heirloom and open-pollinated vegetables, herbal products. CAT \$3, RET, PC, OVER.
- F74 House of Spices - 82-80A Broadway, Elmhurst, NY 11373, (718) 476-1577. Specializes in Indian and Pakistani foodstuffs. *Sells the following product/s: canned tindora. whole vail. vail dal. whole urid. urid dal. panadums. whole toor. toor dal. oily toor dal. canned tinda. kedwa water. amchoor. whole Masoor. Masoor dal. Chat masala. karonda pickles. kerda pickles. sorghum flour... dried guarfali. canned parval. canned suran. mustard oil. dhokla flour. black salt. and poha.* CAT FREE, R & W, PC.
- F74M The House of Webster - P.O. Box 1988, Rogers, AR 72757, (501) 636-4640. Old fashioned gourmet food gift packages. *Sells the following product/s: Santa Rosa plum.*

- Scuppemong. crab apple and wild elderberry jellies, wild Himalaya berry preserves and crab apple svrup. CAT FREE, RET, PC/CC.
- F75M Spencer M. Howard Orchid Imports - 11802 Huston St., North Hollywood, CA 91607, (818) 762-8275. Specializes in species orchids from around the world. CAT FREE, R & W, PC, OVER, M.O. \$25.
- F78 Hsu's Ginseng Enterprises, Inc - P.O. Box 509, Wausau, WI 54402-0509, 1-800-826-1577. Ginseng seed and planting rootlets, fresh ginseng roots in season, ginseng food products. *Sells the following products:* American ginseng tea bags, candv and extract, and Siberian ginseng extract. CAT FREE, RET, PC/CC, OVER, M.O. 2 OZ. SEED.
- F80 J.L. Hudson, Seedsman - Star Route 2, Box 337, La Honda, CA 94020, 1-800-826-1577. Specializes in rare and unusual seeds from around the world. Also traditional and heirloom vegetables, herbs, and a special collection of Zapotec Indian seeds from Sierra Madre del Sur, Oaxaca, Mexico. CAT \$1, RET, PC, OVER.
- F82 Ed Hume Seeds, Inc - P.O. Box 1450, Kent, WA 98035, (206) 859-0694 (fax). Family owned and operated business offering vegetable, herb and flower seeds for cool, short season areas. CAT FREE, R & W, PC/CC, CANADA ONLY.
- Hungnong Seed America, Inc. - 3065 Pacheco Pass Hwy., Gilroy, CA 95020, (408) 848-5354. American subsidiary of Hungnong Seed Co., Ltd., Korea, which see.
- F85 Hurov's Seeds & Botanicals - P.O. Box 1596, Chula Vista, CA 91912, (619) 690-1741. Seed of over 6,000 species collected from around the world by H. Ron Hurov and collaborators. Specializes in useful plants including tropical fruits and vegetables, rare herbs and spices, palms. Also ornamental and foliage plants. CAT \$1, R & W, PC, OVER.
- F85D Hyatt Fruit Co - P.O. Box 639, Vero Beach, FL 32961, 1-800-327-5810. Fresh citrus, organic apples and apple cider, gourmet foods, gift baskets. *Sells the following products:* baby Vidalia onions. CAT FREE, R & W, PC/CC, OVER.
- F85G Hydro-Gardens, Inc - P.O. Box 25845, Colorado Springs, CO 80936, 1-800-634-6362. Specializes in lettuce, cucumber, pepper and tomato seeds for greenhouse or hydroponic culture. CAT FREE, WHLS, PC, OVER, M.O. \$25.
- F85J Ideal Cheese Shop - 1205 Second Ave., Nov York, NY 10021, 1-800-382-0109. Large selection of imported cheeses from around the world, gift baskets. *Sells the following products:* Applewood. Banon. Levden. Pepato. Cabrales. Mahon. Sapsago. Cotswold. Fromage de Vigneion. Vacherin Mont d'Or. and Appenzeller cheeses. CAT FREE, R & W, PC/CC, OVER.
- F85M Ili Ili Rums - P.O. Box 150, Kula, HI 96790, 1-800-535-6284. Hawaiian specialty foods and flowers including Maui onions. CAT FREE, RET, PC/CC, OVER.
- F86 Ulinois Foundation Seeds - P.O. Box 722, Champaign, IL 61824-0722, (217) 485-6260. Specializes in Xtra-Sweet hybrid sweet corn. CAT FREE, R & W, PC, OVER.
- F86D Imperial Date Gardens - P.O. Box 100, Bard, CA 92222, (760) 572-0277. Specializes in Medjool dates. *Sells the following products:* Frozen "rutab" Medjool dates. CAT FREE, R & W, PC/CC, OVER.
- F86G **In Harmoiy Herbs & Spices** - P.O. Box 7555, San Diego, CA 92167, (619) 223-8051. Botanicals, seasonings, medicinal and culinary herb seeds, herbal products, many organically grown. *Sells the following products:* roasted dandelion roots. CAT \$2 REFUNDABLE, RET, PC/CC.
- F86T **Indian Harvest Specialtifooods, Inc** - P.O. Box 428, Bemidji, MN 56619-0428, 1-800-294-2433. Exotic grains, heirloom beans, rice blends, gift boxes and samplers. CAT FREE, R & W, PC/CC, OVER.
- F87 **Indiana Berry & Plant Co** - 5218 West 500 South, Huntingburg, IN 47542, 1-800-295-2226. Berry plants, grapes, perennial vegetables. Incorporating North Star Gardens. CAT FREE, R & W, PC/CC.
- F88 **Indigo Spring Natural Food Co** - P.O. Box 2473, Amherst, MA 01004, 1-800-578-5301. Natural foods, macrobiotic foods. Previously known as WellSpring Natural Food Co. *Sells the following products:* snow-dried tofu, chickpea miso, gomashio, brown rice svrup, brown rice svrup powder, mochi, mochi rice cakes, wild rice rice cakes, tekla, Cafix and Yannoh grain coffees, hato-mugi tea, and barley tea. CAT FREE, R & W, PC/CC, OVER.
- F88G **Inner Coast Nursery** - Box 115, Mansons Landing, Cortes Island, BC V0P 1K0, Canada, (250) 935-6384. Organic growers of over 300 cultivars of rare, heritage and exceptional fruit trees. CAT \$5, R & W, PC, CANADA ONLY, M.O. \$25.
- F88M **Inside Rissage** - P.O. Box 639, R)rt Townsend, WA 98368, 1-800-361-9657. Tree, shrub and wildflower seed wildcrafted in the Pacific Northwest. CAT SASE, R & W, PC, OVER.
- F88P **Integrated Agro Systems** - 20220 Elfin Forest Rd., Escondido, CA 92029, (760) 744-3120. Specializes in fresh frozen spirulina. Subsidiary of Pecoff Brothers Nursery & Seed Inc. CAT (CALL FOR PRICES), WHLS.
- F89 **Inter-State Nurseries** - 1800 Hamilton Rd., Bloomington, IL 61704, (309) 663-9551. Berry plants, nut trees, perennial vegetables, roses, garden perennials, flowering shrubs. CAT FREE, RET, PC/CC.
- F89M **Intermountain Cactus** - 1478 North 750 East, Kaysville, UT 84037, (801) 546-2006. Specializes in hardy cactus. CAT SASE, RET, PC, M.O. \$20.
- F90C **International Bio-Tech U.S.A.** - 1145 Linda Vista Dr., San Marcos, CA 92069, (760) 471-1182. Manufacturers and distributors of Flora Balance nutritional supplement. CAT FREE, R & W, PC, OVER.
- F91 **International Specialty Supply** - 820 East 20th St., Cookeville, TN 38501, 1-800-277-7688. Seed company and sprout equipment manufacturer. Sells everything to run a professional sprout business, including seed, equipment and packaging. CAT FREE, WHLS, PC, OVER, M.O. 5 LBS.
- F91T **Irrigated Agriculture Research and Extension Center** - National Research Support Project Na 5, Washington State University, 24106 North Bunn Rd, Prosser WA 99350-0687, (509) 786-9251. Propagation material of virus-tested deciduous fruit tree cultivars of interest to researchers, collectors and the commercial fruit industry. CAT FREE, RET, M.O. \$10.
- F91Z Iseli Nursery - 30590 S.E. Kelso Road, Boring, OR 97009, 1-800-777-6202. Ornamental trees and shrubs. CAT FREE, WHLS.

- F92 **Island Seed Co. Ltd.** - P.O. Box 4278, Depot 3, Victoria, BC V8X 3X8, Canada, (250) 744-3677. Vegetable, herb and flower seeds. CAT FREE, RET, PC/CC, OVER.
- F93 **Ison's Nursery & Vineyards** - P.O. Box 190, Brooks, GA 30205, 1-800-733-0324. Large selection of fruit and nut trees for the South, berry plants, bunch grapes. Specializes in muscadines and scuppernongs, offering approximately 40 cultivars. CAT FREE, R & W, PC/OC, OVER.
- F93G **It's About Thyme** - 11726 Manchaca Rd., Austin, TX 78748, (512) 280-1192. Herb plants including Southwestern natives, scented geraniums, everlastings. CAT FREE, RET, PC/CC, M.O. \$25.
- F94 **J & L Orchids** - 20 Sherwood Rd., Easton, CT 06612, (203) 261-3772. Hybrid and species orchid plants and seedlings. Specializes in miniatures. CAT \$1, RET, PC/CC, OVER.
- F96 **Jacklin Seed Co.** - 5300 West Riverbend Ave., Post Falls, ID 83854-9499, (208) 773-7581. Seed of reclamation and environmental grasses, turf grass seed. CAT FREE, WHLS, OVER.
- F97 **Jackson & Iterkins** - P.O. Box 1028, Medford, OR 97501, 1-800-292-4769. Roses, garden perennials, ornamental grasses. CAT FREE, R & W, PC/CC, CANADA ONLY.
- F97G **S.M. Jacobson Qtrus** - 1505 Doherty, Mission, TX 78572, (956) 585-1712. Organically grown citrus. CAT FREE, RET, PC.
- F97M **Jaffe Bros. Natural Foods, Inc** - P.O. Box 636, Valley Center, CA 92082, (760) 749-1133. A 50-year old family business supplying sprouting seeds, dried fruits, nuts, grains, seeds, dates, beans and other organic foods, mostly in five pound quantities. *Sells the following products:* cashew, nut butter, kamut flour, pasta, almond paste, lecithin granules, both toasted and raw carob powder, and soy milk powder. CAT FREE, R & W, PC/CC, OVER.
- F99 **James Page Homebrewing Supplies** - Box 14712, Minneapolis, MN 55414, 1-800-347-4042. Home beer-making supplies. CAT FREE, RET, PC/CC.
- GO **Janca's Jojoba Oil & Seed Co.** - 456 East Juanita #7, Mesa, AZ 85204, (602) 497-9494. Large selection of specialty vegetable oils, essential oils, butters, herbs and spices, botanicals. *Sells the following products:* Camellia seed, cotton seed, chia seed, hemp seed and pecan nut oils, balsam, Qf, Eem, ilayana, jnd, jos, vQPd-essential, oils, cocoa, jjaL, illipe, kokuni, shfia and mangq butteis, jnd sunflower petals. CAT FREE, R & W, PC/CC, OVER.
- G1 **Japan California Products** - 544 Stanford Ave., Los Angeles, CA 90013, (213) 622-6386. Large selection of Japanese and Oriental foods. CAT (CALL FOR PRICES), R & W, PC.
- G1M **Jeffreys Seed Co.** - P.O. Box 887, Goldsboro, NC 27533, (919) 734-2985. Vegetable seed including older traditional cultivars, cover crop and green manure seeds. Established in 1888. CAT FREE, R & W, PC/CC.
- Jelitto Perennial Seeds** - 125 Chenoweth Lane, Louisville, KY 40207, (502) 895-0807. American subsidiary of Jelitto Staudensamen, Germaiy, which see.
- G2M **Jene's Tropicals** - 6831 Central Ave., St. Petersburg, FL 33710, (813) 344-1668. Tropical fruits including a good selection of bananas. CAT FREE, R & W, PC/CC.
- G3 **Jersey Asparagus Farms, Inc.** - 105 Porchtown Rd., Pittsgrove, NJ 08318, 1-800-499-0013. Specializes in male hybrid asparagus developed at Rutgers University. CAT FREE, R & W, PC/CC, OVER.
- G3M **Jersey Persimmon Farm** - 58 Van Duyne Avei, Wayne, NJ 07470-4705, (973) 694-1220. Specializes in budded American persimmon trees. CAT FREE, RET, PC.
- G3Z **The Jewel Date Co.** - 48-440 Prairie Dr., Palm Desert, CA 92260, (760) 399-4474. Pioneer organic date growers. Also citrus and pecans. Covalda brand products. Incorporating Covalda Date Co. *Sells the following products:* date sugar, date butter and date pieces with oat flour. CAT FREE, R & W, PC/CC, OVER.
- G4 **Jewell Nurseries of Minnesota** - P.O. Box 457, Lake City, MN 55041-0457, 1-800-848-0933. Fruit trees, berry plants, grape vines, perennial vegetables, ornamental trees and shrubs. Established in 1868. CAT FREE, WHLS.
- G5 **Hans Johansson's Mushrooms & Moie** - P.O. Box 532, Goldens Bridge, NY 10526, (914) 232-2107. Good selection of fresh and dried mushrooms, other gourmet foods. *Sells the following products:* sparkling elderflower drink, and elderflower concentrate. CAT FREE, R & W, PC, M.O. \$25.
- G5M **Johnny Kiwised, Inc** - P.O. Box 1268, Ashland, OR 97520, 1-800-219-9071. Unique collection of gourmet fruit preserves, jams, jellies, chutneys, juices and syrups. Also honey, tea, and salsas. *Sells the following products:* kamahi, leatherwood and manuka honeys, Rangpur Lime marmalade, Brazil nut brittle, coquitos, Feijoa jam and gtoingy, birgh, syrup, Turkish Delight with roastfc, Abalai marmalade, preserved Ababai, nances in svrup, Tavberv, Asian pear, durian and Saskatoon jam, medlar and starfruit preserves, and agrito, buffelo-berry, Oregon grape, salal and sea grape jellies. CAT FREE, R & W, PC/CC.
- G6 **Johnny's Selected Seeds** - 1 Foss Hill Road, Albion, ME 04910-9731, (207) 437-4301. Breeders and growers of a wide range of vegetables, culinary herbs, grains, and flowers. Specializes in varieties for cool, short season areas and specialty markets. The quintessential alternative seed company. CAT FREE, R & W, PC/CC, OVER.
- G8 **Johnson Nursery** - Rt. 5, Box 29-J, Ellijay, GA 30540, 1-888-276-3187. Small nursery offering fruit trees, berry plants and grape vines. Specializes in antique peach cultivars. CAT FREE, R & W, PC/CC.
- G13M **Jordan Seeds** - 6400 Upper Afton Rd., Woodbury, MN 55125, (612) 738-3422. Complete line of vegetable seeds for commercial growers. CAT FREE, WHLS, PC/CC.
- G13T **Josie's Best New Mexican Foods** - P.O. Box 5525, Santa Fe, NM 87505, (505) 473-3437. Specializes in Mexican and Southwest Indian foods. *Sells the following products:* whole dried Pequfn peppers, crushed dried Pequfn peppers, corn husks, and piloncillo. CAT FREE, RET, PC.
- G16 **J.W. Jung Seed Co.** - 335 South High St., Randolph, WI 53957-0001, 1-800-247-5864. Vegetable, herb and flower seed, fruit and nut trees, berry plants, grape vines, perennial vegetables, bulbs, trees and shrubs. Established in 1907. CAT FREE, RET, PC/CC.
- G17 **Just Fruits Nursery** - 30 St. Francis St., Crawfordville, FL 32327, 1-888-714-0037. Complete list of container grown fruits, nuts and berries, both common and exotic, suitable for growing in Zones 8 and 9. Offers numerous cultivars developed at the University of Florida. CAT \$2, R & W, PC.

- G17M The Just Tomatoes Ca - P.O. Box 807, Westley, CA 95387, 1-800-537-1985. Vine-ripened dried fruits and vegetables. *Sells the following product/s: dried tomatoes, dried tomato pesto, and dried bell peppers.* CAT FREE, R & W, PC/CC, OVER.
- G18 K & L Cactus Nursery - 9500 Brook Ranch Rd. East, Lone, CA 95640-9417, (209) 274-0360. Cactus and succulent plants and seed. CAT \$3 REFUNDABLE, RET, PC/CC, OVER, M.O. \$25.
- G19 Kahiltna Birchworfes - P.O. Box 13243, Trapper Creek, AK 99683, (907) 733-1309. Small family owned business specializing in Alaskan birch products sustainably produced on their homestead and adjacent state lands. *Sells the following product/s: pure birch svrup, birch svrup blend, birch caramel BMnetto cream topping, and birch cream caramel candy.* CAT FREE, R & W, PC/CC, OVER.
- G19M Kam Man Food Products - 200 Canal St., New York, NY 10013, (212) 571-0330. Specializes in Chinese and Oriental foods. *Sells the following product/s: bottled water shield, dried lotus leaves, glass jelly, Guilinggao, and ma ja* CAT (CALL FOR PRICES), RET, PC.
- G19P Kam Tat Chinese Herbs Trading Inc. - 54 Mott St., New York, NY 10013, (212) 226-5911. Extensive selection of Chinese herbs and herbal products. CAT FREE, R & W, PC, OVER.
- G19T Kamprath Seed Co. - 205 Stockton St., Manteca, CA 95337, 1-800-446-9959. Cover crop and green manure seeds, California natives. Previously known as Ramsey Seed Co. CAT FREE, WHLS.
- G20 Kartuz Greenhouses - P.O. Box 790, Vista, CA 92085, (760) 941-3613. Exotic tropical flowering plants, rare fruits including passionfruit, pepino dulce, and acerola. CAT \$2, R & W, PC/CC, OVER, M.O. \$20.
- G20M Katagiri & Co., Inc. - 224 East 59th St., New York, NY 10022, (212) 755-3566. Specializes in Japanese food items. *Sells the following product/s: pickled Aka Taka-na, rakko-zuke, nara-zuke, pickled Nozawa-Na, amazu-shoea, takuan, Suguki pickle, konnaku, shirataki, kinako, bottled iunsai, ponzu vinegar, canned nameko mushrooms, kashiwa mochi, hato-muri biscuits, shichimiL matcha, kombu-cha, and frozen shredded wasahL* CAT FREE, R & W, PC/CC, OVER.
- G21M Forrest Keeling Nursery - Highw^ 79, Elsberry, MO 63343, 1-800-356-2401. Ornamental trees and shrubs, seedling transplants. CAT FREE, WHLS, M.O. 50 OF EACH.
- G22 Kelchner's Horseradish Products - P.O. Box 245, Dublin, PA 18917, 1-800-424-1952. Specializes in home style horseradish products. *Sells the following product/s: white horseradish, red horseradish, and horseradish mustard.* CAT FREE, R & W, PC.
- G23 Kelly Nurseries - 410 Eight Ave. N.W., Faribault, MN 55021, (507) 334-1623. Fruit and nut trees, berry plants, grape vines, perennial vegetables, general ornamental nursery stock. CAT FREE, RET, PC/CC.
- G23D Kelly's Cblor - P.O. Box 724, Etna, CA 96027, (530) 467-3215. Specializes in hardy succulents. Succeeded Jim & Irene Russ. CAT FREE, R & W, PC, M.O. \$15.
- G26 Kester's Wild Game Food Nurseries, Inc - P.O. Box 516, Omro, WI 54963, 1-800-558-8815. Specializes in seed, roots and tubers of aquatic plants, grains, and forages for feeding wildlife and developing wildlife habitats. CAT \$3, R & W, PC/CC, CANADA ONLY.
- G27 Khatsa & Co. - 13805 Main St., Bellevue; WA 98005-3733, (206) 649-5508. Specials in foods from Tibet. *Sells the following product/s: nettle salsa, dried toma roots and tsampa.* CAT FREE, R & W, PC.
- G27M Kilgore Seed Ca - 1400 West First St., Sanford, FL 32771,(407) 323-6630. Vegetable, herb and flower seeds suited to Florida and other Gulf Coast states. CAT \$1 DEDUCTIBLE, RET, PC, OVER.
- G28 Killian Hill Nursery Co. - 1646 Fairview Rd., McMinnville, TN 37110-4520, (931) 668-8003. Ornamental trees and shrubs, perennials, ferns. CAT FREE, WHLS, PC.
- G29 The King Arthur Flour Baker's Catalogue - P.O. Box 876, Norwich, VT 05055, 1-800-827-6836. Grains and flours for breadmaking, sourdough starters, baker's yeast, baking supplies. Also known as The Baker's Catalogue. *Sells the following product/s: triticale flour, tapioca flour, white whole wheat flour, Kev Lime juice, sugar beet syrup, Wondgrslim, Oatrim, almond paste, almond flour, marzipan, hazelnut flour and hazelnut syrup.* CAT FREE, RET, PC/CC, OVER.
- G33 Kitazawa Seed Co. - 1111 Chapman St., San Jose, CA 95126, (408) 243-1330. Specializes in Japanese and Oriental vegetable seeds. Established in 1917. CAT FREE, R & W, PC, OVER.
- G36 Klamath Blue Green, Inc - P.O. Box 1626, Mt. Shasta, CA 96067, 1-800-327-1956. Specializes in Klamath blue-green algae. *Sells the following product/s: Klamath blug-grgep algae PQwder, Ate» seasoning, snack-bars\* drink mixes and tinctures.* CAT FREE, R & W, PC/CC, OVER.
- G36M Klamath Valley Botanicals - 2625 Toqua Rd., Chiloquin, OR 97624, (541) 783-3826. Specializes in Klamath Lake blue-green algae. CAT FREE, R & W, PC, CANADA ONLY, M.O. 1 LB.
- G37 Joseph Klein Nursery - 15215 S.E. Webfoot Rd., Dayton, OR 97114, (503) 868-7556. Specializes in Asian pear trees, both bare root and container grown. CAT FREE, WHLS, PC, M.O. 10 TREES.
- G37P KLM Bioscientific - P.O. Box 2691, Escondido, CA 92033, (760) 745-1445. Biological supplies including living cultures of algae, bacteria and fungi. Succeeded College Biological Supply Co. Previously known as The Biology Store. CAT FREE, R & W, PC, M.O. \$15.
- G39G Kombucha Manna - 2 Alexander Lane, Croton-on-Hudson, NY 10520, (914) 271-0954. Kombucha cultures, kombucha foods, organic teas for kombucha culturing. *Sells the following product/s: bottled kombucha beverage, flavored bottled kombucha beverages, and kombucha extract.* CAT FREE, RET, PC, OVER.
- G39M Konriko Company Store - Coniad Rice Mill, P.O. Box 10640, New Iberia, LA 70562-0640, 1-800-551-3245. Regional foods, specialty rices including Wild Pecan rice. Oldest operating rice mill in America. CAT FREE, R & W, PC/CC, OVER.
- G40 E.G Kraus - P.O. Box 7850, Independence, MO 64054, (816) 254-7448. Complete line of wine and beer making supplies and equipment for the home brewer. *Sells the following product/s: dried elderflpwerg, dried eiderterrigs, beech wood curls, licorice sticks, brewers licorice, and the following liqueur extracts - Kirsch, Kflmmei, Danziger Gojdmssgr, AmareUQt.Sgmbtfea.aiQd Verveine.* CAT FREE, RET, PC/CC.

- G43 Krieger's Wholesale Nuisery, Inc - P.O. Box 116, Bridgman, MI 49106, (616) 465-5522. Raspberries, blueberries, currants and gooseberries, grapes, rhubarb and asparagus. CAT FREE, WHLS, M.O. \$75.
- G44 William Krohne Plant Farms - 65295 CR 342, Hartford, MI 49057, (616) 424-5423. Family owned nursery and farm specializing in strawberry and asparagus plants for gardeners, formers, u-pick operations and other nurseries. CAT FREE, R & W, PC, M.O. 25 PLANTS.
- G44M Krystal Wharf Farms - R.R. 2, Box 2112, Mansfield, PA 16933, (717) 549-8194. Organically grown fresh fruits and vegetables, natural food items, vegetable seeds. CAT FREE, RET, PC.
- G45 KSA Jojoba - 18630 Hart St., Reseda, CA 91335, (818) 701-1534. Specializes in jojoba seeds and plants, and jojoba based products. CAT FREE, R & W, PC/CC, OVER.
- G47 The Kusa Seed Research foundation - P.O. Box 761, Ojai, CA 93023, (805) 646-0772. Specializes in traditional edible seed crops of folk origin, especially rare cereal grains. Emphasis is on crops which can be grown by gardeners and small-scale farmers. CAT \$2.50 PLUS SASE, RET, PC, OVER.
- G47B Kushi Institute Store - P.O. Box 500, Becket, MA 01223, 1-800-645-8744. Macrobiotic foods selected for their quality by the teachers of the Kushi Institute. *Sells the following product/s: freshly, huljgd OTgaOKLSfaQfl-gm brown rice, brown rice vinegar, fu rings, fu sheets, snow-dried tofu, vuba, donko shiitake, tekla, Yannoh grain coffee, mugwort mochi, Mu J16Jea.dut aekmezL hato-mugi miso, vinegar and malt, svrup^ nuka, and takuan.* CAT FREE, RET, PC/CC, OVER.
- G47C L & H Vitamins - 32-33 47th Ave., Long Island City, NY 11101, 1-800-221-1152. Extensive selection of food supplements, over 10,000 items. *Sells the following product/s: greenmagma, Green Kamut juice powder, aloe vera gel, aloe vera juice, bottled kombucha, rice bran oil, rice bran svrup, Swedish bitters, and acidophilus beverage.* CAT FREE, R & W, PC/CC, OVER.
- G47D L'Esprit de Gampagne - P.O. Box 3130, Winchester, VA 22604, 1-800-692-8008. Award winning gourmet dried fruits and vegetables. Specializes in dried tomato products. CAT FREE, R & W, PC/CC.
- G47F La Cantina Provisions - 6140 Brocton Rd., Hatboro, PA 19040, (215) 425-8280. Large selection of Mexican and Southwestern foods. *Sells the following product/s: fresh banana leaves, and yellow tomato puree,* CAT FREE, R & W, PC.
- G47G La Colina Market - Hill Plaza, 290 North Hill Ave., Pasadena, CA 91109, (818) 568-1192. South American food specialties. *Sells the following product/s: chuno and papa seca.* CAT (CALL FOR PRICES), RET, PC.
- G47J La Espanola - 25020 Doble Ava, Harbor City, CA 90710, (310) 539-0455. Imported delicacies from the best and most respected food companies in Spain. *Sells the following product/s: horchata de chufa, pimentom sherry vinegar, bottled green garlic stalks, crema de membrillo (quince paste), whole Piquillo peppers, stuffed Piquillo peppers, and Cabrales and Idiazabal cheeses,* CAT FREE, R & W, PC/CC.
- G47M La Fayette Home Nuisery, Inc - P.O. Box 1A, La Fayette, IL 61449, (309) 995-3311. Specializes in native grasses, prairie wild flowers, forbs, and trees and shrubs for wetland and woodland restorations. CAT FREE, R & W, PC/CC, OVER.
- G49 La Verne Nuisery, Inc - 1001 Nashport St., La Verne, CA 91750, 1-800-822-1117. Large selection of avocado and citrus, deciduous and sub-tropical fruit and nut trees, grape vines, grafted ornamentals. CAT FREE, WHLS, PC, OVER, M.O. \$300.
- G50 Labon Inc. - 1350 Newton St., Boucherville, PQ J4B 5H2, Canada, (514) 641-1050. Cereals and legumes, cover crop and green manure seeds, onion and garlic sets, berry plants, grape vines. CAT FREE, WHLS, CC/OC, OVER, M.O. \$25.
- G53M Lake Valley Seed, Inc. - 5717 Arapahoe St., Boulder, CO 80303, 1-800-333-4882. Wholesale distributor of vegetable, herb and flower seed packets to garden centers. Representative for Unwins of England and Pagano of Italy. CAT FREE, WHLS.
- G54 Lakeshore Tree Farms Ltd. - R.R. 3, Box 2A, Saskatoon, SK S7K 3J6, Canada, (306) 382-2077. Growers of extremely hardy fruit and nut trees, berry plants, grape vines, ornamental trees and shrubs. Nursery stock that will survive -50 degrees fahrenheit. CAT FREE, R & W, PC/CC/OC, OVER.
- G55M L.F. Lambert Spawn Ca - P.O. Box 407, Coatesville, PA 19320, (610) 384-5031. Large supplier of mushroom spawn for commercial mushroom forms. The oldest spawn maker in America. CAT FREE, R & W, PC, OVER.
- G57M Landreth Seed Ca - P.O. Box 6426, 180 West Ostend St., Baltimore; MD 21230, 1-800-654-2407. Vegetable, herb and flower seed, including many unique and heirloom vegetable cultivars. America's oldest seed house, established in 1784. CAT FREE, R & W, PC, OVER.
- G58 Laney Family Honey Co. - 25725 New Road, North Liberty, IN 46554, 1-800-246-6398. Honeys from a wide range of Midwestern floral sources. *Sells the following product/s: basswood, buckwheat, star thistle, apple blossom, granb^rix Mid-blugbsTO, honeys\** CAT FREE, RET, PC/CC.
- G58D Reed Lang forms - P.O. Box 219, Rio Hondo, TX 78583, (956) 748-2354. Texas grown specialty produce including oranges, grapefruits and avocados. *Sells the following product/s: orange blossom honqy,* CAT FREE, RET, PC/CC.
- G59M Larner Seeds - P.O. Box 407, Bolinas, CA 94924, (415) 868-9407. Specializes in seed of California native plants, including wild flowers, grasses, trees and shrubs. Catalog offers a "backyard restoration gardener" approach with edible and useful attributes stressed. CAT \$2.50, R & W, PC, OVER, M.O. \$15.00.
- G60 Las Pilitas Nursery - Las Pilitas Rd., Santa Margarita, CA 93453, (805) 438-5992. Plants and seed for an extensive list of California native plants, including wild flowers, perennials, grasses, trees and shrubs. CAT FREE, R & W, PC/CC, OVER.
- G65M Lawson's Nuisery - 2730 Yellow Creek Rd., Ball Ground, GA 30107, (770) 893-2141. Over 100 cultivars of old-fashioned apple trees, cherries, peaches, pears, apricots, plums and pecans. CAT FREE, R & W, PC/CC, OVER.
- G66 Lawyer Nursery Inc. - 950 Highway 200 West, Plains, MT 59859, 1-800-551-9875. Commercial nursery specializing in seedlings, liners and rootstocks for ornamental, forestry, fruit tree and conservation purposes. Also publishes a separate catalog of tree and shrub seed from around the world. CAT FREE, WHLS, PC/CC/OC, OVER, M.O. \$200, \$50 FOR SEED.



- G68 Le Jardin du Gourmet - P.O. Box 75, St. Johnsbury Center, VT 05863, 1-800-659-1446. Imported vegetable and flower seed, herb plants and seeds, shallots, garlic, romaine, leek plants, gourmet food products. *Sells the following product/s: toasted Canola seeds*. CAT \$50, R & W, PC/CC, OVER.
- G71 Orol Ledden & Sons - P.O. Box 7, Sewell, NJ 08080-0007, (609) 468-1002. Vegetable, herb and flower seed, perennial vegetables, berry plants, grape vines, farm seed. CAT FREE, R & W, PC/CC.
- G71M Charles B. Ledgerwood - 3862 Carlsbad Blvd., Carlsbad, CA 92008, (760) 729-3282. Specializes in vegetable, herb and flower seed adapted to coastal southern California growing conditions. Also sells some of their own introductions, such as Winter Zucchini. CAT \$2, R & W, PC.
- G72 Lee's Nuisery - P.O. Box 489-T, McMinnville, TN 37111, (615) 668-4870. Fruit and nut trees, berry plants, grape vines, shade trees, flowering shrubs. CAT FREE, R & W, PC/CC.
- G73 Legendary Ethnobotanical Resources - 16245 S.W. 304th St., Homestead, FL 33033, (305) 242-0877. Seeds and plants of rare ethnobotanicals, dried herbs and spices, herbal products, tea and coffee. *Sells the following product/s: roasted dandelion roots, maple syrup powder, and dried sloe berries*. CAT FREE, R & W, PC/CC, OVER, M.O. \$10.
- G73M Lehman's - P.O. Box 41, Kidron, OH 44636, (330) 857-5757. Products for simple, self-sufficient living including cheese and yogurt cultures. CAT \$3, R & W, PC/CC, OVER.
- G79 Letherman's Inc. - Hi-Zor Farms, P.O. Box 146, Seneca Castle, NY 14547, (716) 526-4585. Vegetable, herb and flower seeds for commercial growers and home gardeners. CAT FREE, R & W, PC/CC.
- G79M Henry Leuthardt Nurseries, Inc. - Montauk Highway, Box 666, East Moriches, NY 11940, (516) 878-1387. Dwarf, semi-dwarf and espalier fruit trees, grape vines, berry plants. Many rare and choice older cultivars. CAT FREE, R & W, PC.
- G80 Lewis Mountain Herbs & Everlastings - 2345 State Route 247, Manchester, OH 45144, (937) 549-2484. Herb plants, everlastings, scented geraniums. CAT \$1, R & W, PC/CC.
- G81 Lewis Strawberry Nuisery, Inc - P.O. Box 24, Rocky Point, NC 28457, 1-800-453-5346. Specializes in strawberry plants. CAT FREE, R & W, PC/CC, OVER, M.O. \$15.
- G82 Liberty Seed Co - P.O. Box 806, New Philadelphia, OH 44663-0806, 1-800-541-6022. Complete line of vegetable, herb and flower seeds for home gardeners, market growers and commercial bedding plant operations. CAT FREE, R & W, PC/CC.
- G83M The Charles H. Lilly Co. - 1456 North Lombard, Portland, OR 97203, 1-800-523-3668. Vegetable, herb and flower seeds. CAT FREE, WHLS, OVER, M.O. 5 LBS.
- G84 Lily of the Valley Herb Farm - 3969 Fck Ave., Minerva, OH 44657, (330) 862-3920. Bulk herbs, botanicals, teas, herbal products. CAT FREE, R & W, PC/CC, OVER, M.O. \$10.
- G85 Lilypons Water Gardens, Inc - P.O. Box 10, Buckeystown, MD 21717-0010, 1-800-999-5459. Aquatic plants, including water lilies, lotus, cattail, arrowhead, Chinese water chestnut, watercress and taro. CAT \$5, R & W, PC/CC, OVER.
- G87 Lindenberg Seeds Ltd. - 803 Princess Ave., Brandon, MB R7A 0P5, Canada, (204) 727-0575. Vegetable, herb and flower seeds, perennial vegetables, grape vines, berry plants. CAT FREE, RET, PC/CC, U.S. (SEEDS ONLY).
- G87M Linn's Berry Farm Gifts - 2485 Village Lane, Cambria, CA 93428, 1-800-676-1670. Gourmet foods and gift baskets. *Sells the following product/s: Olallie berry preserves, svrun. wine, vinegar, tea, pie, pie filling and cheesecake. Satsuma plum preserves, and taralli*. CAT FREE, R & W, PC/CC.
- G87T Linton & Linton Bamboo - 310 Woodbine Rd., Savannah, GA 31410, (912) 897-5755. Large selection of bamboo, both hardy and tropical. CAT FREE, R & W, PC.
- G88 Linwood Nurseries - 3613 West Limrood Ave., Turlock, CA 95380, (209) 634-1836. Grafted pecan trees. Oldest pecan nursery in the West, established in 1915. CAT FREE, R & W, PC, OVER.
- G89 Little Valley Farm - 5693 Snead Creek Rd., Spring Green, WI 53588, (608) 935-3324. Seeds and plants of Midwestern natives including wild flowers, grasses, vines, trees and shrubs. CAT \$1, RET, PC.
- G89M Little Valley Wholesale Nursery - 13022 East 136th Ave., Brighton, CO 80601, 1-800-221-3241. Garden perennials, conifers, shade trees, flowering shrubs. CAT FREE, WHLS, PC.
- G91 Living Farms - P.O. Box 1127, 187 Fourth St., Tracy, MN 56175, (507) 629-4431. Organic sprouting seeds and grains, grown on farms at least three years removed from the use of herbicides, pesticides and insecticides. CAT FREE, R & W, PC, OVER.
- G91M Living Stones Nursery - 2936 North Stone Ave., Tucson, AZ 85705, (520) 628-8773. Specializes in lithops, mesembryanthemums and other unusual succulents. Succeeded Ed Storm Inc. CAT \$2, R & W, PC/CC, OVER, M.O. \$15.
- G92 Living Tree Community Foods - P.O. Box 10082, Berkeley, CA 94709, 1-800-260-5534. Organically grown dried fruits, nuts and nut butters. Previously known as Centre for Community Self Sufficiency and Living Tree Center. *Sells the following product/s: cashew butter, and almond butter*. CAT FREE, R & W, PC, OVER.
- G93M Lockhart Seeds, Inc - P.O. Box 1361, Stockton, CA 95201, (209) 466-4401. Vegetable, herb and flower seed, primarily for farmers and market gardeners. Many specialty cultivars. CAT FREE, R & W, PC/CC, OVER, M.O. \$10.
- G94 Loehman's Cacti and Succulents - P.O. Box 871, Paramount, CA 90723, (562) 428-4501. Cactus and succulent plants. CAT FREE, R & W, PC, M.O. \$10.
- G96 Logee's Greenhouses - 141 North St., Danielson, CT 06239, 1-888-330-8038. Rare and unusual indoor tropical plants, over 2,000 varieties including citrus, herbs, scented geraniums, cacti and succulents, and orchids. Established in 1892. CAT \$3 REFUNDABLE, RET, PC/CC, OVER, M.O. \$20.
- G99M Longan Bend Nursery & Groves - 38100 S.W. 214th Ave., Homestead, FL 33034, (305) 247-7858. Fresh, exotic tropical fruit. *Sells the following product/s: fresh green mango*. CAT FREE, R & W, PC.

- HIM Los Chileros de Nuevo Merico** - P.O. Box 6215, Santa Fe, NM 87502, (505) 471-6967. Specializes in gourmet New Mexico foods. *Sells the following product/s:* blue popped corn. CAT FREE, R & W, PC.
- H3 Los Rios Rancho** - 39610 Oak Glen Rd., Oak Glen, CA 92399, (909) 797-1005. Jams and jellies, preserves, syrups, honey. Family owned and operated since 1906. *Sells the following product/s:* apple blossom honey, tangelo marmalade, Bing cherry preserves, Santa Rosa plum jam, Kadota fig jam, and Bovsenberrv svrup. CAT FREE, R & W, PC.
- H3T Lotus Foods** - 921 Richmond St., El Cerrito, CA 94530, (510) 525-3137. Gourmet foods distribution company specializing in the identification and discovery of new and ancient grains that are grown around the world in limited quantities. CAT FREE, WHLS, OVER.
- H4 Louisiana Nursery** - 5853 Highway 182, Opelousas, LA 70570, (318) 948-3696. Large selection of fruit and nut trees, berry plants, grape vines, bananas, herbs, aquatic plants, bamboo, cacti and succulents, gingers, palms, ornamental trees and shrubs. CAT \$6, RET, PC/CC, OVER.
- H6 Lowe's Own-Root Roses** - 6 Sheffield Rd., Nashua, NH 03062, (603) 888-2214. Custom grown own-root roses. CAT \$3, RET, PC, OVER.
- H7G Lundberg Family Fhrms** - P.O. Box 369, Richvale, CA 95974, (916) 882-4551. Family owned farm specializing in organically grown rice, many varieties developed on their farm. Also rice cakes and other rice products. *Sells the following product/s:* wild rice and mochi rice cakes, brown rice svrup and rice flour. CAT FREE, R & W, PC/CC, OVER.
- H7M Lupin Triticale Enterprises** - P.O. Box 187, Perham, MN 56573, (218) 346-2580. Specializes in sweet lupin and triticale seeds. CAT FREE, R & W, PC, OVER, M.O. \$50.
- H8 Baier Lustgarten Farms & Nurseries** - 1130 Middle Country Rd., Middle Island, NY 11953, (516) 924-3444. Fruit and nut trees, berry plants, grape vines, shade trees, flowering shrubs. CAT \$1, WHLS, M.O. \$100.
- H12 Macadamia Land Nursery** - 2562 Mountain View Dr., Escondido, CA 92027, (760) 745-3417. Specializes in Cate macadamias. *Sells the following product/s:* in shell macadamias, both fresh and roasted macadamia nut meats. CAT (CALL FOR PRICES), R & W, PC, OVER.
- H13M The Magic Chain** - 2598 Fortune Way, Ste. K, Vista, CA 92083, (760) 598-6050. Unique and hard to find health products. *Sells the following product/s:* green papava powder, and hemp seed oil. CAT FREE, RET, PC/CC.
- H14 Maharishi Ayur-Ved Products International** - P.O. Box 49667, Colorado Springs, CO 80949, 1-800-255-8332. Specializes in Ayurvedic herbal formulas developed by Maharishi Mahesh Yogi and others. *Sells the following product/s:* Raia's Cun, Amrit Kalash, and rose petal conserve. CAT \$3, R & W, PC/CC, OVER.
- H14I The Mai! Order Catalog** - P.O. Box 99, Summertown, TN 38483, 1-800-695-2241. Soyfoods, meat substitutes, tempeh starter cultures. Subsidiary of Book Publishing Co. *Sells the following product/s:* textured vegetable protein, sovnuts, sovnut butter, sovmilk powder, and instant gluten powder. CAT FREE, R & W, PC/CC, OVER.
- HI4M Mail-Order Nathes** - P.O. Box 9366, Lee, FL 32059, (850) 973-4688. Specializes in Southeastern natives. CAT FREE, RET, PC.
- H15 Maine Coast Sea Vegetables** - R.R. 1, Box 78, Franklin, ME 04634, (207) 565-2907. OCIA certified organic sea vegetables from the North Atlantic. Sea vegetable foods. *Sells the following product/s:* dulse flakes, granules and powder, kelp powder and granules, nori granules, applewood-smoked dulse, and pickled kelp fronds and stipes. CAT FREE, R & W, PC/CC, OVER, M.O. \$15.
- H15M Maine Seaweed Company** - P.O. Box 57, Steuben, ME 04680, (207) 546-2875. Small selection of Atlantic Coast sea vegetables harvested using environmentally responsible methods. Also seaweed fertilizers for gardeners. CAT FREE, R & W, PC, OVER, M.O. 3 LBS.
- H15P Maine Seed Saving Network** - P.O. Box 126, Penobscot, ME 04476, (207) 546-2875. Heirloom, open-pollinated vegetables and flowers adapted to Maine's climate. Also apple and pear scionwood. CAT FREE, RET, PC.
- H15T Maison E.H. Glass, Inc** - 725 Valley Biok Ave., Lyndhurst, NJ 07071-2030, 1-800-822-5564. Extensive selection of high quality gourmet foods from around the world. Established in 1902. *Sells the following product/s:* Angostura bitters, gentian bitters, Queen olives, pickled walnuts, candied angelica, bottled Morello cherries, Morello cherry preserves, Jerusalem artichoke relish, pickled Jerusalem artichokes, Branston pickles, pistachio paste, sorrel puree, Mostarda di Cremona, canned Nectar peaches, tilleul tea bags, grapeseed and pistachio oils, Victoria plum, Green Gage plum, and cloudberry preserves, and leatherwood, ohia lehua, rata, kamahi, and viper's bugloss honevs. CAT (CALL FOR PRICES), RET, PC/CC, OVER, M.O. \$15.
- H19M Manganaro Foods** - 488 Ninth Ave., Nov York, NY 10018, 1-800-472-5264. Gourmet imported Italian foods. Established in 1893. *Sells the following product/s:* both fresh and marinated cippolini, semolina, chestnut flour, chickpea flour, grano wheat, canonata di melanzane, Amarem di.S^ronpo. CAT FREE, R & W, PC/CC.
- H20 Ann Mann's Exotic Plants** - 9045 Ron-Den Lane, Windermere, FL 34786-8328, (407) 876-2625. Hybrid and species orchids, aroids, bromeliads, tropical foliage plants. CAT FREE, R & W, PC.
- H21 Mapel Seeds** - P.O. Box 551, North Grafton, MA 01536, (407) 876-2625. Vegetable, herb and flower seeds, mostly open-pollinated. CAT FREE, RET, PC.
- H24 Mapple Farm** - R.R. #1, Hillsborough, NB **E0A 1X0**, Canada, (506) 734-3361. Certified organic seeds and planting stock of unusual or difficult to find vegetables. Specializes in short-season sweet potatoes. CAT SASE, R & W, PC, U.S. ONLY.
- H25M Marche aux Delices** - 120 Imlay St., Brooklyn, NY 11231, 1-888-547-5471. Exotic specialty foods and produce including fresh and dried mushrooms, sea vegetables, grains and beans. Previously known as Aux Delices des Bois and Comptoir Exotique. *Sells the following product/s:* pickled haricots de mer, pickled saltwort, pickled criste marine, fresh white asparagus, fleurs d'flil,... hearts of pMm, CayailQn, m^lons, candied violefo Sautgrnes wing jelly, gum.....bg&r jelly,... frozen huitt^Qgh^ poreifli flow, frlafc trvyffe oil black truffle juice, fnd white truffle oil CAT FREE, R & W, PC/CC, OVER.
- H28 Marschall Specialty Ingredients** - 3322 Vondron Rd., Madison, WI 53716, 1-800-810-0127. Wide variety of cultures, coagulants, flavor enzymes and other ingredients for specialty and small-scale cheese manufacture. Subsidiary of Rhone-Poulenc Dairy Ingredients. *Sells the following product/s:* Chvmostar Classic (chvmosin

- product), and Marzyme Supreme vegetable rennet. CAT FREE, R & W, PC/CC.
- H29 Dr. Franklin W. Martin - 2305 Second St. East, Lehigh Acres, FL 33972-5461, (914) 369-7743. Retired tropical agriculture research scientist offering seeds and cuttings of plants in his collection. Limited quantities are available for a \$3.00 shipping and handling fee. CAT SASE, RET, PC.
- H29D Martin & Kraus - P.O. Box 12, Carlisle, ON LOR 1H0, Canada, (905) 689-0230. Specializes in hardy, bareroot rose bushes. Previously known as V. Kraus Nurseries Ltd. CAT \$1, RET, PC, OVER.
- H29M Mary's Plant Farm - 2410 Lanes Mill Rd., Hamilton, OH 45013, (513) 894-0022. Garden perennials, herbs, roses, wildflowers, flowering shrubs, shade trees. CAT \$1, RET, PC/CC.
- H30 Maryland Aquatic Nurseries - 3427 North Furnace Rd., Jarrettsville, MD 21084, (410) 557-7615. Large selection of aquatic and bog plants. CAT FREE, R & W, PC/CC, OVER.
- H33M Earl May Seed & Nursery - 208 North Elm St., Shenandoah, IA 51603, 1-800-831-4193. Complete line of bulk vegetable, herb and flower seed for market gardeners. Also seed potatoes, onion sets and plants, garlic, and sweet potato plants. CAT FREE, WHLS, PC/CC.
- H34M Mayer's Cider Mill, Inc. - 699 Five Mile Line Road, Webster, NY 14580, (716) 671-1955. Home brewing supplies, beer and wine yeasts. Also bulk vinegar and vinegar supplies, honey. *Sells the following products: Champagne vinegar, buckwheat honey, orange blossom honey.* CAT FREE, R & W, PC/CC.
- H35 The Mayhaw Company - P.O. Box 3430, Peachtree City, GA 30269, 1-800-262-9429. Regional gourmet and specialty food products. Specializes in mayhaw and Vidalia onion foods. *Sells the following products: mavhaw iellv. vinegar and svrup. Vidalia onion iellv. vinegar. salad dressing. mustard and relish. Jalapeio jelly. Kev Lime jam, and Muscadine iam.* CAT FREE, R & W, PC/CC.
- H36 May way Corpt - 1338 Mandela Pkwy., Oakland, CA 94607, 1-800-262-9929. Large selection of Chinese herbs and herbal products. *Sells the following products: Panta tea. Emperors Secret tea. Essential Harmony tea. Lo han kuo drink. Guilinggao. and haw candv.* CAT FREE, R & W, PC/CC, OVER.
- H37M McClure & Zimmerman - P.O. Box 368, Friesland, WI 53935, (414) 326-4220. Specializes in rare species bulbs. CAT FREE, RET, PC/CC.
- H40M McEwen Nursery - 22144 Boston Ave., Exeter, CA 93221, (209) 592-3367. Fruit and nut trees including citrus, olives and pistachios. CAT (CALL FOR PRICES), R & W, PC.
- H41 McFadden Farm - General Delivery, Ibtter Vall^, CA 95469, 1-800-544-8230. Gold medal award winning, certified organic herbs and herb blends, gourmet specialty foods. *Sells the following products: herbes de Provence, garlic braids. California bav leaf wreaths and basilwood.* CAT FREE, R & W, PC/CC, OVER.
- H42 McFayden Seed Co. Ltd. - 30 Ninth St., Ste. 200, Brandon, MB R7A 6N4, Canada, 1-800-205-7111. Vegetable, herb and flower seed, fruit and nut trees, berry plants, grape vines, perennial vegetables, ornamental trees and shrubs. Succeeded Robertson-Pike Co. Ltd. CAT FREE, RET, PC/CC/OC, U.S. ONLY.
- H44 McKay Nursery Ca - P.O. Bex 185, Waterloo, WI 53594, 1-800-236-4242. Growers of fruit trees, berry plants, perennial vegetables, roses, shade trees, flowering shrubs. Established in 1897. CAT \$5, WHLS.
- H44M McNulty's Tea & Coffee Co. - 109 Christopher St., New York, NY 10014, 1-800-356-5200. Choice coffees and rare teas from around the world. Established in 1895. *Sells the following product/s: Columbian Maragogine coffee, and lychee, jasmine, chrysanthemum and Earl Grev teas.* CAT FREE, R & W, PC, OVER.
- H45 Meadow Farms Country Smokehouse - P.O. Box 1387, Bishop, CA 93514, (760) 873-5311. Gourmet specialty foods. *Sells the following product/s: various meats smoked with mountain mahogany wood.* CAT FREE, RET, PC/CC.
- H45M Meadow Lake Nursery Ca - P.O. Box 1302, McMinnville, OR 97128, 1-800-852-5322. Seedling and clonal deciduous fruit rootstocks, ornamental trees and shrubs. CAT FREE, WHLS, M.O. \$250.
- H46 Meadowbrook Herb Garden - 93 Kingstown Rd., Wyoming, RI02989, 1-888-539-7603. Bio-dynamic herb farm offering a large selection of dried herbs and spices, teas, cosmetics and other herbal products. CAT FREE, R & W, PC/CC, CANADA ONLY.
- H47 Mech Apiaries - P.O. Bex 452, Maple Vall^, WA 98038, (206) 432-3971. Large selection of rare honeys collected from hives set out in various areas of Washington state. *Sells the following product/s: raspberry, fireweed, snowberrv, madrona and maple blossom honevs.* CAT FREE, RET, PC.
- H49 Mellinger's Inc - 2310 West South Range Rd., North Lima, OH 44452-9731, 1-800-321-7444. Extensive selection of vegetable, wild flower, cover crop and grain seed, fruit and nut trees, berry plants, perennial vegetables, herb plants and seed, ornamentals. CAT FREE, R & W, PC/CC, OVER.
- H50 Mendocino Sea Vegetable Ca - P.O. Box 1265, Mendocino, CA 95469, (707) 937-2050 (no telephone orders). Complete line of packaged and bulk sea vegetables wildcrafted from the pristine waters of Mendocino County, California. CAT FREE, R & W, PC, OVER.
- H51 Merhaba Importing - P.O. Box 11423, San Diego, CA 92111, (619) 569-6042. Complete selection of Ethiopian foods including a large number of spices. *Sells the following product/s: mit'in shiro, nech' shiro, herbere, awaze, mit'mit'a, white teff flour, brown teff flour, and teu* CAT (CALL FOR PRICES), R & W, PC.
- H51M Merry Gaidens - P.O. Box 595, Camden, ME 04843, (207) 236-9064. Herbs, scented geraniums, plants for window boxes and containers. CAT \$1, RET, PC.
- H52 Mesa Gaiden - P.O. Box 72, Belen, NM 87002, (505) 864-3131. Cactus and succulent plants and seed. CAT FREE, RET, PC/CC, OVER.
- H53M Roger and Shirley Meyer - 16531 Mt. Shelly Circle, Fountain Valley, CA 92708, (714) 839-0796. Scionwood of kiwifruit, approximately 30 cultivars, Actinidia arguta and other hardy kiwi, and jujube. Tropical and subtropical fruit trees. Also known as Valley Vista Kiwi. CAT FREE, R & W, PC, OVER, M.O. \$10.
- H54 The Meyer Seed Co. - 600 South Caroline St., Baltimore, MD21231, (410) 342-4224. Vegetable, herb and flower seeds, berry plants, perennial vegetables, cover crop and green manure seed. CAT FREE, R & W, PC/CC.

- H55 Miami InterCulinary Center, Inc - 1555 Obispo Ave., Miami, FL 33134-2156, 1-800-282-8459. Specializes in Floribbean foods. *Sells the following product/s: carambola marmalade. Key Lime juice made from yellow-ripe Key Lime?. Key Lipig Qoil, Kff-Xlme jelly, Cal.ampndin jgily and marmalade Valencia orange cookies and cakes, and Papava-Mamev preserves.* CAT FREE, R & W, PC/CC, M.O. \$15.
- H57M Henry F. Michell Ca - P.O. Box 160, King of Prussia, PA 19406-0160, 1-800-422-4678. Vegetable, herb and flower seeds for commercial growers. CAT FREE, WHLS, PC, OVER, M.O. \$50.
- H58 Michigan Bulb Ca - 1950 Waldorf, N.W., Grand Rapids, MI 49550, 1-800-422-4678. Ornamental perennials, vegetable plants, berries, fruit trees, grapes. CAT FREE, RET, PC/CC.
- H60 Midwest Cactus - P.O. Box 163, New Melle, MO 63365, (314) 828-5389. Specializes in plants of hardy cactus. Incorporating The Cactus Patch. CAT \$1, R & W, PC, OVER, M.O. \$5.
- H61 Midwest Seed Growers - 10559 Lackman Rd., Lenexa, KS 66219, 1-800-873-7333. Vegetable, herb and flower seeds for the market grower and home gardener. CAT FREE, R & W, PC/CC, OVER.
- H61M Midwest Wildflowers - Box 64, Rockton, IL 61072, 1-800-873-7333. Specializes in seeds of wild flowers common to the Midwestern United States. CAT \$1, RET, PC, OVER, M.O. \$3.
- H63 Milaeger's Gardens - 4838 Dopglas Ave., Racine, WI 53402-2498, 1-800-669-9956. Herb plants, perennial flowers, native woodland and prairie wild flowers, prairie grasses, roses. CAT \$1, RET, PC/CC, M.O. \$25.
- H63G Milk Ranch Seed Potatoes - 20094 Highway 149, Powderhorn, CO 81243, (970) 641-5634. Good selection of certified disease-free seed potatoes, some certified organic. CAT \$1 DEDUCTIBLE, R & W, PC.
- H63M Mill Creek Nursery Co. - 6416 Short Mountain Rd., Smithville, TN 37166, 1-888-240-6567. Fruit and nut trees, grape vines, shade trees, flowering shrubs. Previously known as Judkins & Son Nursery. CAT FREE, WHLS.
- H65 Miller Nurseries Inc - 5060 West Lake Road, Canandaigua, NY 14424, 1-800-836-9630. Wide selection of hardy fruit and nut trees, berry plants, grape vines, hardy kiwi, perennial vegetables, shade trees, flowering shrubs. CAT FREE, R & W, PC/CC.
- H68M Minnesota Specialty Crops - P.O. Box 86, McGregor, MN 55760, 1-800-328-6731. Regional Midwestern foods, many hand-harvested from the pristine wilderness of Minnesota by Native Ojibwe people. *Sells the following product/s: wild chokecherry jellv. wine and svrup. wild highbush cranberry jellv. wine and svrup. wild pin cherry jellv and honeywine. and wild rice pancake mix.* CAT FREE, RET, PC/CC.
- H69 Mission Orchards - P.O. Box 546, Maumee, OH 43537, 1-800-289-4114. Fresh produce, gourmet and specialty food items. CAT FREE, RET, PC/CC.
- H70M Missouri Wildflowers Nursery - 9814 Pleasant Hill Rd., Jefferson City, MO 65109-9805, (573) 496-3492. Seeds, spores and plants of native wild flowers, forbs, grasses, ferns and shrubs. CAT \$1, RET, PC.
- H71 Mistletoe Sales - 780 North Glen Annie Rd., Goleta, CA 93117, (805) 968-4818. Extensive seed listing of trees and shrubs, perennial flowers, herbs and palms. CAT FREE, WHLS, PC/CC, OVER.
- H72 Mixed Nuts - 203 Belmont St., Belmont, MA 02178, 1-800-466-3022. Freshly roasted nuts and seeds, dried fruits, nut butters, coffee and tea, gift baskets. *Sells the following product/s: hazelnut, pecan and soybean butters.*  
Espresso and Mocha wffebap&JBth  
black and red wterniston gegdg, squash seeds, pumpkin seeds, and mslPH Wfids» CAT FREE, RET, PC/CC.
- H73 MMA Earthy Delights - 4180 Keller Rd., Ste. B, Holt, MI 48842, 1-800-367-4709. Specialty foods including fresh and dried wild mushrooms, wild edible plants, dried fruits and nuts, specialty grains and legumes, edible flowers, dried chiles. Some items are only available to the restaurant trade. *Sells the following product/s: babv white asparagus, babv shiitake mushrooms, babv blue ovster mushrooms, yellow sun-dried tomatoes, hazelnut flour, Banon cheese, cattail shoots, cattail flower spikes, frozen huitlacoche, Styrian pumpkinseed oil, pistacho oil, and pine nut oil.* CAT FREE, R & W, PC/CC.
- H78 Monrovia Nuisery - P.O. Box 2, 18331 East Foothill Blvd., Azusa, CA 91702, 1-800-999-9321. Large commercial grower of fruit trees, berry plants, grape vines, garden perennials, ornamental trees and shrubs. CAT FREE, WHLS.
- H78M Montana Flour & Grains - P.O. Box 691, Fort Benton, MT 59442, 1-800-644-6450. Specializes in certified organically grown Kamut wheat and Kamut wheat foods. *Sells the following product/s: Kamut flour, and Durum wheat flour.* CAT FREE, R & W, PC, OVER.
- H80 Moon Mountain Wildflowers - P.O. Box 725, Carpenteria, CA 93014-0725, (805) 684-2565. Seeds of North American native wildflowers. Individual species plus mixtures that are customized for the geographical regions of the United States. CAT \$2, R & W, PC/CC, OVER.
- H80M Moon Shine Trading Ca - P.O. Box 896, Winters, CA 95694, 1-800-678-1226. Rare varietal honeys, honey fruit spreads, nut butters. *Sells the following product/s: cashew butter, and yellow star thistle, orange blossom, sunflower, black button sage, sweet clover, ohia lehua, tupelo and fireweed honevs.* CAT FREE, R & W, PC/CC, OVER.
- H85 Morden Nurseries Ltd. - P.O. Box 1270, Morden, MB R6M 1B2, Canada, (204) 822-3311. Extra hardy fruit and nut trees, berry plants, grape vines, shade trees, flowering shrubs. CAT FREE, RET, PC, U.S. ONLY.
- H85M Morgan County Wholesale - Rt. 2, Box 35A, Barnett, MO 65011-9621, (573) 378-2655. Vegetable, herb, flower and cover crop seeds. CAT FREE, R & W, PC/CC.
- H86 Morgan's Mills - 168 Pay son Rd., Union, ME 04862, 1-800-373-2756. Stone-ground flour, whole grains, pancake mixes, home baking supplies, natural foods. Established in 1797 as Lermond Grist Mill. *Sells the following product/s: jonnycake meal, hard white soring wheat, and white whole wheat flour.* CAT FREE, RET, PC/CC.
- H88 Walter K. Moiss & Son - R.F.D. 2, Boxford, MA 01921, (978) 352-2633. Specializes in small fruits including strawberries, raspberries, blueberries and grapes. CAT FREE, R & W, PC.
- H89M Motz & Son Nursery - 11445 N.W. Skyline Blvd., Portland, OR 97231, (503) 645-1342. Fruit and nut trees, heirloom apples, espalier fruit trees, flowering shrubs, shade trees. CAT FREE, WHLS.

- H90 Mount Arbor Nurseries - P.O. Box 129, Shenandoah, IA 51601, 1-800-831-4125. Fruit and nut trees, berry plants, grape vines, perennial vegetable plants, roses, ornamental trees and shrubs. CAT FREE, WHLS, OVER.
- H90G The Mount Horeb Mustard Museum - P.O. Box 468, Mount Horeb, WI53572, 1-800-438-6878. A selection of prepared mustards from the world's largest collection, more than 2800 types. Also offers mustard seed and flour, mustard mixes, marmalades, preserves. *Sells the following product/s: mustard flour. Colman's dry mustard, both whole and cracked brown and yellow mustard seeds, grapefruit marmalade, and the following prepared mustards - horseradish, tarragon, Maui onion, Vidalia onion, Champagne, Chardonnay, mesquite, and green peppercorn.* CAT FREE, RET, PC/CC, OVER.
- H90M Mount Vernon Research and Extension Unit - Washington State University, 1468 Memorial Highw<sup>^</sup>, Mount Vernon, WA 98273-978, 1-800-438-6878. Sells a limited amount of deciduous fruit tree scionwood intended for the commercial nursery industry, collectors and researchers. CAT FREE, RET, PC.
- H91 Mountain Ark Trading Co - 799 Old Leicester Hwy., Asheville, NC 28806, 1-800-643-8909. Extensive collection of organically grown macrobiotic foods, including grains, seeds, beans, sea vegetables and soyfoods. Also natto starter cultures. *Sells the following product/s: prepared hama-natto, jinenjo soba, umeboshi plums, ume plum vinegar, ume plum balls, ko-umeboshi, amazake concentrate, amazake pickles, daikon pickles, dried wheat gluten (fu), seitan, rice bran (nuka), dried lotus root slices, lotus root tea, lotus root soba, hato-mugi malt, miso and vinegar, black soybean miso, azuki miso, Kiwa granules, wakame flakes, ita wakame, mekabu, tororo kombu, kombu powder, ne-kombu, silkv sea palm, black gomashio, Japanese sweet millet, Japanese sweet millet mochi, green tea soba, Yuzu vinegar, and Ponzu sauce.* CAT FREE, R & W, PC/CC, OVER, M.O. \$35.
- H92 Mountain Maid Gourmet Jelly Co - P.O. Box 7, Saguache, CO 81149, 1-800-279-4681. All-natural jams, jellies, syrups and sauces prepared in small batches from fruits and berries that grow wild in the Rocky Mountain region. *Sells the following product/s: columbine petal jellv, spruce needle jellv, and chokecherry jellv.* CAT FREE, R & W, PC/CC.
- H94M Mountain Valley Growers - 38325 Pepperweed Rd., Squaw Valley, CA 93675, (209) 338-2775. Organically grown herbs, scented geraniums, perennials, everlastings. CAT FREE, R & W, PC/CC, M.O. 6 PLANTS.
- H95 Mountain Valley Seed, Inc - 1800 South West Temple, Salt Lake City, UT 84115, (801) 486-0480. Specializes in vegetable, herb and flower seeds for northern areas. CAT FREE, R & W, PC/CC.
- H98 Mt. Tahoma Nursery - 28111 112th Avenue East, Graham, WA 98338, (253) 847-9827. Rock garden and woodland plants, native alpines of Washington State. CAT FREE, R & W, PC, CANADA ONLY.
- H99J Mumm's Sprouting Seeds - Hazelridge Farm, Box 268, Shellbrook, SK S0J 2E0, Canada, (306) 747-2935. Large selection of certified, organic sprouting seeds, available in 100 gram quantities to truck loads. GAT SASE, R & W, PC/OC, OVER.
- H99M Munak Ranch - 3770 North River Rd., Paso Robles, CA 93446, (805) 238-7056. Organically grown specialty produce. Will ship fresh melons in season. *Sells the following product/s: sun-dried Celebrity tomatoes.* CAT (CALL FOR PRICES), RET, PC, OVER.
- II T.V. Munson Viticulture and Enology Center - Grayson County College, 6101 Grayson Dr., Denison, TX 75020-8299, (903) 786-4382. Repository for more than 50 grape cultivars developed for the Southwest by Thomas Volney Munson. Scionwood is made available in limited quantities. CAT FREE, RET, PC.
- II G Museum of the Fur Trade - H.C. 74, Box 18, Chadron, NE 69337, (308) 432-3843. Specializes in seed of heirloom vegetables originally brought to the Plains region by fur traders. Available in limited quantities only. CAT (CALL FOR PRICES), RET, PC.
- II M Mushroom Kingdom - P.O. Box 901, Elkin, NC 28621, (704) 297-4725. Mushroom cultures, spawn and kits, dried mushrooms. CAT FREE, R & W, PC/CC.
- 13 Mushroompeople - P.O. Box 220, Summertown, TN 38483-0220, 1-800-692-6329. Specializes in shiitake mushroom spawn, both sawdust and plug spawn, for the wood-lot farmer and the commercial grower. Also morels and other species. CAT FREE, R & W, PC/CC, OVER.
- 14 Musser Forests Inc - P.O. Box 340, Indiana, PA 15701-0340, 1-800-643-8319. Evergreen and hardwood seedlings and transplants for nurseries, landscaping, lining out and reforestation. CAT FREE, R & W, PC/CC, OVER.
- 18 Naka Nursery Inc. - 36501 Niles Blvd., Fremont, CA 94536, (510) 796-7577. Ornamental trees and shrubs, ground covers, fruit trees. CAT FREE, WHLS, M.O. \$35.
- 18M Nancy's Specialty Market - P.O. Box 530, Newmarket, NH 03857, 1-800-688-2433. International gourmet and specialty foods. *Sells the following product/s: corn husks, ras el hanout, berbere, polenta taragna, Thai green curry paste, hoisin sauce, palmyra palm sugar, and buckwheat honey.* CAT FREE, RET, PC/CC, OVER.
- 19M The National Arbor Day Foundation - 100 Arbor Ave., Nebraska City, NE 68410, (402) 474-5655. Non-profit organization working toward a goal of improved tree planting and tree care throughout America. Offers fruit and nut trees, evergreens, flowering shrubs, shade and ornamental trees. CAT FREE, RET, PC/CC.
- III Native American Seed - 610 Main St., Junction, TX 76849, 1-800-728-4043. Family farm specializing in seeds of Texas native plants, wild flowers and grasses for environmental restoration. CAT \$1, R & W, PC/CC.
- III M Native Gardens - 5737 Fisher Lane, Greenback, TN 37742, (423) 856-0220. Seeds and plants of native ferns, grasses, wild flowers, trees and shrubs. Also emphasizes plants important in creating wildlife habitats. All plants are nursery propagated, none are collected from the wild. CAT \$2, R & W, PC, OVER (SEEDS ONLY).
- 112 Native Habitat Ethnobotanics - P.O. Box 644023, Vero Beach, FL 32964-4023, (423) 856-0220. Landscape specialists offering rare tropical plants and seeds including ethnobotanics, palms, ornamentals and tropical fruits. Also food products. *Sells the following product/s: Pan Parak betel nut chew.* CAT \$1, R & W, PC/CC, OVER, M.O. \$25.
- 115M Native Seeds, Inc. - 14590 Triadelphia Mill Rd., Dayton, MD 21036, (301) 596-9818. Wild flower seeds in packets and bulk quantities. Also regional mixes as well as custom mixes. CAT FREE, R & W, PC/CC, OVER.
- 116 Native Seeds/Seach - 526 North 4th Ave., Tucson, AZ 85705, (520) 622-5561. Non-profit conservation group working to preserve the wide diversity of crops grown by Native Americans in the Greater Southwest. *Sells the*

- following product/s:* popped amaranth, sweet-corn chicos, corn coffee, parched corn, pinole, posole, Alamo-Navaio Blue cornmeal, Santa Ana Pueblo Blue corn atole and cornmeal, Chimavo chile powder, Guaiillo chile powder, sorghum flour and meal, sorghum pancake and muffin mixes, mesquite meal, and mesquite honey. CAT \$1, RET, PC/CC, OVER.
- I18M The Natural Gardening Co - 217 San Anselmo Ave., San Anselmo, CA 94960, (707) 766-9303. Certified organic seedling nursery. Specializes in tomatoes. Also vegetable, herb and flower seeds. CAT FREE, RET, PC/CC.
- I19M Natural Lifestyle - 16 Lookout Drive, Asheville, NC 28804-3330, 1-800-752-2775. Organic natural foods, macrobiotic specialties. *Sells the following product/s:* kuzu starch and noodles, amazake, Rice Dream, mugwort mochi, mugwort soba, canned black soybeans, canned aduki team, donko Shitab<sup>^</sup> almond, oil, almond butter, unrefined Canola oil, hato-mugi coffee, mekabu, ne-kombu, tekka, Gravenstein apple sauce, millet flour, kiwa flakes and granules, and Swedish bitters. CAT FREE, R & W, PC/CC, OVER.
- 120 Natural Way Mills Inc. - Route 2, Box 37, Middle River, MN 56737, (218) 222-3677. Grains, flours and cereals, nearly all certified organically grown and kosher. *Sells the following product/s:* durum wheat flour, triticale flour, hard white spring wheat, hard white whole wheat flour, and rolled hard white spring wheat. CAT FREE, R & W, PC, OVER.
- I23G Naturespirit Herbs - P.O. Box 150, Williams, OR 97544, (541) 846-7995. Wildcrafted sea vegetables, herbs and herbal products. CAT FREE, R & W, PC.
- I23M Naug's Apple Creek Timber - 4010 Meridean East, Edgewood, WA 98371, 1-800-683-0549. Large selection of smoking woods. Specializes in varietal fruit woods. *Sells the following produces:* red alder,.....mountain alder, apple (Red Delicious, Golden Delicious, Rome Beauty, Spartan, B.raeburn, Fuji), wild black chem chgmffiing, Rainier), grapevine (White Riesling), nectarine, apricot (Tilton), plum (President, Republican), pear (Bartlett, Bose) and peach smoking woods, and Memal oak wood chips. CAT FREE, R & W, PC, M.O. 25 POUNDS.
- 124 Navarro Vineyards - P.O. Box 47, Philo, CA 95466, 1-800-537-9463. Medal-winning wines, non-alcoholic varietal grape juices, verjus. *Sells the following product/s:* Gewirztraminer and Pinot Noir grape juices, and Chardonnay verjus. CAT FREE, R & W, PC/CC.
- 125 Naylor Wine Cellars - 4069 Vineyard Rd., Stewartstown, PA 17363, 1-800-292-3370. Specializes in wines made from American and French Hybrid grapes. Also viniferas and fruit wines. *Sells the following product/s:* Niagara, Seval Blanc, Vidal Blanc, Chambourcin, Vignoles "Ekem", De Chaunac, and Catawba wines. CAT FREE, R & W, PC/CC.
- I25M Nebraska Nut Growers Association - P.O. Box 4644, Lincoln, NE 68504, (402) 472-3674. Seed and scionwood distribution program of the non-profit Nebraska Nut Growers Association designed to encourage tree plantings that will produce nuts and small fruit. CAT FREE, RET, PC, OVER, M.O. \$5.
- I27M Jeff Nelson's Berry Farm - Rt. 1, Box 251, Vincent, OH 45784, (614) 678-2192. Highbush blueberry plants. Previously known as Dyke Bros. Nursery. CAT FREE, R & W, PC.
- 128 Neon Palm Nursery - 3525 Stony Point Rd., Santa Rosa, CA 95407, (707) 585-8100. Hardy palms and subtropicals, cacti and succulents, bamboo, rare trees and shrubs, conifers, cycads, ornamental grasses, ferns. CAT \$2, R & W, PC, M.O. \$50.
- I29T New England Bamboo Co - P.O. Box 358, Rockport, MA 01966, (508) 546-3581. Hardy bamboos including recent introductions from China and a collector's list. CAT FREE, R & W, PC/CC, OVER, M.O. \$50.
- 130 New England Cheesemaking Supply Co. - 85 Main St., Ashfield, MA 01330, (413) 628-3808. Home cheese making supplies and dairy products, including starter cultures for yogurt, cheese, kefir, buttermilk and sour cream. *Sells the following product/s:* annatto cheese coloring. CAT \$1, R & W, PC/CC, OVER.
- I31 New England Wild Flower Society, Inc. - Garden in the Woods, 180 Hemenway Rd., Framingham, MA 01701-2699, (508) 877-7630. Non-profit organization established in 1922 to promote the appreciation, knowledge and conservation of native plants. Sells seed collected in the wild and at their botanical garden. CAT \$2.50, RET, PC, OVER.
- I32M New Leaf Nurseries - 2456 Foothill Dr., Vista, CA 92084-5809, (760) 726-9269. Excellent selection of scented geraniums. CAT \$2, R & W, PC.
- 133 New Mexico Cactus Research - P.O. Box 787, Belen, NM 87002, (505) 864-4027 (no telephone orders). Extensive collector's list of cactus and succulent seeds, over 1,000 varieties. Also seed of natives and exotics. CAT SASE, R & W, PC, OVER, M. O. \$5.
- I34 New Mexico Pinon Coffee Co. - 1470A Bosque Farms Blvd., Bosque Farms, NM 87068, 1-800-572-0624. Regional gourmet foods from the Southwest. Specializes in pinon products. *Sells the following product/s:* pinon cocoa, pinon coffee and pinon sun tea, chocolate-covered Espresso coffee beans. CAT FREE, R & W, PC/CC.
- I34J The New Orleans School of Cooking and The Louisiana General Store - 620 Decatur St., Hie Jackson Brewery, New Orleans, LA 70130, 1-800-237-4841. Specializes in Cajun and Creole foods. *Sells the following product/s:* coffee with chicory, Tabasco brand Jalapeno sauce, and gumbo seasoning with dried okra. CAT FREE, RET, PC/CC, OVER.
- I34M New Penny Farm - P.O. Box 448, Presque Isle, ME 04769, 1-800-827-7551. Gourmet potatoes for eating, seed potatoes for planting, regional foods from New England. *Sells the following product/s:* ploves mix. CAT FREE, RET, PC/CC.
- I37M Niche Gardens - 1111 Dawson Road, Chapel Hill, NC 27516, (919) 967-0078. Specializes in nursery propagated Southeastern natives. Also offers other North American natives, selected garden perennials, ornamental grasses and under used trees and shrubs. CAT \$3, RET, PC/CC, OVER, M.O. \$35.
- I39 Nichols Garden Nursery Inc. - 1190 North Pacific Hwy., Albany, OR 97321, (541) 928-9280. Large selection of herb plants and seed, elephant garlic, seeds of oriental, European and specialty vegetables, perennial vegetables, beer and wine making supplies, starter cultures. CAT FREE, R & W, PC/CC, OVER.
- I39M Noel's Seeds - Turner Rd., Oxford, NY 13830, (541) 928-9280. Small family business specializing in open-pollinated vegetable seeds for home gardeners in the Northeast. CAT \$2, RET, PC.

- 139T Nokomis Farms - W2495 County Road ES, East Trey, WI53120, 1-800-367-0358. Certified organic, yeast-free sourdough breads. *Sells the following products: wild rice, spelt and kamut breads.* CAT FREE, R & W, PC.
- 140 Nolin River Nut Tree Nursery - 797 Ibrt Wooden Rd., Upton, KY 42784, (502) 369-8551. Extensive listing of grafted nut trees, including pecans, walnuts, heartnuts, butternuts, chestnuts, hicans and hickories. Also native American persimmons and pawpaws. Will custom graft on request. Succeeded Leslie H. Wilmoth Nuisery. CAT FREE, R & W, PC.
- 141 Norcal Nuisery - P.O. Box 1012, Red Bluff, CA 96080, (916) 527-6200. Specializes in everbearing and day neutral strawberries and strawberry cultivars suitable for California growing conditions. CAT FREE, WHLS, OVER, M.O. 1500 OF EACH.
- 141G Nordic Delicacies - 6909 Thiid Ave., Brooklyn, NY 11209, 1-800-346-6734. Specializes in foods from Scandinavia. *Sells the following products: lingonberry jam and preserves, cloudberry iam and preserves, frozen lingonberries, frozen cloudberry, and rosehip soup mix.* CAT FREE, R & W, PC/CC.
- 141M Ben J. Nordmann Inc - P.O. Box 621, DeLand, FL 32721, (904) 734-4712. Specializes in disease resistant bunch grapes adapted to the South. CAT FREE, R & W, PC.
- 141P North Alabama Nursery Ca - P.O. Box 67, Joppa, AL 35087, (205) 586-5676. Fruit and nut trees, berry plants, grape vines, shade trees, flowering shrubs. CAT FREE, R & W, PC.
- 142G North Country Smokehouse - P.O. Box 1415, Claremont, NH 03743, 1-800-258-4304. Maple cured, applewood and corncob smoked meats, poultry and cheese, gourmet foods. *Sells the following products: horseradish jellv.* CAT FREE, RET, PC/CC.
- 143T Northbest Natural Products - P.O. Bck 1976, Vashon, WA 98070, (206) 463-4000. Natural food items. *Sells the following products: whole grain quinoa, quinoa flour, quinoa pasta, quinoa flakes, spirulina powder, spirulina flakes, Green Kamut, dried barley grass juice, iarrah bee pollen, and star thistle comb honey.* CAT FREE, WHLS, PC, M.O. \$100.
- 144 Northeastern Ferns & Wildflowers - Pleasant Street, Newfields, NH 03856, (603) 772-1136. Hardy native orchids, ferns and wild flowers collected from the wild. CAT FREE, R & W, PC/OC, CANADA ONLY.
- 145M Northern Groves - R>ur Wands Farm, 23818 Henderson Rd., Corvallis, OR 97333, (541) 929-7152. Specializes in hardy bamboos. CAT \$2, R & W, PC, OVER.
- 146 Northern Kiwi Nursery - R.R. #3, 181 Niven Rd., Niagara-on-the-Lake, ON LOS 1J0, Canada, (905) 468-7573. Specializes in hardy kiwi. Also other unusual, hardy fruits and berries. CAT FREE, R & W, PC, OVER.
- 147 Northplan Seed Producers - P.O. Box 9107, Moscow, ID 83843-1607, (208) 882-8040. Native tree, shrub and wild flower seed including grasses and legumes for reclamation, revegetation and landscaping. CAT \$1 OR SASE, R & W, PC, OVER.
- 147M Northridge Gardens - 9821 White Oak Ave., Northridge, CA 91325-1341, (818) 349-9798. Rare and unusual succulents, bonsai-like plants and plants that have unique sculptural forms. Succeeded Singer's Growing Things. CAT \$1, R & W, PC/CC, M.O. \$20.00.
- 149 Northwest Mycological Consultants - 702 N. W. 4th St., Corvallis, OR 97330, (541) 753-8198. Spawn and cultures for different strains of shiitake mushrooms, other exotic mushrooms, mushroom growing supplies. Also provides consulting and design to growers. CAT \$2 REFUNDABLE, R & W, PC/CC, OVER.
- 149G Northwind Nursery & Orchards - 7910 355th Ave. N.W., Princeton, MN 55371-4915, (612) 389-4920. Small family nursery specializing in organically grown fruit trees for northern areas. Also offers native shrubs, trees and ornamentals, rootstocks and scionwood, custom grafting services. Previously known as LBG Nuisery. CAT \$1, RET, PC.
- 149M Northwoods Nursery - 27635 South Oglesby Rd., Canby, OR 97013, (503) 266-5432. Specializes in exotic and unusual fruits and nuts, including hardy kiwi, fig, persimmon, pawpaw, feijoa, jujube, heartnut, buartnut and butternut. *Sells the following products: Key Lime c.ur<L., Agian,, pgar bmsL Laveqfar jam, Multem preserves, Tavberrv jam, Cabernet Sauvignon jellv and Sauvignon Blanc jellv.* CAT FREE, RET, PC/CC, OVER.
- 149P Northwoods Wholesale Nursery - 28696 South Cramer Rd., Molalla, OR 97038, (503) 651-3882. Unusual fruit and nut trees. Specializes in fruit trees from Eastern Europe and the former Soviet Union. CAT \$2, WHLS, PC/CC, OVER, M.O. \$100.
- 150 Nourse Farms, Inc. - 41 River Rd., South Deerfield, MA 01373, (413) 665-2658. Strawberries, raspberries, blackberries, horseradish, rhubarb and hybrid asparagus. Specializes in tissue culture, virus-free stock. CAT FREE, R & W, PC/CC, OVER.
- 150D Novakovich Orchards - 14251 Fruitvale Ave., Saratoga, CA 95070, (408) 867-3131. Dried fruits and nuts, jams and jellies, gift baskets. Established in 1925. CAT FREE, R & W, PC.
- 150G Novartis Seeds - 5300 Katrine Ave., Downers Grove, IL 60515-4095, 1-800-454-8159. Vegetable, herb and flower seeds, garden perennials. Previously knewn as Vaughn's Seed Co. CAT FREE, WHLS, PC/CC, OVER, M.O. \$75.
- 151M Nu-World Amaranth - P.O. Box 2202, Naperville, IL 60567, (630) 369-6819. Specializes in amaranth and amaranth foods. *Sells the following products: amaranth flour, ppffed amaranth, toasted amaranth bran floyr, pre-gel amaranth powder, corn-amaranth tortillas, and amaranth flat bread/pizza crust.* CAT FREE, R & W, PC.
- 152 Nuccio's Nurseries - P.O. Box 6160, Altadena, CA 91003, (818) 794-3383 (no telephone orders). Specializes in camellias and azaleas. CAT FREE, R & W, PC, OVER.
- 153M The Nursery at iy Ty - Box 130, Ty Ty, GA 31795, 1-800-972-2101. Broad range of common and unusual fruit and nut trees, muscadines, bunch grapes, berry plants, shade trees, flowering shrubs, bulbs. Incorporating Ty Ty Plantation Bulb Ca and Mary Walker Bulb Co. Previously known as iy Ty South Orchards. CAT \$2, R & W, PC/CC.
- 153Z NyPa Inc - 727 North Ninth Ave., Tucson, AZ 85705, (520) 578-8244. Small company specializing in the development of halophyte grains. Mostly provides consultation work but will supply some grain on special request. CAT FREE, R & W, PC, OVER.
- 157 Oak Hill Gardens - P.O. Box 25, Dundee, IL 60118-0025, (847) 428-8500. Specializes in orchids,

- bromeliads, and unusual tropical house plants. CAT FREE, R & W, PC/CC, OVER.
- 158P Oakville Grocery - P.O. Box 86, Oakville, CA 94562, 1-800-736-6602. Premium California wines, gourmet specialty foods. *Sells the following product/s: Olallie Berrv preserves, pistachio butter and Bartlett pear wafers.* CAT FREE, RET, PC/CC, OVER.
- 159 Oasis Date Gardens - P.O. Box 757, Thermal, CA I64M 92274, 1-800-827-8017. Dried fruits and nuts, date foods, fresh fruit, holiday gift packages. Established in 1912. *Sells the following product/s: khalal dates (yellow BarhisL date bread, date butter, date cake, and brandied dates.* CAT FREE, R & W, PC/CC, OVER.
- 159D Ocean Harvest Sea Vegetable Ca - P.O. Box 1719, Mendocino, CA 95460, (707) 937-1923. Sea vegetables harvested from pristine waters of northern California and sun dried the same day. *Sells the following product/s: silky sea palm.* CAT FREE, R & W, PC.
- 159E Ocean Produce International - P.O. Box 995, Shelburne, NS B0T 1W0, Canada, (902) 875-4444. Specializes in Sea Parsley dulse. *Sells the following product/s: fresh, sun-dried, and broiled Sea Parsley dulse.* CAT FREE, R & W, PC/CC, OVER.
- 159J Ohio Department of Natural Resources - Division of Forestry, 1855 Fountain Square Court, Columbus, OH 43224, (614) 265-6565. Sells selected seedlings of high-sugar maple trees. Also seedlings of other species for timber, reclamation and reforestation. CAT FREE, R & W, PC/CC, M.O. 25 TREES.
- 159L The Ohio Hempery - P.O. Box 18, Guysville, OH 45735, 1-800-289-4367. Hemp foods, other hemp products. *Sells the following product/s: hemp seeds, hemp seed oil, hemp coffee.* CAT FREE, R & W, PC/CC, OVER.
- 159M The Ohio Seed Ca - P.O. Bax 87, West Jefferson, OH 43162, (614) 879-8366. Complete line of vegetable seeds. CAT FREE, WHLS.
- 160 Oikos Tree Crops - P.O. Box 19425, Kalamazoo, MI 49019, (616) 624-6233. Native shrubs and trees selected for disease resistance, especially nut bearing trees including hybrid oaks, pecans, chestnuts, walnuts and filberts. Also minor fruits. CAT FREE, R & W, PC/CC, OVER, M.O. \$20.
- 160M Oils <f Aloha - P.O. Bax 685, Waialua, HI 96791, 1-800-367-6010. Specialty oils from Hawaii. Previously known as Hawaiian Macadamia Nut Oil Co. *Sells the following product/s: pure macadamia nut oil, flavored macadamia nut oils.* CAT FREE, R & W, PC/CC.
- 161M Okanagan Plant Improvement Ca - P.O. Box 6000, Summer land, BC V0H 1Z0, Canada, (250) 494-5157. Certified, virus-indexed budwood and scions of apples, apricots, cherries, nectarines, peaches, pears and plums, many developed at the Summerland Research Station. Previously known as B.C. Certified Budwood Association. CAT FREE, R & W, PC, OVER, M.O. \$25.
- 163T Old Southwest Trading Ca - P.O. Box 7545, Albuquerque, NM 87194, (505) 836-0168. Specializes in Mexican and Southwestern foods. Also chili pepper seeds for planting. *Sells the following product/s: Chimavo red, African Birdseve, Ail Amarillo and Rica Red Habanero chile powders, crushed Rica Red Habanero chiles, Chile Pasado, corn husks, Pequin chile ristras and wreaths, pickled Ail Amarillo chiles and Rica Red Habanero sauce.* CAT FREE, RET, PC/CC, OVER.
- 163Z Old Sturbridge Village - 1 Old Sturbridge Village Rd., Sturbridge, MA 01566, (508) 347-3362. Heirloom vegetable, flower and herb seeds. CAT FREE, RET, PC/CC, CANADA ONLY.
- 164 L. L. Olds Seed Ca - P.O. Box 7790, Madison, WI 53707, (608) 249-9291. Wholesale supplier of vegetable, herb and flower seeds to garden stores and market growers. Established in 1888. CAT FREE, WHLS, PC, OVER.
- The Olive Pit - 2156 Solano St., Corning, CA 96021, 1-800-654-8374. Large selection of olives, stuffed olives, olive oil, pickles, vinegars, salsas, nuts, jams and jellies. *Sells the following product/s: Queen olives, Mission and Sevillano olive oils, grapeseed and avocado oils, Martini mixer (olive juiceL Martini stuffed olives, Opal basil jellv, and pickled Golden Greek peppers.* CAT FREE, R & W, PC/CC.
- 165M Brown's Omaha Plant Farms, Inc - P.O. Box 787, Omaha, TX 75571-0787, 1-800-654-8374. Specializes in sweet onion plants. Also known as Jim Brown Plants, and W.G. Farrier Plant Co. CAT FREE, R & W, PC/CC.
- 166 Omega Nutrition - 6505 Aldrich Rd., Bellingham, WA 98226, 1-800-661-3259. Natural foods, gluten-free foods. Specializes in oils high in essential fatty acids. *Sells the following product/s: wild rice pasta, xanthan gum, Jerusalem artichoke flour, pumpkin seed spread, and the following oils - flax seed, Brazil nut, borage seed, hemp seed, hazelnut, pistachio, and pumpkin seed.* CAT FREE, R & W, PC/CC, OVER.
- 166M Once Again Nut Butter, Inc - P.O. Box 429, Nunda, NY 14517-0429, (716) 468-2535. Nut butters, roasted nuts, gourmet honeys. *Sells the following product/s: organic Valencia peanut butter, Virginia peanut butter, cashew, hazelnut and almond buttersu blueberry, raspberry, tupelo, buckwheat, basswood and orange blossom honeys, organic Yucatan honey.* CAT FREE, R & W, PC.
- 166T One Green World - 28696 South Cramer Rd., Molalla, OR 97038, (503) 651-3005. Unique collection of fruit trees from Eastern Europe and the former Soviet Union. Subsidiary of Northwoods Wholesale Nursery. CAT \$2, RET, PC/CC, OVER.
- 167M Ontario Seed Co., Ltd. - P.O. Box 7, 330 Phillip St., Waterloo, ON N2J 3Z6, Canada, (519) 886-0557. Vegetable, herb and flower seeds. In business for over 100 years. CAT FREE, RET, PC/CC.
- 168 Orange County Nursery - 13249 East Firestone Blvd., P.O. Box "O", Norwalk, CA 90651-5017, 1-800-569-0169. Fruit and nut trees, including many low chill cultivars, shade trees, flowering shrubs. Major suppliers of oriental persimmons and Asian pears. Established in 1887. CAT FREE, WHLS, PC, OVER, M. O. \$500.
- 173M Oregon Blueberry Farms - 8474 Hazelgreen Rd., Silverton, OR 97381, (503) 873-4791 or 873-2618. Specializes in highbush blueberries. CAT FREE, WHLS, PC, CANADA ONLY, M.O. 50 PLANTS.
- 174 Oregon Exotics Nursery - 1065 Messinger Rd., Grants Pass, OR 97527, (541) 846-7578. Rare and unusual, cold hardy sub-tropicals including a large selection of figs and hardy citrus. Also medicinal herbs, and a fascinating collection of unusual edibles collected in remote areas of the globe. Previously known as Black Oak Nursery. CAT FREE, R & W, PC/CC, M.O. \$100 OVER.
- 175 Oregon Rootstock and Tree Co./TrecO - 10906 Monitor-McKee Rd. N.E., Woodburn, OR 97071, (503) 634-2209. Complete line of controlled-size understock for



- apples, pears, cherries and plums. Also interstems and interstem wood for grafting, and apple trees. Incorporating Knolview Nuisery. CAT FREE, WHLS, PC, OVER, M.O. 100 OF EACH.
- 176T The Oriental Pantry - 423 Great Road, Acton, MA 01720, 1-800-828-0368. Herbs and spices, hard to find foods from China, Japan, Thailand, India and the Philippines. *Sells the following product/s: Szechuan preserved vegetable, Chinese black vinegar, sugar cane vinegar, shichimi, and halo-halo.* CAT FREE, RET, PC/CC, OVER.
- 177 Ornamental Edibles - 3622 Weedin Court, San Jose, CA 95132, (408) 946-7333. Seeds of over 400 varieties of gourmet vegetables, herbs and edible flowers for urban landscapes, container gardens, and specialty growers. Specializes in mesclun. CAT \$1, R & W, PC/CC, OVER. M.O. \$50
- 177G Our Kids' Orchids & Nursery - 17229 Phil C. Peters Rd., Winter Garden, FL 34787, (407) 877-6883. Tropical fruit trees, citrus, gingers, orchids. Specializes in bananas. CAT FREE, R & W, PC.
- 177M Owen Farms - 2951 Curve-Nankipoo Rd., Ripley, TN 38063-6653, (901) 635-1588. Ornamental trees and shrubs, garden perennials. CAT FREE, RET, PC, OVER.
- 178 Owen Nursery - 2300 East Lincoln St., Bloomington, IL 61701, (309) 663-9551. Fruit and nut trees, berry plants, grape vines, perennial vegetables, flowering shrubs, garden perennials, indoor exotics. CAT FREE, RET, PC/CC.
- 179M Oxford Hemp Exchange - 202 South Westwood Blvd., Ste. 32, Poplar Bluff, MO 63901, 1-800-411-5728. Specializes in hemp products. *Sells the following product/s: hemp seeds, hemp seed meal, hemp seed oil, and hemp coffee.* CAT FREE, RET, PC/CC, OVER.
- 181 P & P Seed Co. - 14050 Rt. 62, Collins, NY 14034, 1-800-449-5681. Specializes in extra large squash and watermelon cultivars for competition. Publishes a newsletter on extra large vegetables and sponsors the "World Pumpkin Confederation Weigh-Off. CAT FREE, R & W, PC/OC, OVER.
- 181M P.J.T. Botanicals - P.O. Box 49, Bridgewater, MA 02324-1630, 1-800-449-5681. Seeds and plants of rare exotics, cactus, herbs and spices. Specializes in ethnobotanicals. Also bulk herbs and mushroom growing supplies. CAT \$2, R & W, PC, OVER.
- 181T Pacific Botanicals - 4350 Fish Hatchery Rd., Grants Pass, OR 97527, (541) 479-7777. Growers and suppliers of high quality, certified organically grown or wildcrafted herbs and spices, both fresh and dried. CAT FREE, R & W, PC, OVER, M.O. 1 LB OF EACH.
- 183M Pacific Tree Farms - 4301 Lynwood Drive, Chula Vista, CA 91910, (619) 422-2400. Wide selection of fruits, nuts and berries for both temperate and tropical regions. Also flowering trees and vines, California natives, conifers and rare plants of many types. CAT \$2, R & W, PC/CC/OC, OVER.
- 184 Page Seed Ca - P.O. Box 158, Greene, NY 13778, (607) 656-4107. Vegetable, herb and flower seeds. CAT FREE, R & W, PC.
- 184M Palm Nuts - 16651 Velazquez Blvd., Loxahatchee, FL 33470, (561) 793-9029. Growers of rare and unusual palms and cycads. CAT FREE, R & W, PC/CC, OVER, M.O. \$50.
- 185 D. Palmer Seed Ca - 8269 South Hwy. 95, Yuma, AZ 85365, (520) 341-8494. Specializes in low-chill artichokes. CAT (CALL FOR PRICES), WHLS, OVER, M.O. \$100.
- 186 Pampered Plant Nuisery - P.O. Box 3, Bourbonnais, IL 60914-0003, (815) 937-9387. Seedling and grafted fruit and nut trees, scion wood, custom grafting. CAT FREE, RET, PC.
- 190M Paradise Water Gardens - 14 May Street, Whitman, MA 02382, 1-800-966-4591. Water lilies, lotus, other aquatic and bog plants. CAT \$3, RET, PC/CC, M.O. \$15.
- 191 George W. Park Seed Co. - 1 Ihrkton Ave., Greenwood, SC 29647-0001, 1-800-845-3369. Vegetable, herb and flower seeds, fruit and nut trees, grape vines, berry plants, perennial vegetables, garden perennials, bulbs. Established in 1868. CAT FREE, R & W, PC/CC, OVER.
- 193M Parsons Seeds Ltd. - P.O. Box 280, Beeton, ON LOG 1A0, Canada, (905) 729-2202. Cereals, grains, cover crop and green manure seeds. CAT FREE, R & W, PC, OVER.
- 194 The Pasta Shop - 5655 College Ave., Oakland, CA 94618, (510) 547-4005. Mail order supplier of gourmet imported Italian foods from Manicaretti, Inc. *Sells the following product/s: farro pasta, farm flour, crushed farro, polenta taragna, puttanesca sauce, arugula sauce, caperberries, gift-CUred capers, Ligqrian olive? pate, acacia honey, chestnut honey, and Panettone.* CAT FREE, RET, PC/CC.
- 194M Pat's Pimiento Products - P.O. Box 5, Kiqg City, CA 93930, (408) 385-5756. Specializes in pimiento foods. *Sells the following product/s: red and yellow pimiento jam, and red and yellow pimiento relish.* CAT FREE, R & W, PC, M.O. 1 CASE.
- 197 Paul's Grains - 2475-B 340th St., Laurel, IA 50141, (515) 476-3373. Organically grown grains and grain products, fresh apples. *Sells the following product/s: Reid's Yellow Dent commmeal, corn flour, and corn grits, spelt flour and spelt cereal.* CAT FREE, R & W, PC.
- 198M The Theodore Payne Foundation for Wildflowers and Native Plants - 10459 Tuxfoild St., Sun Vall^r, CA 91352-2126, (818) 768-1802. Non-profit organization dedicated to perpetuating the native flora of California. Offers an extensive listing of California native wild flowers, grasses, trees and shrubs. CAT SASE, R & W, PC.
- 199M Peaceful Valley Btrm Supply - P.O. Box 2209, Grass Valley, CA 95945, 1-888-784-1722. Organic, open-pollinated vegetables seeds, fruit and nut trees, berry plants, garlic, vegetable plants, bulbs, grains, cover crop and wildflower seeds. CAT FREE, R & W, PC/CC.
- 199P Pearson's Gardens - P.O. Box 1512, Vista, CA 92085-1512, (760) 726-0717 (no phone orders). Family owned and operated farm offering seeds and plants of herbs, scented geraniums and everlastings. CAT FREE, R & W, PC, OVER.
- 199T Pecan Valley Nut Ca - 150 North Harbin Dr., Ste. 200, Stephenville, TX 76401, 1-800-473-2267. Pecans, pecan foods, gift baskets. *Sells the following product/s: pecan pies.* CAT FREE, R & W, PC/CC, OVER.
- JO Pecoff Brothers Nursery & Seed Inc. - 20220 Elfin Forest Rd., Escondido, CA 92029, (760) 744-3120. Specializes in native and exotic trees, shrubs and perennials for erosion control and adverse areas. CAT \$5, WHLS, OVER.

- J2M Pense Nursery - 16518 Marie Lane, Mountainburg, AR 72946, (501) 369-2494. Specializes in small fruits including a large selection of blackberries. Also dewberries, raspberries, blueberries, grapes, currants and gooseberries. CAT FREE, R & W, PC/CC.
- J3 Peoples Woods - 75 Mill Street, Cumberland, RI02864, 1-800-729-5800. Large selection of gourmet cooking and smoking woods. CAT FREE, R & W, PC/CC, OVER.
- J4 The Rpper Gal - P.O. Box 23006, Ft. Lauderdale, FL 33307-3006, 1-800-729-5800. Seeds for over 250 cultivars of hot, sweet and ornamental peppers. CAT FREE, R & W, PC, OVER.
- J4D Pepper Joe's, Inc. - 1650 Pembroke Rd., Norristown, PA 19403, (410) 561-8158. Organically grown pepper and tomato seeds. CAT \$2, RET, PC.
- J5M Perennial Pleasures Nuisery - P.O. Box 147, East Hardwick, VT 05836, (802) 472-5104 (no telephone orders). Specializes in old-fashioned perennial flowers and herbs. CAT \$3, RET, PC/CC, OVER (SEEDS ONLY).
- J6 Perennial Vegetable Seed Ca - P.O. Box 608, Belchertown, MA 01007, (413) 552-4167. Specializes in perennial vegetables for edible landscaping, permaculture and naturalizing. CAT FREE, RET, PC.
- J7M Perry's Water Gardens - 1831 Leatherman Gap Rd., Franklin, NC 28734, 1-888-673-7797. Water lilies, lotus, cattail, arrowhead, other aquatic and bog plants. CAT \$2, R & W, PC/CC, OVER.
- J8 Peter Pauls Nurseries - 4665 Chapin Road, Canandaigua, NY 14424-8713, (716) 394-7397. Specializes in carnivorous plants. CAT FREE, R & W, PC/CC, OVER.
- J9M Peters Seed & Research - P.O. Box 1472, Myrtle Creek, OR 97457, (541) 863-3693. Small company specializing in non-hybrid vegetable, herb and flower seeds, many of which they have personally developed. Also unusual edibles and perennial grains. CAT \$1, R & W, PC, CANADA ONLY.
- J9P Petite Vines - 766 Westside Rd., Healdsburg, CA 95448, (707) 433-6255. Unique nursery specializing in bonsai grape varieties. Also benchgrafted wine and table grapes, and hop plants. CAT FREE, R & W, PC/CC.
- J11 Phillips Exotic Mushrooms - 909 Baltimore Pike, Kennett Square, PA 19348, 1-800-243-8644. Fresh and dried gourmet mushrooms, gift baskets, mushroom products, growing kits. CAT FREE, R & W, PC/CC.
- J11M Phipps Country Store & Fhrm - P.O. Box 349, Pescadero, CA 94060, 1-800-279-0889. Family farm that grows and ships heirloom beans, herbs and herbal products and home-made jams. *Sells the following product/s: brown, red and white teff flours, red lentil flour. Olallieberrv iam. Olallieberrv vinegar. Chinese five-spice powder, fines herbes and herbes de Provence.* CAT FREE, R & W, PC/CC, CANADA ONLY, M.O. 5 LBS.
- J14 Piedmont Plant Ca - P.O. Box 424, Albary, GA 31702, (912) 883-7029. Large selection of vegetable plants including cabbage, broccoli, collards, leeks, onions, tomatoes, eggplants and peppers. Also Vidalia onions for eating. CAT FREE, RET, PC/CC.
- J15M Pierce & Sons Nurseries, Inc. - 24175 N.E. Dayton Ave., Newberg, OR 97132, (503) 538-2363. Large selection of filbert trees for orchard and backyard planting. Also chestnuts and black walnuts. CAT FREE, R & W, PC, OVER.
- J16 Pikes Peak Nurseries - R.D. 1, Box 75, Penn Run, PA 15765, 1-800-787-6730. Fruit and nut trees, berry plants, grape vines, evergreen and hardwood seedlings and transplants, ornamental and flowering trees and shrubs, tree seed. CAT FREE, R & W, PC/CC, CANADA ONLY.
- J17 Pine Island Nursery - 16300 S.W. 184th St., Miami, FL 33187, (305) 233-5501. Commercial grower of tropical fruit trees. Also supplies propagating wood. CAT FREE, WHLS, PC, OVER.
- J19M Pines International, Inc - P.O. Box 1107, Lawrence, KS 66044, 1-800-697-4637. Specializes in cereal grass foods. *Sells the following product/s: dried wheat, barlw, oat and rve grasses, dried wheat and barley grass juice powders, dried alfalfa, beet juice powder, rhubarb juice powder, and wheat grass pasta.* CAT FREE, R & W, PC/CC, OVER.
- J20 Pinetree Garden Seeds - Box 300, New Gloucester, ME 04260, (207) 926-3400. Broad range of vegetables including many open-pollinated and limited space cultivars, gourmet and ethnic vegetables, uncommon flower seeds, sprouting seeds, perennial vegetables, berry plants. CAT FREE, RET, PC/CC, OVER.
- J21H Pitt's and Spitt's - 14221 Eastex Freeway, Houston, TX 77032, 1-800-521-2947. Barbecue supplies including woods for smoking. *Sells the following product/s: white oak, pin oak and post oak smoking woods, hickory, pecan and mesquite smoking woods, apple, cherry and sugar maple chips.* CAT FREE, R & W, PC/CC, OVER.
- J21M Pittman & Dais - P.O. Box 532227, Harlingen, TX 78553-2227, (956) 423-2154. Fresh produce and other gourmet food items. Specializes in fresh citrus. *Sells the following product/s: Rubv Red grapefruit juice and marmalade, and Texas Supersweet onion salsa.* CAT FREE, RET, PC/CC.
- J21P Ned W. Place - 21600 Conant Rd., Wapakoneta, OH 45895-7621, (419) 657-6727. Specializes in open-pollinated field com. CAT FREE, R & W, PC.
- J22 Plant It Hawaii - P.O. Box 388, Kurtistown, HI 96760, (808) 966-6633. Tropical fruit and nut trees, citrus and avocado including local Hawaiian selections. Only ships lychee and longan out of state. CAT FREE, R & W, PC, OVER, M.O. 25 TREES.
- J24 The Plantage - P.O. Box 28, Cutchogue, NY 11935, (516) 734-6832. Herb plants, garden perennials, ornamental grasses. CAT FREE, WHLS.
- J24M Planters 3 Pickles & Relishes - 3627 Holmes Rd., Johns Island, SC 29455, (803) 559-2820. Specializes in Wadmalaw Sweet onions. Also pickles, relishes, jams, jellies and preserves. *Sells the following product/s: Wadmalaw Sweet onion relish. Scunpernong iellv. and watermelon rind pickles.* CAT FREE, RET, PC/CC, OVER.
- J25M Plants of the Southwest - Agua Fria, Rt. 6, Box 11 A, Santa Fe, NM 87501, 1-800-788-7333. Seeds and plants of native Southwestern wild flowers, grasses, trees and shrubs, unusual Southwestern vegetable and herb seed, cover crops. CAT \$3.50, R & W, PC/CC, OVER.
- J26 Plants of the Wild - P.O. Box 866, Teloa, WA 99033, (509) 284-2848. Specializes in container grown trees, shrubs and wild flowers native to the Pacific Northwest. Subsidiary of Palouse Seed Co. CAT FREE, R & W, PC/CC, OVER.
- J26M Plimoth Plantation - P.O. Box 1620, Plymouth, MA 02362, 1-800-262-9356. Seeds of plants familiar to the

- residents of Plymouth in the 17th Century including heir-loom vegetables, natives and kitchen garden herbs. CAT FREE, RET, PC/CC.
- J27 The Plumeria People - 910 Leander Dr., Leander, TX 78614, (512) 259-0807. Exotic tropical plants including gingers and hibiscus. Specializes in plumeria. CAT \$3, RET, PC/CC, M.O. \$20.
- J29 Plumtree Nursery - 387 Springtown Rd., New Paltz, NY 12561, (914) 255-0417. Small nursery specializing in organically grown currants and unusual strawberries. CAT FREE, RET, PC.
- J29M Ben Ibirier - P.O. Box 222, Fallbrook, CA 92088, (760) 751-1605. Collector and propagator of rare fruiting plants. Offers limited quantities of fresh seed in season. CAT FREE, R & W, PC, OVER.
- J31M Ponderosa Nurseries Inc. - 464 South Mooney Blvd., Tulare, CA 93274, (209) 686-2874 or 688-6626. Vinifera grape vines, both table and wine, certified grape rootstocks. Also offers custom propagation. CAT FREE, WHLS.
- J36M Potato Patch - R.R. 1, Box 263, Halstad, MN 56548, 1-800-934-7002. Certified disease free potato seed stock (mini-tubers) produced under laboratory conditions using micro-propagation techniques. CAT FREE, R & W, PC/CC.
- J37M Powell's Gardens - 9468 U.S. Highway 70 East, Princeton, NC 27569-7896, (919) 936-4421 (no telephone orders). Daylilies, iris, hostas, herbs, ornamental trees and shrubs. CAT \$5, RET, PC, OVER.
- J39 Prairie Grown Garden Seeds - Box 118, Cochin, SK SOM 0L0, Canada, (306) 386-2737. Open-pollinated, heirloom garden and farm seeds for short-season areas and dryland farming. Grown without agricultural chemicals. CAT \$1, RET, PC, U.S. ONLY.
- J39M Prairie Moon Nursery - Rt. 3, Box 163, Winona, MN 55987-9515, (507) 452-1362. Large selection of seeds and nursery propagated plants native to the "driftless" area of Minnesota, Wisconsin, Iowa and Illinois. CAT \$1, R & W, PC.
- J40 Prairie Nuisery - P.O. Box 306, Westfield, WI 53964, (608) 296-3679. Seeds and plants of prairie wild flowers and grasses. CAT \$3, R & W, PC/CC, OVER, M.O. \$25.
- J41M Prairie Restoration, Inc. - P.O. Box 327, Princeton, MN 55371, 1-800-837-5986. Seeds and plants of prairie wild flowers and grasses for restoring native plant communities. CAT FREE, R & W, PC/CC.
- J42 Prairie Ridge Nursery - 9738 Overland Rd., Mt. Horeb, WI 53572-2832, (608) 437-5245. Seeds and plants of native wild flowers and grasses. All plants are propagated from seed collected and grown in their nurseries. CAT FREE, R & W, PC/CC, OVER, M.O. \$45.
- J43 Prairie Seed Source - P.O. Box 83, North Lake, WI 53064-0083, (608) 437-5245. Specializes in prairie wild flowers and grasses native to southeastern Wisconsin. CAT \$1, RET, PC, OVER.
- J47M Primera Ifecans - P.O. Box 1301, Corsicana, TX 75151, 1-800-732-2648. Pecans and other nuts, dried fruits, snack foods. CAT FREE, RET, PC/CC, OVER.
- J48 The Primrose Path - R.D. 2, Box 110, Scottdale, PA 15683, (412) 887-6756. Choice perennials, woodland and rock garden plants, ferns. CAT \$2, R & W, PC/CC.
- Prissy's of Vidalia- P.O. Box 1213, Vidalia, GA 30474, 1-800-673-7372. Regional southern gourmet foods. Specializes in Vidalia onion products. Sells the following products: pickled Vidalia onions, Vidalia onion relish, jelly and salt, and tomolives. CAT FREE, R & W, PC/CC, M.O. 2 CASES WHLS.
- J51M Pueblo to People - 2105 Silber Rd., Ste. 101-88, Houston, TX 77055, 1-800-843-5257. Non-profit organization focusing on cottage industry crafts produced by native people in developing countries of Central America. Sells the following products: organic cashew nuts, CAT FREE, RET, PC/CC, CANADA ONLY.
- J51P The Puget Sound Kiwi Co. - 1220 N.E. 90th St., Seattle, WA 98115, (206) 523-6403. Scionwood of kiwifruit, hardy kiwi, kiwi hybrids, one of the largest selections available. Also fig plants and scionwood. CAT SASE, R & W, PC, OVER.
- J51T Purity Foods, Inc - 2871 West Jolly Rd., Okemos, MI 48864-3547, (517) 351-9231. Specializes in spelt foods. Sells the following products: organically grown hulled spelt, and spelt flour, pasta, flakes, bread mixes, and pancake mixes. CAT FREE, R & W, PC/CC.
- J52 The Purple Foot - 3167 South 92nd St., Milwaukee, WI 53227, (414) 327-2130. Wine and beer making supplies for home brewers. CAT FREE, RET, PC/CC.
- J53M Quady Winery - P.O. Box 728, Madera, CA 93639, 1-800-733-8068. Specializes in fortified and dessert wines. Sells the following products: Elvsum, Essensia and Electra dessert wines. CAT FREE, R & W, PC/CC, OVER.
- J56 Quinoa Corporation - P.O. Box 1039, Torrance, CA 90505, (310) 530-8666. Sprouting quality quinoa, quinoa food items. Sells the following products: whole grain quinoa, quinoa flour, quinoa pasta, quinoa flakes. CAT FREE, R & W, PC, OVER.
- J57 Rabbit Shadow Farm - 2880 East Highway 402, Loveland, CO 80537, 1-800-850-5531. Herb plants, scented geraniums. Specializes in herbal topiary. CAT FREE, WHLS.
- J58 Rafal Spice Co. - 2521 Russell, Detroit, MI 48207, 1-800-228-4276. Large selection of herbs and spices, coffee and tea, gourmet food specialties. Sells the following products: Torrida peppers, Cholula sauce, and Pickapeppa sauce. CAT FREE, R & W, PC/CC.
- J59 Rainbow Star Nursery - 2324 S.W. 36th Terrace, Gainesville, FL 32607, (352) 378-4681. Low-chill apples, pears, peaches and plums. Also a large selection of Oriental persimmons. Will do custom propagation. CAT FREE, R & W, PC.
- J60 Rainforest Mushroom Spawn - Box 1793, Gibsons, BC VON 1V0, Canada, (604) 886-7799 (no telephone orders). Mushroom spawn for commercial and hobby growers. CAT FREE, RET, PC.
- J61M Raintree Nuisery - 391 Butts Rd., Morton, WA 98356, (360) 496-6400. Broad selection of fruit and nut trees, berry plants, perennial vegetables, bamboo, mushroom spawn, and windbreak trees. Specializes in flavorful, disease resistant cultivars for organic growers and edible landscapers. Sells the following products: birch svrup, mavhaw iellv, Asian pear butter, rose hip iellv, blood orange marmalade, and passionfruit svrup. CAT FREE, RET, PC/CC, M.O. \$10.
- J63M L.J. Rambo's Wholesale Nurseries - 10495 Baldwin Road, Bridgman, MI 49106, (616) 465-6771. Grape vines, raspberries, blackberries and dewberries,

- strawberries, blueberries, currants and gooseberries, elderberries, perennial vegetables. CAT FREE, WHLS.
- J63T Ramps - Box 571, Richwood, WV 26261, (304) 846-4235. Specializes in ramps (*Allium tricoccum*), including seeds, bulbs and ramp food products. Also cookbooks and post cards. *Sells the following products: pickled ramps, ramp salt, and ramp jelly.* CAT FREE, RET, PC.
- J65 Rancho Nuez Nursery - 1378 Willow Glen Rd., Fallbrook, CA 92028, (760) 728-6407. Seedling and grafted macadamia nut trees, in shell macadamia nuts, macadamia confections, custom grafting service, husking and cracking services. Also known as Cooper's Nut House. *Sells the following products: both raw and roasted shelled macadamia nuts, chocolate covered macadamias, macadamia nut brittle.* CAT FREE, R & W, PC/CC.
- J66 Rasland Farm - NC 82 at US 13, Godwin, NC 28344, (910) 567-2705. Herb plants, scented geraniums, everlasting flowers, herbal products. CAT \$2, R & W, PC/CC, OVER, M.O. \$20.
- J66M G.B. Ratto International Grocers - 821 Washington St., Oakland, CA 94607, (510) 832-6503. International specialty food items. Established in 1897. *Sells the following products: pickled caperberries, filet powder, tapioca flour, cassava meal, candied angelica, shredded celery root, Amaretti di Sarrano, pickled Golden Greek peppers, pear vinegar, canned Seville oranges, horehound candv. and violet candv.* CAT (CALL FOR PRICES), RET, PC/CC, OVER, M.O. \$75.
- J68 Steve Ray's Bamboo Gardens - 250 Cedar Cliff Rd., Springville, AL 35146, (205) 594-3438 (no telephone orders). Specializes in cold-hardy bamboos. CAT \$3, RET, PC, M.O. \$20.
- J70D Red Barn - 203 Encinal Dr., Red Bluff, CA 96080, (916) 384-0118. Dried fruits and nuts, honey, gift boxes. *Sells the following products: star thistle honey.* CAT FREE, RET, PC/CC.
- J71 Red's Rhodies - 15920 S.W. Oberst Lane, Sherwood, OR 97140, (503) 625-6331. Large selection of hardy orchids. Also rare bulbs. CAT \$.50, R & W, PC, OVER.
- J73 Redwood City Seed Company - P.O. Box 361, Redwood City, CA 94064, (415) 325-7333 (no telephone orders). Seeds of unusual and heirloom vegetables, herbs, useful plants from around the world. Specializes in hot peppers. The original alternative seed company. *Sells the following products: Habanero pepper sauces and powder, and chipotle peppers.* CAT FREE, R & W, PC/OC, OVER.
- J73M Reed Bros. Qtrus - P.O. Box 1863, Dundee, FL 33848, (941) 439-1916. Registered and certified citrus seed. CAT FREE, WHLS TO THE PUBLIC, PC, OVER.
- J74 Reed's Seeds - 3334 N.Y.S. Rt. 215, Cortland, NY 13045-9440, (607) 753-9095. Specializes in hybrid cabbage, broccoli, cauliflower and brussels sprouts. CAT FREE, WHLS, OVER.
- J75 Reflective Gardens Nursery - 24329 N.E. Snow Hill Lane, Poulsbo, WA 98370, (360) 598-4649. Specializes in perennials and alpine, including rare species collected in remote areas of Asia and Europe. CAT \$2, RET, PC, M.O. \$20.
- J76 Renaissance Acres Organic Herb Farm - 4450 Valentine Rd., Whitmore Lake, MI 48189, (313) 449-8336 (no telephone orders). Herb seeds and plants, Chinese medicinals, heirloom hot peppers, scented geraniums. CAT \$3, RET, PC.
- J80 Rice Seed Farms - 2348 No. 5th St., Fremont, OH 43420, (419) 332-5571. Commercial grower of farm seeds. CAT FREE, WHLS, OVER.
- J80M RiceTec, Inc - P.O. Box 1305, Alvin, TX 77512, 1-800-993-7423. Specializes in aromatic rices, available by mail order in gift-packs only. Originators of Texmati rice. CAT FREE, R & W, PC/CC.
- J81G Richardson's Seaside Banana Garden - 6823 Santa Barbara Ave., La Conchita, CA 93001, 1-800-993-7423. Wide selection of banana corms for planting, including many rarities. Also fresh fruit in season for eating. CAT FREE, RET, PC.
- J81M Richland - P.O. Box 9008-284, Solvang, CA 93464, (805) 686-0307. Specializes in exotic plants. Also award winning environmental services. *Sells the following products: California live oak BBO chips.* CAT FREE, R & W, PC/CC, OVER.
- J82 Richters - P.O. Box 26, Goodwood, ON L0C 1A0, Canada, (905) 640-6677. Extensive listing of herb plants and seeds, gourmet and ethnic vegetable seed, everlastings, wild flowers, alpine flowers, herbal products. *Sells the following products: Swedish bitters.* CAT FREE, R & W, PC/CC, OVER.
- J83 Rider Nursery - Rt. 2, Box 78, Farmington, IA 52626, (319) 878-3313. Fruit trees, berry plants, grape vines, perennial vegetables, roses. CAT FREE, R & W, PC/CC.
- J83D Rife Vineyards - 154 Moonlight Drive, Plano, TX 75094, (972) 422-7658. Grape products, gift baskets. *Sells the following products: Champanel grape juice, jelly and svrup.* CAT FREE, R & W, PC.
- J83U Rising Tide Sea Vegetables - P.O. Box 1914, Mendocino, CA 95460, (707) 964-5663. Sea vegetables collected from the pristine waters of northern California, gourmet sea vegetable foods. *Sells the following products: toasted sea palm fronds, and nori gomasio.* CAT FREE, R & W, PC.
- J84 Rispens Seeds, Inc - P.O. Box 5, 3332 Ridge Rd., Lansing, IL 60438, (708) 474-0241. Complete line of vegetable seeds. CAT FREE, R & W, PC/CC.
- J85T Riverview Farm - 35218 S.E. David Powell Rd., Fall City, WA 98024, (425) 391-0393. Fresh-cut, certified organically grown culinary herbs. CAT (CALL FOR PRICES), R & W, PC, CANADA ONLY, M.O. \$100.
- J86 Roadrunner Tree Farm - P.O. Box 1900, Borrego Springs, CA 92004, 1-800-362-9032. Specializes in drought tolerant trees and ornamentals for the Southwest. CAT FREE, WHLS.
- J86M The Roasting Man - 82-5989 Napoopoo Rd., Captain Cook, HI 96704, 1-800-826-5713. Pure Kona coffee, purchased only from selected local farmers to ensure quality. *Sells the following products: Kona coffee, decaf Kona coffee, flavored Kona coffee.* CAT FREE, R & W, PC/CC, OVER.
- J88 Clyde Robin Seed Co - P.O. Box 2366, Castro Valley, CA 94546, (510) 785-0425. Wild flower seeds, wild flower seed mixes. CAT \$2, R & W, PC/CC, OVER.
- J89 Robison Ranch - P.O. Box 1018, Walla Walla, WA 99362, (509) 525-6589. Onions, shallots and garlic, both for planting and eating. Specializes in Walla Walla sweet onions. *Sells the following products: batv Walla Walla onions.* CAT FREE, R & W, PC.
- J89M Roblyn Eyrie Farm - R.R. #3, Perth, ON K7H 3C5, Canada, (613) 267-9732. Hardy, disease resistant fruit

- trees and deciduous ornamentals. CAT FREE, RET, PC, CANADA ONLY.
- J93 Rocky Meadow Orchard & Nursery - 360 Rocky Meadow Rd. N.W., New Salisbury, IN 47161, (812) 347-2213. Full line fruit tree nursery specializing in superior flavored cultivars for both the home and commercial orchard. Also supplies rootstocks for grafting and maintains and extensive scion orchard for custom propagation. CAT \$1, R & W, PC.
- J93T Rocky Mountain Rare Plants - 1706 Deerpath Rd., Franktown, CO 80116-9462, (303) 660-6498 (fax). Specializes in habitat-collected seed of alpiners native to western North America. CAT FREE, RET, PC/CC, OVER.
- J97M P.L. Rohrer & Bro., Inc - P.O. Box 25, Smoketown, PA 17576, (717) 299-2571. Vegetable, herb and flower seeds, grains, perennial vegetables, berry plants, organically grown seeds, green manure and cover crop seeds. CAT FREE, R & W, PC/CC.
- J98 Lon J. Rombough - P.O. Box 365, Aurora, OR 97002-0365, (503) 678-1410 (no telephone orders). Extensive listing of table and wine grapes, both American and vinifera, adapted to a wide range of climates. More than 125 varieties available as scion wood or custom grown vines. Also does consulting and research on uncommon fruits, nuts, vegetables and other edible plants. Previously known as Lon's Oregon Grapes. CAT SASE, R & W, PC, OVER, M.O. 5 OF EACH.
- J99D Ron's Rare Plants & Seeds - 415 Chappel, Calumet City, IL 60409-2122, (708) 862-1993. Seeds of rare plants, mostly perennials. CAT FREE, RET, PC.
- J99G Ronniger's Seed Potatoes - P.O. Box 307, Ellensburg, WA 98926, 1-800-846-6178. Small, family-operated farm supplying organic seed potatoes to farmers, gardeners and hobbyists, over 70 cultivars. Also garlic, potato onions, sweet potatoes, cover crop seeds, perennial vegetables, and blueberries. *Sells the following products: Spanish Roia garlic powder, Elephant garlic powder, and dried Elephant garlic slices.* CAT FREE, R & W, PC/CC, M.O. \$20.
- K2 The Rosemary House - 120 South Market St., Mechanicsburg, PA 17055, (717) 697-5111. Herb plants and seeds, scented geraniums, botanicals, herbal products. *Sells the following products: Norfolk Punch, vanilla sugar, mustard and cress kits, Tellicherrv and Muntok peppers, and candied anise seed.* CAT \$3, R & W, PC/CC, OVER (SEEDS ONLY), M.O. \$75 WHLS.
- K5M Roswell Seed Cot - P.O. Box 725, Roswell, NM 88202-0725, (505) 622-7701. Specializes in vegetables and flowers adapted to the Southwestern United States. CAT FREE, RET, PC/CC, M.O. \$5.
- K7M Royal Hawaiian Sea Farms - P.O. Box 3167, Kailua Kona, HI 96745, (808) 329-5468. Large selection of species and strains of fresh ogo nori seaweed, Gracilaria. CAT FREE, R & W, PC/CC, CANAEA ONLY, M.O. 10 LBS.
- K8 Royal Palm Enterprises - P.O. Box 645, Kurtistown, HI 96760, (808) 966-7169. Tropical fruit trees and seeds, spice plants, gingers, tropical ornamentals. CAT FREE, R & W, PC.
- K10 Rupp Seeds, Inc. - 17919 County Road B, Wauseon, OH 43567, 1-800-507-1444. Vegetable, herb and flower seeds for the commercial grower. CAT FREE, R & W, PC/CC.
- K15 S & S Seeds - P.O. Box 1275, Carpinteria, CA 93014, (805) 684-0436. Seeds of wild flowers, native and naturalized grasses, trees and shrubs for reclamation and landscape. Subsidiary of Mistletoe Sales. CAT FREE, WHLS, OVER, M.O. \$100.
- K16M Sakata Seed America, Inc. - P.O. Box 880, Morgan Hill, CA 95037, (408) 778-7758. Vegetable and flower seeds. CAT FREE, WHLS, PC, OVER.
- K17 Sakuma Brothers Farms, Inc - P.O. Box 427, Burlington, WA 98233, (360) 757-6611. Specializes in raspberries and blackberries. CAT FREE, R & W, PC.
- K17J Salsas, Etc! - P.O. Box 611535, San Jose, CA 95161, 1-800-407-2572. Specializes in hot and spicy foods. *Sells the following products: Peri-Peri hot sauce, Pickapeppa sauce, Rica Red Habanero sauce, pickled Datil peppers, Datil pepper, hOt s@pge, Cholul@hpt gaucp, Mayi onion saiga and L.BBQ.sau.ee, kjawe, BBO ggugp, Chile Arbol ristras and wreaths, roghan iosh sauce, Massaman currv paste, Thai green gurry pg^ Thai phjlg pgste with holy basil, bottled rocoto peppers, rocoto pepper salsa, Ail Amarillo sauce, Ah Panca sauce, Sierra Nevada Chileno peppers, pickled Ternn peppers, Chili ftqufn jelly, Chile de Arbol infused oil and vinegar, and Meco. Mora and Morita peppers.* CAT FREE, RET, PC/CC, OVER.
- K17M Salt Spring Seeds - P.O. Box 444, Ganges, BC V8K 2W1, Canada, 1-800-407-2572. Small seed company specializing in organically grown, high-protein vegetables and grains adapted to Canadian climates. Good selection of beans, peas, heirloom grains, and garlic. CAT \$2, RET, PC, OVER.
- K18M San Francisco Herb & Natural Food Co./Nature's Herb Co. - 47444 Kato Road, Fremont, CA 94538, 1-800-227-2830. Large selection of herbs and spices, botanicals, teas, dried fruits and vegetables, specialty legumes, green foods. *Sells the following products: Morita peppers, cream of tartar powder, roasted dandelion roots, dandelion root teabags, Cape jasmine fruits, guar gum, seedless rose hips, rose hips teabags, lvchee tea and genmai-cha.* CAT FREE, R & W, PC/CC, OVER, M.O. \$50.00.
- K19 San Juan Agricultural Cooperative - Ohkay T'owa Gardens, P.O. Box 1188, San Juan Pueblo, NM 87566, (505) 747-3146. Farm and food processing enterprise owned by members of the San Juan Pueblo tribe. *Sells the following products: sweet-corn chicos, apple wood-smoked dried tomatoes.* CAT FREE, R & W, PC.
- K20M Sand Hill Preservation Center - 1878 230th St., Calamus, LA 52729, (319) 246-2299. Heirloom vegetable seeds, sweet potato plants. Specializes in reintroducing varieties previously offered by the old Oscar Will and Gill Brothers Seed Companies. CAT FREE, RET, PC, OVER.
- K22 Sandy Mush Herb Nursery - 316 Surret Cove Rd., Leicester, NC 28748-5517, (828) 683-2014. Extensive listing of herb plants and seeds, scented geraniums, perennial vegetables, ornamental grasses, everlastings. CAT \$4, RET, PC/CC.
- K23 Santa Barbara Heirloom Nuisery - P.O. Box 4235, Santa Barbara, CA 93140, (805) 968-5444. Specializes in certified organic seedlings of heirloom vegetables, herbs and flowers. CAT \$2 REFUNDABLE, R & W, PC/CC, OVER (SEEDS ONLY), M.O. 6 SEEDLINGS.
- K26M Sargent-Welch - P.O. Box 5229, Buffalo Grove, IL 60089, 1-800-727-4368. Complete selection of biological supplies, including living cultures of algae, fungi and bacteria. Also known as VWR Scientific Products. CAT FREE, R & W, PC/CC, OVER.

- K27M Saunders Seed Co., Inc - P.O. Box 98, Tipp City, OH 45371, (937) 667-2313. Vegetable, herb and flower seeds. Specializes in bulk seed at retail prices. CAT FREE, R & W, PC/CC.
- K27T The Sausage Maker - 1500 Clinton St., Bldg. 123, Buffalo, NY 14206, 1-888-490-8525. Complete selection of sausage making, smoking and meat curing supplies. *Sells the following product/s: hickory sawdust, liquid hickory smoke, and cracked fennel seeds.* CAT FREE, RET, PC/CC, OVER.
- K28 Savage Nursery Center - 6255 Beeisheba Hwy., McMinnville, TN 37110, (615) 668-3781 or 668-8902. Fruit and nut trees, berry plants, grape vines, shade trees, evergreens, flowering shrubs. Previously known as Savage Farms Nurseries. CAT FREE, RET, PC/CC.
- K29M Sazerac Company, Inc - P.O. Box 52821, New Orleans, LA 70152-2821, (504) 831-9450. Gourmet specialty foods company established in 1850. *Sells the following product/s: Peychaud's bitters, grenadine svrup.* CAT FREE, R & W, PC/CC, OVER.
- K32M Schaller & Webber - 22-35 46th Street, Long Island City, NY 11105-1305, 1-800-847-4115. Extensive selection of sausages and processed meats, specialty smoked meats, gourmet foods from Germany and Eastern Europe. Gold Medal winner at International exhibitions in Holland, Austria and Germany. *Sells the following product/s: Westphalian ham, sugar beet svrup, Mirabelles in svrup, and acacia honey.* CAT FREE, R & W, PC, OVER, M.O. \$30.
- K33M John Scheepers, Inc. - 23 Tulip Dr., Bantam, CT 06750, (860) 567-0838. Specializes in bulbs and garden perennials. CAT FREE, RET, PC/CC.
- K34 Scherer & Sons - 104 Waterside Rd., Northport, NY 11768, (516) 261-7432. Large selection of water lilies, lotus and other aquatic and bog plants. CAT \$1, RET, PC/CC.
- K36 Schlabach's Nursery - 3901 County Rd. 135, Millersburg, OH 44654, (516) 261-7432. Small family-operated nursery specializing in fruit trees for serious home orchardists and small growers. Offers custom grafting services. CAT FREE, R & W, PC.
- K37M J. Frank Schmidt & Son Ca - P.O. Box 189, Boring, OR 97009, 1-800-825-8202. Ornamental trees and shrubs, flowering crabapples, conifers. CAT FREE, WHLS, M.O. \$1,000.
- K370 School of Self-Reliance - P.O. Box 41834, Eagle Rock, CA 90041, (213) 255-9502. Specializes in epasote. Also conducts wild food and survival skills outings. Previously known as Survival Services. CAT FREE, R & W, PC/OC, OVER.
- K37P Schoonmaker/Lynn Enterprises - 4619 N.W. Barnes Rd., Portland, OR 97210, (503) 222-5435. Rare gourmet honeys from the Domaine de Donadei in the Provence region of southern France. *Sells the following product/s: sunflower, orange blossom, acacia, chestnut and lavender honevs.* CAT FREE, R & W, PC, OVER.
- K37T Schroeder's Popcorn - Rt. 1, 3519 North, 1400 East, Buhl, ID 83316, (208) 543-4470. Specializes in gourmet popping com, both for planting and eating. CAT FREE, R & W, PC.
- K38 F.W. Schumacher Co., Inc. - 36 Spring Hill Rd., Sandwich, MA 02563-1023, (508) 888-0659. Broad range of tree and shrub seed for nurserymen and foresters, including a selection of seed for fruit tree understock. CAT FREE, R & W, PC, OVER.
- K39M NickSciabica & Sons - P.O. Box 1246, Modesto, CA 95353-1246, 1-800-551-9612. Growers and producers of olives and olive products. Specializes in unrefined 100% varietal olive oils. Also vinegars, gift packs and other gourmet foods. *Sells the following product/s: Mission, Manzanillo, Sevillano, Ascolano, Barouni, Picholine, Lucques and Nevadillo varietal olive oils, Chardonnay and Cabernet wine vinegars.* CAT FREE, R & W, PC. M.O. 1 CASE.
- K41 Scott Bros. Nursery Ca - P.O. Box 581, McMinnville, TN 37111, 1-800-435-1142. Specializes in ground covers, perennials, and native ferns and wild flowers. CAT FREE, WHLS, M.O. 100 OF EACH.
- K43 Seabear Specialty Foods - P.O. Box 591, Anacortes, WA 98221, 1-800-645-3474. Smoked salmon and other Northwest specialties. *Sells the following product/s: cedar planks, and grapevine smoking wood.* CAT FREE, R & W, PC/CC, OVER.
- K46 Seatree Nurseries, Inc - P.O. Box 339, East Irvine, CA 92650, 1-800-800-9601. Ornamental trees and shrubs, palms, eucalyptus, conifers, shade trees. CAT FREE, WHLS.
- K46T Seed Dreams - P.O. Box 1476, Santa Cruz, CA 95061, (408) 458-9252. Small family farm that grows and sells open-pollinated heirloom vegetables and grains. CAT \$2 REFUNDABLE, R & W, PC.
- K47 Seed Savers Exchange - 3076 North Winn Rd., Decorah, IA 52101, (319) 382-5990. Heirloom vegetable and flower seeds from Eastern Europe and the former Soviet Union, plus favorites from the Seed Savers Exchange's collection at Heritage Farm. CAT FREE, RET, PC/CC, OVER.
- K47G Seed Service - 695 Joaquin Ave., San Leandro, CA 94577, (510) 352-4291. Extensive listing of palm and cycad seed including many rare species. CAT FREE, RET, PC, OVER.
- K47M TheSeed Shop - P.O. Box 533, Terry, MT 59349, (406) 637-5865. Seeds of cactus and succulent plants. CAT \$2, RET, PC.
- K49M Seeds Blum - HC33, Idaho City Stage, Boise, ID 83706, 1-800-528-3658. Specializes in heirloom vegetables and flowers, listing over 1,000 varieties. Also gourmet, ethnic and regional specialties, edible flowers, herbs, perennial vegetables, and collections such as butterfly gardens and hummingbird gardens. *Sells the following product/s: light amber sweet sorghum svrup, and Hopi Blue cornmeal.* CAT \$3, RET, PC, OVER.
- K490 Seeds for the South - 410 Whaley Pond Rd., Graniteville, SC 29829, 1-800-528-3658. Small family owned business offering vegetable, herb and flower seeds for Southern gardeners. CAT FREE, RET, PC.
- K49Q Seeds of Alaska - P.O. Box 3127, Kenai, AK 99611, (907) 262-3755. Small, single proprietor company specializing in Alaskan wild flower seeds. Previously known as Baldwin Seed Co. of Alaska. CAT FREE, R & W, PC.
- K49T Seeds of Change - P.O. Box 15700, Santa Fe, NM 87506, 1-888-762-7333. Large selection of edible plants. Specializes in traditional open-pollinated vegetable seeds. Also does contract growing of commercial quantities. All seeds are organically grown. CAT FREE, R & W, PC/CC, OVER.
- K49Z Seeds West Garden Seeds - 317 14th St. N.W., Albuquerque, NM 87104, (505) 843-9713. Heirloom and gourmet vegetable seeds, culinary herbs, native wild flowers. Selected for their ability to perform well in short

- season, high elevation areas of the West. CAT \$2, R & W, PC/CC, OVER.
- K50 Seedway, Inc. - 1225 Zeager Rd., Elizabethtown, PA 17022, 1-800-952-7333. Vegetable, herb and flower seeds for the home gardener or commercial grower. Distributor for Bejo Seeds of Holland. Subsidiary of Agway Inc. CAT FREE, R & W, PC/CC, OVER.
- K53 Select Seeds - 180 Stickney Hill Rd., Union, CT 06076-4617, (860) 684-9310. Seeds and plants of old-fashioned flowers, both annual and perennial. CAT \$1, R & W, PC/CC, CANADA ONLY.
- K53M Seminole Springs Herb Farm - 34935 Huff Rd., Eustis, FL 32736, (352) 357-2643. Small family-run herb farm. CAT FREE, RET, PC.
- K54 Semplex of U.S.A. - 4171 Lyndale Ave. North, Minneapolis, MN 55412, 1-888-255-7997. Complete selection of home wine and beer making supplies. *Sells the following product/s: Benedictine. Chartreuse. Drambuie. Creme de Prunelle. Galliano. Danziger Goldwasser. Grand Marnier. Cointreau. Millefiori. Verveine and Frangelico liqueur extracts, liquid hop extract, hop oil, white oak barrels and chips, sunflower, orange blossom and basswood honeys.* CAT FREE, R & W, PC/CC, OVER.
- K55 Severtson Farms - 4000 Highway 78 North, Wylie, TX 75098, (972) 442-6846. Specializes in Doyle Thornless blackberries. CAT FREE, RET, PC.
- K57 Shady Acres Herb Farm - 7815 Highway 212, Chaska, MN 55318, (612) 446-3391. Herb plants, herbal products, wildflowers, gourmet and heirloom vegetable plants. CAT \$2, RET, PC/CC, M.O. \$20.
- K60 Shahan Brothers Nurseries - P.O. Box 876, Tullahoma, TN 37388, (931) 455-3297. Evergreens, shade and ornamental trees. CAT FREE, WHLS.
- K60D Shahrzad International Foods - 215 Copeland Rd. #12, Atlanta, GA 30342, (404) 843-0549. Specializes in Persian foods. *Sells the following product/s: zereshk, advieh, and watermelon seeds with golpar.* CAT (CALL FOR PRICES), R & W, PC/CC, M.O. \$20.
- K60M Shamrock Seed Co. - 3 Harris Place, Salinas, CA 93901, (408) 771-1500. Niche oriented seed company specializing in carrot, melon, onion and selected brassicas tailored toward specific regions and planting slots. CAT FREE, WHLS, M.O. \$250.
- K62 Sharp Bros. Seed Co. - P.O. Box 140, Healy, KS 67850, (316) 398-2231. Grains, legumes, native prairie grasses, wild flowers and forbs including individual species and mixes. CAT FREE, R & W, PC.
- K63G Sheffield's Seed Co. - 273 Auburn Road, Route 34, Locke, NY 13092, (315) 497-1058. Large selection of tree and shrub seed. Also vegetables, herbs and flowers. CAT FREE, R & W, PC/CC, OVER, M.O. 2 GRAMS EACH SPECIES.
- K63M Shein's Cactus - 3360 Drew St., Marina, CA 93933, (408) 384-7765. Cactus and succulent plants grown from seed or cuttings, none collected from the wild. CAT \$1 DEDUCTIBLE, RET, PC, M.O. \$20.
- K64 Shelmerdine Nurseries - 7800 Roblin Blvd., Headingley, MB R4H 1B6, Canada, (204) 895-7203. Complete line of prairie hardy nursery stock including fruit and nut trees, berry plants, grape vines, perennial vegetables, herbs, shade trees, flowering shrubs. CAT FREE, R & W, PC/CC/OC, OVER.
- K66 Shepherd's Garden Seeds - 30 Irene St., Torrington, CT 06790, (860) 482-3638. Specialty vegetables chosen for flavor and fresh eating quality, baby vegetables, culinary herbs, edible flowers, everlastings, old-fashioned garden flowers. CAT FREE, R & W, PC/CC, CANADA ONLY.
- K66M Sherard Plantation - P.O. Box 75, Sherard, MS 38669, 1-800-647-5518. In shell pecans, shelled pecans, gourmet pecan foods, holiday gift items. Established in 1874. CAT FREE, RET, PC/CC.
- K67 Sherwood's Greenhouses - P.O. Box 6, Sibley, LA 71073, 1-800-647-5518. Single proprietor nursery offering unusual fruit and nut trees not commonly found in large nursery listings. CAT SASE, RET, PC.
- K68 Shields Date Gardens - 80-225 Highway 111, Indio, CA 92201, 1-800-414-2555. Dates and date products, citrus fruit, dried fruits and nuts, gift baskets. CAT \$.25, R & W, PC/CC, OVER.
- K71 R.H. Shumway's - P.O. Box 1, Graniteville, SC 29829, 1-888-437-2733. One of America's oldest mail order seed companies, established in 1870. Specializes in traditional open-pollinated vegetables and flowers. Also berry plants, grape vines, perennial vegetables. CAT FREE, R & W, PC/CC, OVER.
- K73 Siegers Seed Co. - 8265 Felch St., Zeeland, MI 49464-9503, 1-800-962-4999. Complete line of hybrid and open-pollinated vegetable seeds for commercial growers. CAT FREE, R & W, PC/CC, OVER.
- K73M Sierra Gold Nurseries - 5320 Garden Highway, Yuba City, CA 95991-9499, 1-800-243-4653. Commercial grower of deciduous fruit and nut trees for orchardists and retail nurseries. CAT FREE, WHLS, PC, OVER, M.O. 10 OF EACH.
- K74G SIGCO Sun Products - P.O. Box 331, Breckenridge, MN 56520, 1-800-654-4145. Breeders and distributors of specialty grains for the food ingredients industry. Specializes in high oleic, long shelf life sunflowers. CAT FREE, WHLS.
- K74J Siletz Tribal Smothouse - P.O. Box 1004, Depoe Bay, OR 97341, 1-800-828-4269. Specializes in foods from the Pacific Northwest. *Sells the following product/s: alder-smoked meats and seafood.* CAT FREE, RET, PC/CC.
- K74M Sill House Bakery - Cox Farm, 40 Sill Lane, Old Lyme, CT 06371, (203) 434-9501. Specializes in organic grain essence bread products. *Sells the following product/s: wheat and rye essence breads.* CAT FREE, RET, PC.
- K75 Silvaseed Company - P.O. Box 118, Rcy, WA 98580, (253) 843-2246. Specializes in conifer tree seed and seedlings from the Pacific Northwest. Also broadleaf trees and shrubs and wildflowers. CAT FREE, WHLS, PC, OVER, M.O. \$50.
- K75M Silver Springs Nursery - HC 62, Box 86, Moyie Springs, ID 83845, (208) 267-5753. Specializes in native ground covers. Also native shrub and tree species. CAT FREE, WHLS.
- K75T Simmons Plant Farm - 11542 North Highway 71, Mountainburg, AK 72946, (501) 369-2345. Berries, grapes, perennial vegetables. CAT FREE, R & W, PC.
- K75Z Simonian Farms - 2629 South Clevis Ave., Fresno, CA 93725, (209) 237-2294. Dried fruits and nuts, gift packs. Specializes in jumbo raisins. Established in 1901. *Sells the following product/s: jumbo natural and jumbo golden Flame Seedless raisins, and. jumbo natural and jumbo*

- golden ThQ.mpSQn Seeding raising, CAT FREE, R & W, L3J PC/CC.
- K76 Simpson Nuiseries - P.O. Box 160, Monticello, FL 32345, 1-800-874-3571. Large selection of fruit and nut trees, grape vines, ornamental trees and shrubs. CAT FREE, WHLS.
- K77 Simpson Nursery Ca - P.O. Box 2065, Vincennes, IN 47591, (812) 882-2441. Flowering crabapples, hawthorn, flowering pears, deciduous holly. CAT FREE, WHLS, PC, OVER.
- K79 Siskiyou Rare Plant Nursery - 2825 Cummings Rd., Medford, OR 97501, (541) 772-6846. Over 1,000 varieties of handy, cold climate plants for the rock garden and woodland garden. Specializes in alpines. CAT \$3, RET, PC/CC, CANADA ONLY.
- K81 Skinner's Nuisery - P.O. Box 220, Roblin, MB R0L 1P0, Canada, (204) 564-2336. Native fruits, ornamental trees and shrubs, hardy roses. CAT FREE, R & W, PC, U.S. ONLY.
- K85 Sleepy Hollow Herb Farm - 568 Jack Black Rd., Lancaster, KY 40444-9306, 1-800-726-1215. Organically grown herb plants, scented geraniums. CAT FREE, RET, PC/OC, CANADA ONLY.
- K85M Slocum Water Gardens - 1101 Cypress Gardens Blvd., Winter Haven, FL 33884-1932, (941) 293-7151. Water lilies, lotus, Chinese water chestnut, other aquatic and bog plants. CAT \$3, R & W, PC/CC, OVER.
- K88T Smith Nuisery - 270 West Briggs Ave., Lathrop, CA 95330, (209) 982-1276. Fruit and nut trees, registered and certified rootstocks. Specializes in cherry trees. CAT FREE, R & W, PC.
- K89 Smith Nursery Ca - P.O. Bex 515, Charles City, IA 50616, (515) 228-3239. Fruit and nut trees, berry plants, grape vines, perennial vegetables, ornamental trees and shrubs. Also seed of native trees and shrubs. CAT FREE, WHLS, PC, OVER.
- K94 J.P. Snapp & Son - 184 Snapp Bridge Rd., Limestone, TN 37681, (423) 257-6341. Contract grower of field corn seed. CAT FREE, WHLS, PC, OVER.
- K95M Snow Pbn'd Farm Supply - R.R. 2, Box 4075, Belgrade, ME 04917-9441, 1-800-768-9998. Certified seed potatoes, organic vegetable seeds, cover crop and green manure seeds. CAT FREE, RET, PC/CC, OVER.
- K96M Joe Soghomonian, Inc - 8624 South Chestnut Ave., Fresno, CA 93725, (209) 834-2772. Certified organically grown grapes. Also known as Three Sisters. CAT FREE, R & W, PC.
- K97 Sohn's Forest Mushrooms - 610 South Main St., Westfield, WI 53964, (608) 296-2456. Spawn of shiitake and oyster mushrooms, mushroom growing supplies. CAT FREE, RET, PC/CC, OVER.
- LI Sonoma Antique Apple Nuisery - 4395 Westside Rd., Healdsburg, CA 95448, (707) 433-6420. Antique apples and pears, cider apples, apple and pear scionwood for grafting, espaliered apples and pears, other fruit and nut trees, berry plants. Certified organically grown. CAT FREE, R & W, PC/CC, CANADA ONLY, M.O. \$15.
- LIM Sonoma Grapevines - 1919 Dennis Lane, Santa Rosa, CA 95403, (707) 542-5510. Specializes in grafted vinifera grape vines, both table and wine. Also offers disease resistant grape rootstocks, and scionwood. CAT FREE, R & W, PC, OVER.
- Sourcepoint Organic Seeds - 1647 2725 Road, Cedaredge, CO 81413, (707) 542-5510. Heirloom and traditional, open-pollinated seeds of native peoples and cultures from around the world, including cereal grains, legumes, vegetables, herbs, flowers, trees and shrubs. All organically grown or wildcrafted. *Sells the following product/s: mesquite meal and mesouite pinole.* CAT \$3, RET, PC, OVER.
- L3M Sourdoughs International, Inc - P.O. Box 670, Cascade, ID 83611, 1-800-888-9567. Offers eight authentic sourdough cultures discovered in the Middle East, Europe and North America. Each culture has different wild yeast and lactobacilli producing unique flavors and textures of bread. CAT FREE, RET, PC/CC.
- L4 South Carolina Foundation Seeds - 1162 Cherry Road, Box 349952, Clemson, SC 29634-9952, (864) 656-2520 (no telephone orders). Supplies Foundation quality seeds and propagating material of cultivars developed by plant breeders at state agriculture experiment stations and by the USDA. CAT \$1 REFUNDABLE, RET, PC.
- L7M Southern Exposure Seed Exchange - P.O. Box 170, Earlsyville, VA 22936, (804) 973-4703. Open-pollinated, heirloom, and traditional cultivars of vegetables, flowers and herbs adapted to the Mid-Atlantic and Southern states. Specializes in rare perennial multiplier onions, topset onions, and garlic. CAT \$2, R & W, PC/CC, CANADA ONLY.
- L8 Southern Gold Honey Co. - 3015 Brown Rd., Vidor, TX 77662, 1-800-899-2494. Specializes in Texas honeys. Also gift containers and honey foods. *Sells the following product/s: Chinese tallow tree honey.* CAT FREE, R & W, PC/CC, OVER.
- L10 Southern States Cooperative - P.O. Box 26234, Richmond, VA 23260, (804) 358-1005. Vegetable and herb seeds for southern gardeners. CAT FREE, WHLS.
- L11 Southern Sun Seeds - Box 1682, Escondido, CA 92033, (760) 749-0793. Small family-owned seed company specializing in non-hybrid, untreated vegetable, herb and flower seeds adapted to southern California growing conditions. CAT FREE, RET, PC, M.O. \$10.
- L12 Southmeadow Fruit Gardens - P.O. Box 211, Baroda, MI 49101, (616) 442-2411. Over 500 varieties of choice and unusual fruit trees for the connoisseur and home gardener, including apples, pears, peaches, plums, grapes, cherries, quinces and medlars. Incorporating Grootendorst Nurseries. CAT FREE, RET, PC, M.O. \$15.
- L13 Southwestern Native Seeds - Box 50503, Tucson, AZ 85703, (616) 442-2411. Seed of native wild flowers, trees, and shrubs from the deserts, tropics, and mountains of the American West and Mexico. CAT \$2, RET, PC, OVER, M.O. 4 PACKETS.
- L13M Sow Organic Seeds - 1130 Tetherow Road, Williams, OR 97544, (541) 846-7173. Organically grown vegetable, herb and flower seeds. Previously known as Southern Oregon Organics. CAT FREE, RET, PC, OVER.
- L13P The Spanish Table - 1427 Western Ave., Seattle, WA 98101, (206) 682-2827. Gourmet foods and wines imported from Spain and Portugal. *Sells the following product/s: horchata de chufa. Cabrales cheese. turron. Queen olives. Farga Aragon olive paste (pate). Arbequina olive oil. Pimenton de la Vera. stuffed Piquillo peppers. Serra cheese. Piri-Piri hot sauce. Cava. jamon serrano. g.^na.^dg.^kmQ.^r.^and.^ctori.^?Q.^T* CAT FREE, R & W, PC/CC.
- L14G Special Foods - 9207 Shotgun Court, Spriigfield, VA 22153, (703) 644-0991. Large selection of unique



- non-allergenic foods. Specializes in chemical free and mold free products. *Sells the following product/s:* flours, pastas, breads, cereals, pancake mixes, tortillas, cookies, crackers, imitation nut butters and baking powders made from the following - Boniato sweet potato, malanga, yams, cassava, lotus, milo sorghum, amaranth, quinoa, Jerusalem artichoke, water chestnut, lentil and millet, star fruit jam and fruit leather, and sunflower, pecan, pumpkin seed, Brazil nut, macadamia nut, and hazelnut butters. CAT FREE, RET, PC/CC, OVER.
- L15G Specialty World Foods - 84 Montgomery St., Albany, NY 12207, 1-800-233-0193. Gourmet specialty foods including dried mushrooms and wood cooking planks. *Sells the following product/s:* cherry, hickory, maple, and oak pooking planks, and chgrry, maple, oak-apple, and honev locust smoking woods. CAT FREE, R & W, PC/CC, OVER.
- L15M Sphinx Date Ranch - 3039 North Scottsdale Rd., Scottsdale, AZ 85251, 1-800-482-3283. Dried fruits and nuts, jams and jellies, pure Arizona honey, gourmet gift baskets. *Sells the following product/s:* Kadota fig jam, prickly pear cactus iellv and candv. pomegranate iellv and mesquite honey. CAT FREE, RET, PC/CC.
- L16 The Spice House - 1031 North Old World Third St., Milwaukee, WI 53203, (414) 272-0977. Excellent selection of fresh bulk spices, herbs and seasonings, spice mixtures, gift boxes. *Sells the following product/s:* Chipotle Meco, Tung Hing cassia cinnamon, Tellicherry, Muntok and mignonette peppers, oriental mustard seeds, dried Super Sweet corn, cream of tartar, pomegranate molasses, hickory smoke powder, mesquite smoke powder, and za'tar. CAT FREE, R & W, PC/CC, OVER.
- L16M Spice Merchant - P.O. Box 524, Jackson Hole, WY 83001, 1-800-551-5999. Ethnic foods from China, Japan, India, Thailand and Vietnam, bulk herbs and spices. CAT FREE, RET, PC/CC, OVER.
- L17 Spices, etc - P.O. Box 5266, Charlottesville VA 22905-5266, 1-800-827-6373. Herbs and spices, seasoning blends, bulk teas, dried vegetables, botanicals, gourmet mushrooms. *Sells the following product/s:* whole and ground nutmeg, celery flakes, celery seed, mace blades, dried bell peppers, dried green beans, beet powder, magadamja nut, hazelnut, pistachio an<J passjonfruit flavorings, and Chili Peauin. Cascabel and Datil hot pepper sauces. CAT \$2, RET, PC/CC, OVER.
- L18 Ken M. Spooner Farms - 9710 SR 162 East, Puyallup, WA 98374-1814, (253) 845-5517. Certified strawberry and raspberry plants. CAT FREE, WHLS, PC/CC, OVER, M.O. 50 PLANTS.
- L21 Spring Hill Nurseries - P.O. Box 1758, Peoria, IL 61656, 1-800-582-8527. Bulbs, garden perennials, roses. CAT \$2.50, RET, PC/CC.
- L21P Spring Valley Nursery - 11096 Spring Valley Lane, Delaplane, VA 20144, (540) 364-3160. Specializes in antique apples. CAT FREE, RET, PC.
- L21T Spring Wind Herb Co. - 2325 Fourth St. #6, Berkeley, CA 94710, 1-800-588-4883. Specializes in Chinese Herbs. CAT FREE, R & W, PC/CC.
- L22 Springbrook Gardens Inc - P.O. Box 388, Mentor, OH 44061, 1-888-255-3059. Field grown, bareroot herb plants, garden perennials, ornamental grasses, ground covers. Subsidiary of Garden Place, Inc. CAT FREE, WHLS, PC/CC, CANAEA ONLY, M.O. 12 OF EACH.
- L24 The Sprout House - 17267 Sundance Dr., Ramona, CA 92065, 1-800-777-6887. Good collection of organic sprouting seeds and mixes. Also supplies for sprouting including their own unique inventions: the flaxseed sprout bag and the indoor vegetable kit. *Sells the following product/s:* fresh wheatgrass by the pound. CAT FREE, R & W, PC/CC, OVER.
- L24G Sprout Master - Bck 43, Site W, R.R. #3, Elmvale, ON L0L 1P0, Canada, (705) 322-2222. Sprouting seeds, dried grains and beans, kombucha, organic chocolate. *Sells the following product/s:* Wake Up. CAT FREE, R & W, PC/CC, OVER.
- L24M The Sproutpeople - 225 Main St., Grays Mills, WI 54631, (608) 735-4735. Large selection of organic sprouting seeds, sprouting supplies. Specializes in sprout mixes. CAT FREE, R & W, PC/CC, OVER.
- L25M Spruce Mountain Blueberries - P.O. Bex 68, West Rockport, ME 04865, (207) 236-3538. Fresh lowbush blueberries in season, blueberry products. *Sells the following product/s:* wild blueberry iam, svrup and vinegar. CAT FREE, R & W, PC.
- L26 Squaw Mountain Gardens - P.O. Box 946, Estacada, OR 97023, (503) 630-5458. Rock garden plants, including a large selection of sedums and sempervivums. CAT FREE, R & W, PC, OVER.
- L27M St. Lawrence Nurseries - 325 State Hwy. 345, Potsdam, NY 13676, (315) 265-6739. Fruit and nut trees selected for northern climates, to -50 degrees Fahrenheit. Specializes in antique apple trees and edible landscaping plants. CAT FREE, RET, PC, OVER.
- L33 Stark Brothers Nurseries & Orchards Ca - P.O. Box 10, Louisiana, MO 63353, 1-800-325-4180. Wide range of fruit and nut trees, berry plants, grape vines, kiwi, perennial vegetables, shade trees, flowering shrubs. One of the oldest mail order nurseries in America, established in 1816. CAT FREE, R & W, PC/CC.
- L33M Starr Organic Produce - P.O. Box 561502, Miami, FL 33256, 1-888-262-1242. Organically grown tree-ripened fruits and vegetables, including citrus, avocados, bananas, mangoes, and papayas. CAT FREE, R & W, PC/CC.
- L34 Starwest Botanicals - 11253 Trade Center Dr., Rancho Cordova, CA 95742, 1-800-800-4372. Importer, processor and supplier of a large selection of botanicals, culinary herbs and spices, teas, herbal products and food supplements. *Sells the following product/s:* cream of tartar, dried sour orange blossoms, Dacopa, herbal chews, peelu chewing gum, bergamot, caiuput, bav-rum, Eucalyptus, Balsam of Pgru, and rosgwopd essential oils, and apricot kernel, avocado, wheat germ and rice bran oils. CAT FREE, WHLS, PC, OVER, M.O. \$50.
- L35 Steele Plant Co. - Box 191, Gleason, TN 38229, (901) 648-5476. Family owned business specializing in sweet potatoes. Also offers plants of onions, cabbage, broccoli, cauliflower and brussels sprouts. CAT \$50, R & W, PC, M.O. 12 PLANTS.
- L35M The C.S. Steen Syrup Mill, Inc - P.O. Box 339, Abbeville, LA 70510, 1-800-725-1654. Sweeteners and vinegar made from sugar cane. *Sells the following product/s:* pure cane svrup, both light and dark molasses, and cane vinegar. CAT FREE, R & W, PC/CC, OVER.
- L36M F.H. Steinbart Co. - 234 S.E. 12th Avenue, Portland, OR 97214, 1-800-638-2897. Wine and brewing supplies, including Brewer's Garden line of specialty herbs and spices for the homebrewer. Founded in 1918. *Sells the*

following product/s: Curacao orange peel, sweet orange peel, seedless rose hips, dried elderberries, dried elderflowers, Belgian candi sugar, safrole-free sassafras extract, and birch bark extract. CAT FREE, RET, PC/CC, OVER.

- L41 Stock Seed Farms - 28008 Mill Rd., Murdock, NE 68407-2350, 1-800-759-1520. Seed of prairie grasses, field crops and wild flowers. CAT FREE, R & W, PC, OVER, M.O. \$10.
- L42 Stokes Seeds Inc - P.O. Box 548, Buffalo, NY 14240, (716) 695-6980. Growers and breeders of a complete line of vegetable, herb and flower seeds, ornamental grasses. Breeding program focuses on sweet corn, tomatoes, peppers and asparagus. United States branch of Stokes Seeds Ltd., Canada, which see. CAT FREE, R & W, PC/CC, OVER.
- Stokes Seeds Ltd. - P.O. Box 10, St. Catherines, ON L2R 6R6, Canada, (905) 688-4300.
- L43 Stokes Tropicals - P.O. Box 9868, New Iberia, LA 70562, 1-800-624-9706. Exotic tropical plants including fruiting and ornamental bananas, ginger, bromeliads, and plumerias. CAT \$4 REFUNDABLE, R & W, PC/CC, OVER, M.O. \$20.
- L46M Strawberry Time Farms - R.R. #2, Simcoe, ON N3Y 4K1, Canada, (519) 426-3099. Specializes in strawberry plants. CAT FREE, R & W, PC.
- L47 Stribling's Nurseries, Inc - P.O. Box 793, Merced, CA 95341, (209) 722-4106. Deciduous fruit and nut trees, berry plants, grape vines, shade trees, flowering shrubs. Founded in 1911. CAT FREE, WHLS, PC/OC, OVER.
- L47M Stringer's Orchard - P.O. Box 191, New Pine Creek, OR 97635, (916) 946-4112. Specializes in food products made from the Sierra plum. Sells the following product/s: Sierra plum wine, preserves, svruo. wine iellv and sauce. CAT FREE, R & W, PC/CC.
- L49 Stropkey Nurseries, Inc. - 455 Bowhall Rd., Painesville, OH 44077-5222, (440) 352-2813. Ornamental shrubs, shade trees, broad leaf evergreens. CAT FREE, WHLS, CC.
- L50D Sudden Elegance, Ltd. - 3724 Cedar Dr., Baltimore, MD 21207, (410) 944-5547. Offers a unique foolproof kit for home candying of edible flowers, herbs, and leaves. Also sells extra candying gel separately. CAT FREE, R & W, PC.
- L50G Sugar Tree Farms - P.O. Box 2030, Harlingen, TX 78551, 1-800-633-0572. Fresh Texas citrus, gourmet foods, gift baskets. CAT FREE, RET, PC/CC.
- L50M Sultan's Delight - P.O. Box 090302, Brooklyn, NY 11209, 1-800-852-5046. Specializes in Middle Eastern foods. Sells the following product/s: semolina, couscous, roasted chick peas, fowl medammes, shelled fava beans, green za'tar, za'tar with sumac, za'tar bread, dried eggplant skins, khishk, bulghur and kamh makshour wheats, squash, pumpkin and watermelon seeds, and mulberry, sour cherry, date, pomegranate and carob svrups. CAT \$1, R & W, PC/CC, M.O. \$20.
- L53 Sun Garden Growers - P.O. Box 190, Bard, CA 92222, 1-800-228-4690. Band Valley dates including some unusual varieties. Certified organic dates available on request. CAT FREE, R & W, PC/CC, OVER.
- L54 Sunburst Tropical Fruit Co. - 7113 Howard Road, Bokeelia, FL 33922, (941) 283-1200. Offers boxes and gift baskets of fresh tropical fruit in season, including citrus, mangoes, lychees, guavas, sapodillas and sugar apples. Also dried tropical fruits, preserves and chutneys. Sells the following product/s: Key Lime jelly, mango butter, green mango chutney, guava butter and jelly, papava butter, and carambola marmalade. CAT FREE, R & W, PC/CC.
- L54D Sundance Roasting Co - P.O. Box 1886, Sandpoint, ID 83864, (208) 265-2445. Specializes in grain coffees. Sells the following product/s: certified organic barley brew. CAT FREE, R & W, PC/CC.
- L55 Sunlight Gardens -174 Golden Lane, Andersonville, TN 37705, 1-800-272-7396. Wild flowers and ferns native to Eastern North America, traditional garden perennials. CAT \$3, R & W, PC/CC, M.O. \$15.
- L55G Sunny Caribbee Spice Co - P.O. Box 303237, St. Thomas, VI00803, (809) 494-2178. Specialty food items from the Caribbean area. Sells the following product/s: nutmeg iellv. CAT FREE, RET, PC/CC, OVER.
- L55J Sunny Lands Seeds (Semillas Solanas) - Box 385, Paradox, CO 81429, (970) 859-7248. Seeds of edible, medicinal and ornamental plants native to South America, especially Ecuador, and native plants of the Southwest (U.S.A.). CAT \$2 PLUS SASE, R & W, PC, OVER, M.O. \$10.
- L56 Sunnybrook Farms Nuisery - P.O. Box 6, Chesterland, OH 44026, (440) 729-7232. Herb plants, scented geraniums, garden perennials, ivies. Family owned business established in 1928. CAT \$2, RET, PC/CC, M.O. \$15.
- L56M Sunnyland Farms - Willson Road at Ffecan City, P.O. Box 8200, Alabai, GA 31706-8200, 1-800-999-2488. Dried fruits and nuts, gourmet foods. Specializes in pecans. Sells the following product/s: pecan meal, tiny Brazil nuts, mayhaw iellv. and gallberrv honey. CAT FREE, RET, PC/CC.
- L59 Sunrise Oriental Seed Co - P.O. Box 1960, Chesterfield, VA 23832, (804) 796-5796. One of the largest selections of oriental vegetable seeds in North America. CAT \$2, R & W, PC, CANADA ONLY, M.O. \$5.
- L59G Sunseeds - P.O. Box 2078, Morgan Hill, CA 95038, 1-800-733-9505. Commercial breeders and growers of a lull line of vegetable seeds. CAT FREE, WHLS, OVER.
- L59P Sunshine Farm & Gardens - Route 51D, Renick, WV 24966, (304) 497-3163. Rare and unusual flowering plants, trees, shrubs and bulbs for the discriminating gardener and collector. The proprietor, Barry Glick, founded the North American Plant Preservation Council. CAT FREE, R & W, PC, OVER.
- L60M Sunshine Gift Fruit Shippers - P.O. Box 8, Goulds, FL 33170, 1-800-932-6543. Fresh citrus and tomatoes, gourmet food products. Previously known as Coral Reef Gardens. CAT FREE, RET, PC/CC, OVER.
- L62M Sunshine State Tropicals - 6329 Alaska Ave., New Port Richey, FL 34653-4301, (813) 841-9618. Exotic tropical plants. CAT FREE, R & W, PC, CANADA ONLY.
- L66 Surry Gardens - P.O. Box 145, Rte. 172, Surry, ME 04684, (207) 667-4493. Large variety of garden perennials, herb plants, wild flowers, ornamental grasses. CAT FREE, R & W, PC/CC, M.O. \$25.
- L68 R.B. Swan & Son - 25 Prospect St., Brewer, ME 04412, (207) 989-3622. Gourmet Maine honeys and jams. Sells the following product/s: wild blueberry and wild raspberry honeys, creamed honeys and honey fruit spreads, wild blueberry jam. CAT FREE, R & W, PC/CC, M.O. \$20.

- L69 Swan Island Dahlias - P.O. Box 700, Canty, OR 97013, (503) 266-7711. Growers and hybridizers of dahlia. CAT \$3, R & W, PC/CC, OVER.
- L70 Swedberg Nursery - Box 418, Battle Lake, MN 56515, (218) 864-5526. Fruit and nut trees, berry plants, grape vines, hardy kiwi, perennial vegetables, shade trees, flowering shrubs, hardy native ferns and wild flowers. CAT FREE, R & W, PC/CC.
- L73 Sweet Oregon Apple Co. - 570 N.E. 53rd, Hillsboro, OR 97124, 1-800-336-7170. Specializes in pure, unpasteurized varietal apple juices. *Sells the following products: Cortland, Cox's Orang Pippin, Empire, gate, Opld'n PeliQQdg, Jonathan, Jonagold, King, ElStar, Mgltpegh, Mutsu, Fuii, Spartan and Esopus Spitzenburg apple juices.* CAT FREE, R & W, PC/CC, M.O. 1 CASE.
- L74M Sweetwater Lavender, Ltd. - 5653 South Thompson Rd., Langley, WA 98236, 1-800-884-9287. Large selection of lavender plants, about 75 varieties. Also lavender food products, lavender gift items, wildflower seed mixes. *Sells the following product/s: lavender honey, and lavender jellv.* CAT FREE, R & W, PC/CC.
- L75 Dean Swift Seed Co - P.O. Box B, Jaroso, CO 81138, (719) 672-3739. Specializes in source-identified seed of conifers, shrubs, and wild flowers native to the Western United States. CAT FREE, R & W, PC, M.O. 1 LB. OF EACH.
- L77 Sylvan Spawn Laboratory, Inc - West Hills Industrial Park, Kittanning, PA 16201, 1-800-323-4857. Large commercial supplier of button mushroom spawn. CAT FREE, WHLS.
- L77D Synergy Seeds - Confluence Nature Farm, P.O. Box 787, Somes Bar, CA 95568, (916) 321-3769. Small family farm which serves as a Bioregional Seed Bank for Northern California and environs. Offers organically grown heirloom vegetables, grains and herbs, unusual edible plants. CAT FREE, R & W, PC, M.O. \$5.
- L79 T & T Seeds Ltd. - Box 1710, Winnipeg, MB R3C 3P6, Canada, (204) 895-9964. Vegetable, herb and flower seeds, fruit and nut trees, berry plants, grape vines, shade trees, flowering shrubs. Specializes in varieties for cold, short season areas. CAT \$3, RET, PC/CC, U.S. ONLY (SEEDS).
- L79G Tainong Enterprises Co - P.O. Box 1053, Carlsbad, CA 92008, (760) 757-7679. Specializes in oriental vegetable seeds. CAT FREE, WHLS, PC.
- L79J Tait Farm Foods - R.R. 1, Box 329, Centre Hall, PA 16828, 1-800-787-2716. Fruit vinegars, preserves, pancake mixes. Specializes in fruit shrubs. *Sells the following product/s: raspberry shrub.* CAT FREE, RET, PC/CC.
- L87G The Teff Company - P.O. Box A, Caldwell, ID 83606, (208) 454-3330. Specializes in teff, the ancient grain of Ethiopia. *Sells the following product/s: whole grain teff and teff flour.* CAT FREE, R & W, PC, OVER, M.O. 25 LBS.
- L88D Ten Ren Tea and Ginseng Co. - 75 Mott St., Nov York, NY 10013, 1-800-292-2049. Large selection of Oriental teas, ginseng. *Sells the following product/s: Chrysanthemum, Longjing, jasmine, Osmanthus, Earl Grey, and lvchee teas.* CAT FREE, R & W, PC/CC.
- L88J Terra Edibles - Box 164, Foxboro, ON K0K 2B0, Canada, (613) 968-8238. Specializes in organically grown heirloom vegetable seeds. CAT FREE, RET, PC.
- L88M Terra Nova Gardening - P.O. Box 14149, Diamond Lake Station, Minneapolis, MN 55419, (612) 825-7770. Small nursery selling hardy ornamental plants, iris, daylilies, hostas and wild flowers. Previously known as Cooper's Garden. CAT \$2, RET, PC, OVER.
- L89 Territorial Seed Co - P.O. Box 157, Cottage Grove, OR 97424, (541) 942-9547. Specializes in vegetable cultivars that grow well in cool summers and mild, wet winters. Also sells seed of herbs, flowers and green manures. CAT FREE, RET, PC/CC, CANADA ONLY.
- L89C Territorial Seeds Canada - 206-8475 Ontario St., Vancouver, BC V5X 3E8, Canada, (604) 482-8800. Vegetable, herb and flower seeds. Canadian branch of Territorial Seed Co. CAT FREE, R & W, PC/CC.
- L89G Texas Foundation Seed Service - 11914 U.S. Highway 70, Vernon, TX 76384, (940) 552-6226. Distributors of Foundation quality vegetable and crop seeds developed by the Texas Agricultural Experiment Station plant breeders and other public supported plant breeders. CAT SASE, R & W, PC, OVER.
- L90 Texas Pecan Nursery Inc - P.O. Box 306, Chandler, TX 75758, (903) 849-6203. Fruit and nut trees, muscadines, bunch grapes, scionwood, shade trees, flowering shrubs. Specializes in Eastern and Western pecans. CAT FREE, R & W, PC, M.O. \$50.
- L90G Thai Grocery - 5014 N. Broadway, Chicago, IL 60640, (312) 561-5345. Specializes in Thai and Chinese foods. *Sells the following product/s: one hundred unities, liiy-rofit flpyr, fresh coriander xaaU wet tamarind» tapioca flour, pai-liang-ffri grass jelly, hsien-jfrHs'aQ grass jelly.» and canned vanang leaves.* CAT (CALL FOR PRICES), RET, PC.
- L90J Theatrum Botanicum - P.O. Box 288, Navarro, CA 95463, (707) 895-3886 (no telephone orders). Small rare plant nursery specializing in unusual medicinal and culinary herbs. Also exotic ornamentals. CAT \$2, RET, PC, OVER, M.O. \$20.
- L90K Mikael Theodros Ethiopian Products - P.O. Box 12761, Tucson, AZ 85732, (707) 895-3886 (no telephone orders). Specializes in Ethiopian spices. Proceeds from sales are donated to the Kidane Meheret School in Dessie, Ethiopia. *Sells the following product/s: berbere and mit'mit'a.* CAT FREE, RET, PC.
- L90M The Thomas Jefferson Center for Historic Plants - P.O. Box 316, Charlottesville; VA 22902, (804) 984-9860. Collects, preserves and distributes historical vegetable, herb and flower seeds, including many grown by Thomas Jefferson at Monticello. CAT \$1, RET, PC/CC, CANADA ONLY.
- L91M Thompson & Moigan - P.O. Box 1308, Jackson, NJ 08527-0308, 1-800-274-7333. Wide range of vegetable seeds, including gourmet and ethnic specialties, herbs, sprouting seeds, flowers, ornamental grasses, tree and shrub seed. CAT FREE, R & W, PC/CC/OC, OVER.
- L92 A Thousand Alliums - 3915 S.W. Willow, Seattle; WA 98136, (206) 935-7506. Seeds and plants for a large selection of Alliums, including hard to find edible species. CAT \$1, RET, PC.
- L94 Threshold Seeds, Inc - P.O. Box 701, Claverack, NY 12513, (518) 672-5509. Biodynamic vegetable, herb and flower seeds. CAT \$2, RET, PC.
- L94M The Thyme Garden - 20546 Alsea Highway, Alsea, OR 97324, (541) 487-8671. Family farm offering a large selection of organically grown herb plants and seeds, dried herbs, herbal products. CAT \$2, RET, PC/CC, OVER.

- L97G Timber Crest Farms - 4791 Dry Creek Rd., Healdsburg, CA 95448, (707) 433-8255. Dried fruits and nuts, dried tomato products, fruit butters. *Sells the following products: dried tomato pesto, dried tomato tapenade, crystallized ginger and wheat nuts.* CAT FREE, R & W, PC/CC, OVER, M.O. \$10.
- L99 Todaro Bros. - 555 Second Ave., New York, NY 10016, (212) 679-7766. Imported and domestic gourmet foods. *Sells the following product/s: marinated cippolini, chestnut flour, chickpea flour, grano wheat, Caciotta cheese, Bordeaux wine vinegar, Sherry wine vinegar, sun-dried eggplants, farro pasta, pasta con le sarde, Amaretti di Sarrano.* CAT FREE, RET, PC/CC.
- L99G Tollgate Gardens - 20866 Junction Rd., Bellevue, MI 49021, (616) 781-7402 (no telephone orders). Specializes in pawpaw including seeds, seedlings and grafted cultivars. Also nut tree seeds and seedlings. Previously known as Corwin Davis Nursery. CAT SASE, RET, PC.
- M0 Tomato Growers Supply Ca - P.O. Box 2237, Fort Myers, FL 33902, (941) 768-1119. Specializes in seed of tomatoes and peppers, including more than 300 cultivars of tomato. CAT FREE, RET, PC/CC.
- MIG Tomato Tom's Seed Supply Company of Maine - H.C. 75, Box 720, East Sebago, ME 04029, (207) 787-2734. Specializes in currant tomatoes. Also herbs, and garden seeds for children. CAT FREE, RET, PC.
- Mil Torii Station Bamboo - 10416 107th St. Ct. S.W., Lakewood, WA 98498, (253) 588-0662. Specializes in hardy bamboo. CAT FREE, RET, PC.
- M1J Tornello Nursery - P.O. Box 788, Ruskin, FL 33570, (813) 645-5445. Largest commercial bamboo grower in the United States. Some rare species are only available to zoos and institutions. CAT FREE, WHLS, OVER, M.O. \$150.
- M1P Totally Tomatoes - P.O. Box 1626, Augusta, GA 30903, (803) 663-0016. Large selection of tomatoes and peppers, over 300 varieties. Subsidiary of R.H. Shumway's. CAT FREE, RET, PC/CC.
- M3 Tower View Nursery - 70912 C.R. 388, South Haven, MI 49090, (616) 637-1279. Specializes in certified and virus tested highbush blueberry plants. CAT FREE, WHLS, M.O. 100 OF EACH.
- M5M Tradewinds Bamboo Nursery - 28446 Hunter Creek Loop, Gold Beach, OR 97444, (541) 247-0835. Hardy, sub-tropical and tropical bamboo. Focus is on species suitable for edible bamboo shoots, usable cane and ornamental value. Succeeded Panda Products Nursery. CAT FREE, RET, PC/CC, OVER, M.O. \$40.
- M7M Trans-Pacific Nursery - 16065 Oldsville Rd., McMinnville, OR 97128, (503) 472-6215. Rare and unusual perennials, climbers, trees and shrubs from around the world. Also seeds of plants collected in the Yunnan Province of China. CAT \$2 REFUNDABLE, R & W, PC/CC, OVER, M.O. \$10.
- M8 Transplant Nursery - 1586 Parkertown Rd., Lavonia, GA 30553, (706) 356-8947. Native and evergreen azaleas, rhododendrons. CAT FREE, R & W, PC/CC, M.O. \$25.
- MUM Tree-Mendus FVuit Farm - 9351 East Eureka Rd., Eau Claire, MI 49111, 1-800-957-4735. Fresh fruit in season, more than 300 kinds including over 200 modern and heirloom apples. Also jams, jellies, syrups and ciders. *Sells the following product/s: Almata apple jelly.* CAT FREE, RET, PC/CC.
- Tregunno Seeds - 126 Catharine St. North, Hamilton, ON L8R 1J4, Canada, (905) 528-5983. Subsidiary of Ontario Seed Co., Ltd., which see.
- M13M Tri-State Natural Foods - 55 West End Rd., Totowa, NJ 07512, 1-800-262-0184. Distributor and marketer of natural and organic groceries. *Sells the following product/s: McIntosh and Granny Smith apple juices, Golden Delicious apple sauce, Stavman Winesao apple butter, and Chancellor and Vidal Blanc grane juices.* CAT FREE, R & W, PC/CC.
- M15 William Tricker **Inc** - 7125 Tanglewood Dr., Independence, OH 44131, 1-800-524-3492. Water lilies, lotus, wild rice, arrowhead, water chestnut, other aquatic and bog plants. Established in 1895. CAT \$2 DEDUCTIBLE, R & W, PC/CC, OVER.
- M15M Trinity Herb - P.O. Box 1001, Graton, CA 95444, (707) 824-2040. Herb and spice company specializing in organically grown and wild harvested herbs. Also carries sprouting seeds. *Sells the following product/s: whole burdock seed, guar gum powder, Mu #16 tea, aloe vera gel, Triphala, evening primrose oil, sweet almond oil, and apricot kernel oil.* CAT \$1, WHLS, PC, M.O. \$50.
- M15T Triple Oaks Nursery & Herb Garden - P.O. Box 385, Franklinville, NJ 08322, (609) 694-4272. Herb plants, scented geraniums, dried herbs and spices, herbal crafts and products. Specializes in traditional Polish herbs. CAT SASE, RET, PC, CANADA ONLY.
- M16 Tripple Brook Farm - 37 Middle Rd., Southampton, MA 01073, (413) 527-4626. Wide range of edible and useful plants including hardy kiwi, mulberries, feijoa, herbs, natives, hardy cactus and bamboo. CAT FREE, R & W, PC/CC.
- M16M Tropic to Tropic Plants - P.O. Box 1136, Pt. Roberts, WA 98281, (604) 943-6562. Hardy bamboo, bananas, ginger, eucalyptus. CAT FREE, RET, PC, M.O. \$25.
- M17 Tropical Fruit Trees - 7341 121st Terrace North, Largo, FL 33773, (813) 539-7527. Tropical fruits including a large selection of annonas, tropical herbs and spices. Also a collection of plants from the Okavongo Delta, Botswana, Zimbabwe and bordering areas. CAT FREE, RET, PC.
- M22 Tsolum Nursery - 301 Mansell Rd., Salt Spring Island, BC V8K 1P9, Canada, (813) 539-7527. Organically grown fruit trees including an extensive collection of heirloom apples. Also custom grafting services and scionwood. CAT \$2, RET, PC, CANADA ONLY.
- M25 Turner Seed Co. - 211 CR 151, Breckenridge, TX 76424, 1-800-722-8616. Small grain, native grasses, wildflowers, green manure and cover crop seeds. CAT FREE, WHLS.
- M25M Turner's Bend Nursery - 3133 Turner's Bend Rd., McMinnville, TN 37110, (615) 668-4543. Fruit and nut trees, grape vines, native wild flowers, shade trees, evergreens, flowering shrubs. CAT FREE, WHLS, PC, M.O. \$50.
- M27 Turtle Tree Seed Farm - 5569 North County Rd. 29, Loveland, CO 80538, (615) 668-4543. Open-pollinated vegetable and flower seeds produced with the bio-dynamic method. CAT \$1, RET, PC.
- M29 Otis S. Twilley Seed Co., **Inc** - P.O. Box 65, Trevoise, PA 19053, 1-800-622-7333. Vegetable and flower seeds for the small commercial grower of fresh market vegetables, bedding plants and cut flowers, and for the home gardener. CAT FREE, R & W, PC/CC, OVER.

- M32 Underwood Gardens - 4N381 Maple Ave., Bensenville, IL 60106, (630) 616-0268 (fax). Untreated, open-pollinated seeds of heirloom vegetables, herbs and flowers. Many are hard to find or endangered. CAT \$1, R & W, PC/CC, OVER.
- M32G United American Industries - 640 South Perry Lane, Bldg. 2, Tempe, AZ 85281, 1-800-899-9908. Wisdom of the Ancients herbal teas, Stevia products. *Sells the following product/s: Stevia tea bags, stevioside liquid extract and white powder extract.* CAT FREE, R & W, PC/CC, OVER.
- M32M University of Hawaii Seed Program - Department of Horticulture, 3190 Maile Way, Room 112, Honolulu, HI 96822, (808) 956-7890. Vegetable and fruit cultivars developed at the University of Hawaii for tropical areas, including papayas, kidney beans, tomatoes, sweet corn and lettuce. CAT FREE, R & W, PC, OVER.
- M32T The University of Texas - Culture Collection of Algae, Department of Botany, Austin, TX 78713-7640, (808) 956-7890. National source of algal cultures for investigators in the United States and overseas. CAT FREE, RET, PC, OVER.
- M33M Upper Bank Nurseries - P.O. Box 486, Media, PA 19063, (610) 566-0679. Specializes in hardy bamboo. CAT SASE, R & W, PC, OVER.
- M34 Urbani U.S.A. - 29-24 40th Avenue, Long Island City, NY 11101, 1-800-281-2330. Fresh, frozen and dried mushrooms and truffles, truffle foods, smoked fish, caviar. *Sells the following product/s: canned and bottled truffles, and truffle oil, juice, flour, puree and pasta.* CAT FREE, R & W, PC.
- M34M V & J Seed Farms - P.O. Box 82, Woodstock, IL 60098, (815) 338-4029. Specializes in weed and grass seeds for research purposes. Previously known as F & J Seed Service. CAT FREE, R & W, PC, OVER.
- M35 Valley Creek Nursery - 15177 South Log Cabin Rd., Three Oaks, MI 49128-0364, (616) 426-3283. Herbs, scented geraniums. CAT FREE, WHLS, PC/CC.
- M35M Valley Nursery - P.O. Box 4845, Helena, MT 59604, (406) 458-3992 (no telephone orders). Cold hardy plants including fruit and nut trees, berry plants, shade trees, flowering shrubs. CAT 2 STAMPS, R & W, PC/CC, OVER, M.O. \$50.
- M37M Van Bourgondien Bros. - P.O. Box 1000, Babylon, NY 11702-9004, 1-800-622-9997. Garden perennials, bulbs, climbers, ferns. CAT FREE, RET, PC/CC.
- M39 Van Ness Water Gardens - 2460 North Euclid Ave., Upland, CA 91786-1199, (909) 982-2425. Water lilies, lotus, other aquatic and bog plants. CAT \$4, RET, PC/CC, OVER.
- M39M Van Well Nursery - P.O. Box 1339, Wenatchee, WA 98807, 1-800-572-1553. Large selection of dwarf, semi-dwarf and standard fruit and nut trees. CAT FREE, R & W, PC/CC, OVER.
- M41M Vanilla, Saffron Imports - 949 Valencia St., San Francisco, CA 94110, 1-800-648-3091. Gourmet and specialty food items. *Sells the following product/s: canned huitlacoche.* CAT FREE, R & W, PC/CC, M.O. \$21.
- M42 Varga's Nursery - 2631 Pickertown Rd., Warrington, PA 18976, (215) 343-0646. Extensive listing of hardy and tropical ferns. CAT \$1, R & W, PC, M.O. \$25.
- M45P Vella Cheese Co. - P.O. Box 191, Sonoma, CA 95476, 1-800-848-0505. Handmade, award-winning cheeses.
- Originators and sole producers of Dry Monterey Jack cheese. CAT FREE, R & W, PC/CC.
- M46 Vermont Bean Seed Co. - Garden Lane, Fair Haven, VT 05743-0250, (802) 273-3400. Vegetable, herb and flower seeds, everlastings, sprouting seeds. Specializes in beans and oriental greens. CAT FREE, R & W, PC/CC, OVER.
- M46M Vermont Butter and Cheese Co. - P.O. Box 95, Websterville, VT 05678, 1-800-884-6287. Specialty creamery products in the European style. *Sells the following product/s: cultured fruiter aq<J piascarPQngi* CAT FREE, R & W, PC/CC.
- M47M The Vermont Wildflower Bum - P.O. Box 1400, Louisiana, MO 63353-8400, 1-800-424-1165. Wildflower seed including individual species, regional mixtures and custom mixtures. CAT \$3, R & W, PC/CC, OVER.
- Vesey's Seeds, Ltd. - P.O. Box 9000, Charlottetown, PE CIA 8K6, Canada, 1-800-363-7333.
- M49 Vesey's Seeds, Ltd. - P.O. Box 9000, Calais, ME 04619-6102, 1-800-363-7333. Vegetable, herb and flower seeds tested for areas with short growing seasons such as the New England States and the Maritime provinces of Canada. United States branch of Vesey's Seeds, Ltd., Canada, which see. CAT FREE, RET, PC/CC, OVER.
- M50 Vidalia Gold of Georgia - 2305 Georgia Hwy. 56 West, Uvalda, GA 30473, 1-800-673-6338. Specializes in Vidalia onions and Vidalia onion products. *Sells the following product/s: fresh Vidalia onions, Vidalia onion seeds and plants, Vidalia onion pickles, sauces, dressings and relishes.* CAT FREE, RET, PC/CC.
- M51M Viewcrest Nurseries, Inc. - 12713 N.E. 184th St., Batde Ground, WA 98604, (360) 687-5167. Evergreen transplants and seedlings for nurserymen, Christmas tree growers and reforestation. CAT FREE, WHLS, PC, OVER, M.O. 100 OF EACH.
- M53 Village Arbors - 1804 Saugahatchee Road, Auburn, AL 36830, (334) 826-3490. Herb plants, scented geraniums, flowering perennials, herbal products. CAT FREE, R & W, PC/CC.
- Vilmorin, Inc. - P.O. Box 707, Empire, CA 95319, (209) 529-6000. American subsidiary of Vilmorin s.a., France, which see.
- M56M Vivande Porta Via - 2125 Fillmore St., San Francisco, CA 94115, (415) 346-4430. Gourmet foods imported from Italy and other parts of Europe. *Sells the following product/s: mostarda, Rhododendron honey, and farro pasta.* CAT FREE, RET, PC/CC.
- M57M Volcano Island Honey Co. - P.O. Box 1709, Honokaa, HI 96727, (808) 775-0806. Specializes in rare gourmet quality Hawaiian honeys. *Sells the following product/s: pure kiawe honey.* CAT FREE, R & W, PC, M.O. \$36.
- M59M Wafler Nurseries - 10662 Slight Rd., Wolcott, NY 14590, (315) 594-2399. Dwarf and semi-dwarf apple trees for the commercial fruit grower. CAT FREE, WHLS, PC.
- M62 Walla Walla Gardeners' Association - 210 North Eleventh Ave., Walla Walla, WA 99362, 1-800-553-5014. Fresh produce in season. Specializes in Walla Walla Sweet onions. CAT FREE, R & W, PC/CC.
- M63M Walnut Acres Organic Farms - Walnut Acres Road, Penns Creek, PA 17862, 1-800-433-3998. Grower and distributor of organic foods since 1946. Also offers sprouting seeds and starter cultures. *Sells the following product/s: canola oil, Yucatan honey, canned Nectar*

- peaches, canned Lambert cherries, L.M. Pectin, oat milk, sovmilk powder, Wonderslim, high-lvsine corn meal, Valencia peanut butter, dark roast almond butter, sovnut butter, and roasted cashew, sunflower and hazelnut butters. CAT FREE, R & W, PC/CC, OVER.
- M65 Walsenburg Seed Co. - 1704-B Llano St., Ste. 164, Santa Fe, NM 87505, 1-888-242-1665. Vegetables, herbs, ornamentals, exotics. CAT FREE, RET, PC/CC, OVER.
- M65M Walters Gardens, Inc - P.O. Box 137, Zeeland, MI 49464, 1-888-925-8377. Berry plants, grape vines, perennial vegetables, ornamental grasses, perennial flowering and foliage plants. CAT FREE, WHLS, CANADA ONLY.
- M67 Walton Feed, Inc - P.O. Box 307, Montpelier, ID 83254, 1-800-847-0465. Specializes in bulk foods for home storage. Also organic foods, sprouting seeds. CAT FREE, R & W, PC/CC, OVER.
- M69 Ward's Natural Science Establishment - P.O. Box 92912, Rochester, NY 14692-9012, 1-800-962-2660. Complete selection of biological supplies, including living cultures of algae, fungi and bacteria. Also plants and seeds. Established in 1862. CAT \$15, R & W, PC/CC, OVER.
- M69M Warren County Nuisery, Inc. - 6492 Beeisheba Hwy., McMinnville, TN 37110, (615) 668-8941. Fruit and nut trees, berry plants, grape vines, perennial vegetables, shade trees, flowering shrubs, conifers, Tennessee wild flowers. CAT FREE, WHLS, PC/CC, OVER.
- M72 Water Ways Nursery - 13015 Milltown Rd., Lovettsville, VA 20180, (540) 822-5994. Water lilies, cattail, arrowhead, other aquatic and bog plants, native perennials. CAT \$2.50, RET, PC, M.O. \$21.
- M73 The Water Works - 111 East Fairmount St., Coopersburg, PA 18036, 1-800-360-5459. Water lilies, cattail, arrowhead, sweetflag, other aquatic and bog plants. CAT FREE, R & W, PC/CC.
- M73M Waterford Gardens - 74 East Allendale Rd., Saddle River, NJ 07458, (201) 327-0721. Complete selection of water plants and supplies, including water lilies, lotus, taro, arrowhead, cattail and marsh marigold. CAT \$4, R & W, PC/CC, OVER.
- M74M Waukesha Seed Co - P.O. Box 1820, Waukesha, WI 53187, (201) 327-0721. Specializes in seeds of conifers. CAT FREE, R & W, PC, OVER.
- M75 Wavecrest Nursery & Landscaping Co. - 2509 Lakeshore Dr., Fennville, MI 49408, (616) 543-4175. Specializes in rare and unusual ornamental trees and shrubs. CAT FREE, RET, PC/CC, OVER.
- M77 Wayside Gardens - 1 Garden Lane, Hodges, SC 29695-0001, 1-800-845-1124. Fruit trees, berry plants, herbs, bulbs, roses, garden perennials, ornamental trees and shrubs. CAT FREE, RET, PC/CC.
- M77M We-Du Nurseries - Rt. 5, Box 724, Marion, NC 28752, (704) 738-8300. Specializes in nursery propagated Southeastern natives, rare and unusual rock garden and woodland plants including oriental counterparts of native wildflowers. CAT \$2, RET, PC/CC, OVER, M.O. \$25.
- M81M Weeks Berry Nursery - 6494 Windsor Isle Rd. North, Keizer, OR 97303, (503) 393-8112. Raspberries, blackberries, high bush and half-high blueberries, grape vines, currants and gooseberries, perennial vegetables, hop cuttings. CAT FREE, WHLS, M.O. \$100.
- M81T Chris Weeks Peppers - P.O. Box 3207, Kill Devil Hills, NC 27948, (503) 393-8112. Small, single proprietor seed company specializing in hot peppers. CAT \$1, RET, PC.
- M82 Well-Sweep Herb Farm - 205 Mt. Bethel Rd., Port Murray, NJ 07865, (908) 852-5390. Extensive list of herb plants including many rare varieties, scented geraniums, herb seed, garden perennials, dried flowers and other herbal products. CAT \$2, RET, PC/CC.
- M82M Sam'IWells & Co. - Pondlick Farm, 7190 Pondlick Rd., Seaman, OH 45679, (513) 927-5283. Botanicals, herbal products. Specializes in ginseng. Established in 1826 in Cincinnati, Ohio as a fur and root company. CAT FREE, R & W, PC, OVER.
- M83 Bob Wells Nuisery - P.O. Box 606, Lindale, TX 75771, (903) 882-3550. Fruit and nut trees, berry plants, grape vines, perennial vegetables, roses, shade trees, flowering shrubs. CAT FREE, R & W, PC.
- M84 West Coast Honey Stop - 88878 Highway 101 North, Florence, OR 97439, 1-800-395-2196. Honeys and honey products. *Sells the following products: manuka, borage, buckwheat, fireweed and meadow-foam honeys.* CAT FREE, RET, PC/CC, OVER.
- M85 West Oregon Wood Products - P.O. Box 249, Columbia City, OR 97018, 1-800-966-5654. Specializes in pressed hardwood pellets, unique products that are used instead of wood chunks or chips in smoking foods. *Sells the following products: alder, apple, cherry, hickory, maple, mesquite, and oak smoking pellets.* CAT FREE, R & W, PC/CC.
- M87 Western Biologicals Ltd. - P.O. Box 283, Aldergrove, BC V4W 2T8, Canada, (604) 856-3339. Extensive selection of exotic mushroom spawn, live cultures, home mushroom growing kits, grower's supplies. Also a small selection of unusual seeds and plants. CAT \$3, R & W, PC/CC, OVER.
- M87M Western Comfrey - P.O. Box 45, Canty, OR 97013, (503) 266-3788. Comfrey roots for planting, comfrey products. *Sells the following products: comfrev leaf tea.* CAT FREE, R & W, PC, OVER.
- M89 Western Ontario FVuit Testing Association - Research Station, Harrow, ON NOR 1G0, Canada, (519) 738-2251. Rootstock seeds of peach and apricot produced from virus-indexed trees. Also distributes for testing nursery stock selections of apricot, peach, pear and nectarine developed at the Harrow Research Station. CAT FREE, WHLS, PC, OVER, M.O. 100 SEEDS.
- M89G Western Shore Orchard - P.O. Box 75, Hood, CA 95639, (916) 775-1637. Small family farm producing high quality gourmet Bartlett pear products. *Sells the following products: Bartlett pear wafers, pear vinegar, pear chutney and pear jam.* CAT FREE, R & W, PC.
- M89M Western Trails - P.O. Box 460, Bozeman, MT 59771-0460, 1-800-759-5489. Montana grown grains, specialty beans, barbecue sauces. Specializes in NuBarley grains, a copyrighted name for various types of hullless and waxy hullless barleys. *Sells the following products: Treasure State, Bronze Nugget and Black Buffalo hullless barley cereals, flours, flakes, grits, bread mixes and soup mixes.* CAT FREE, R & W, PC/CC, OVER.
- M92 Weston Nurseries - P.O. Box 186, Hopkinton, MA 01748, (508) 435-3414. Wide range of nursery stock including shade trees, flowering shrubs, herbaceous perennials and roses. CAT FREE, R & W, PC/CC.
- M95M Wetsel, Inc - P.O. Box 791, Harrisonburg VA 22801-0791, (540) 434-6001 or 434-6110. Vegetable,

- herb and flower seeds, garden perennials, grains, green manure and cover crop seeds, wild flowers. CAT \$2, R & W, PC/CC, OVER.
- M95T WGA Grape Nursery - 11926 Rosetree Place South, Seminole, FL 33772-5705, (813) 391-0899. Cuttings and plants of Southern bunch grapes and muscadines. CAT FREE, R & W, PC.
- M96 Wheat Montana Farms & Bakery - P.O. Box 647, Three Forks, MT 59752, 1-800-535-2798. Chemical free and organic grains, beans, seeds, flour and bakery products. *Sells the following product/s: wheat coffee, Bronze Chief wheat flour, and Prairie Gold wheat flour.* CAT FREE, R & W, PC.
- M97M Whistling Wings Harm - 427 West St., Biddeford, ME 04005-9581, (207) 282-1146. Specializes in gourmet raspberry foods. *Sells the following product/s: wild raspberry honey, raspberry vinegar, and purple raspberry spreadable fruit.* CAT FREE, R & W, PC/CC, OVER.
- M98 White Flower Farm - P.O. Box 50, Litchfield, CT 06759, 1-800-503-9624. Garden perennials, bulbs, herbs, ornamental shrubs. CAT \$4, RET, PC/CC, CANADA ONLY.
- M99 White Mountain Farm - 8890 Lane 4 North, Mosca, CO 81146, (719) 378-2436. Specializes in certified organically grown quinoa and potatoes. CAT FREE, R & W, PC.
- M99G White Oak Nursery - 494 White Oak Rd., Strasburg, PA 17579, (719) 378-2436. Fruit and nut trees, berry plants, grapes, perennial vegetables. Specializes in old and new apple varieties. CAT FREE, R & W, PC.
- M99M White Truffle Foods Inc. - 4749 Black Forest Court, Lake Oswego, OR 97035, (503) 635-6444. Specializes in fresh Oregon white and California black truffles. CAT FREE, R & W, PC.
- NO Whitman Farms - 3995 Gibson Road N.W., Salem, OR 97304, (503) 585-8728. Fruit and nut trees, berry plants, grape vines, kiwi, seedling trees and shrubs. Specializes in currants and gooseberries. CAT FREE, R & W, PC, CANADA ONLY, M.O. \$10.
- N1M Whitney Gardens & Nursery - P.O. Box F, Brinnon, WA 98320-0080, 1-800-952-2404. Species and hybrid azaleas and rhododendron, Camellias, Magnolias, perennials. CAT FREE, RET, PC/CC, OVER.
- N3M Wicklein's Water Gardens - P.O. Box 9780, Baldwin, MD21013, 1-800-382-6716. Water lilies, lotus, Chinese water chestnut, cattail, arrowhead, other aquatic and bog plants. CAT \$2, R & W, PC/CC, CANADA ONLY.
- N5 Herman J. Wiemer Vineyard, Inc. - Route 14, Box 38, Dundee, NY 14837-0038, 1-800-371-7971. Specializes in grafted vinifera wine grapes. Also custom grafting services, and Finger Lakes vinifera wines. CAT FREE, R & W, PC/CC, OVER.
- N7D Wild Earth Herbs - 2611 Grant St., Houston, TX 77006, 1-888-524-0388. Bulk herbs, extracts, essential oils, supplements, bee products» Ayurvedic formulas, teas. *Sells the following product/s: Chvavanprash, Trikatu, Triphala, sambhar, acerola powder, T.V.P. aloe vera juice, aloe vera gel, Swedish bitters, dried orange blossoms, Korean ginseng chewing gum, oriental mustard seeds, and herbal chews.* CAT FREE, RET, PC/CC.
- N7G Wild Garden Seed - Shoulder to Shoulder Farm, P.O. Box 1509, Philomath, OR 97370, (541) 929-4068. Specializes in home-bred varieties, strains and gene pool mixes of salad plants selected for a diversity of flavors, textures, colors and forms. These are salad plants regularly grown by Shoulder to Shoulder Farms and sold to fine restaurants. CAT \$4, R & W, PC, M.O. \$50.
- N7J Wild Ridge - 17561 Vierra Canyon Rd., Box 37, Prunedale, CA 93907, (831) 768-1517. One of the largest selections of passifloras, including their own hybrids. Also vines, fruiting plants, and rare ornamentals. CAT \$1, RET, PC, OVER, M.O. \$20.
- N7M Wild Seed Inc - P.O. Box 27751, Tempe, AZ 85285, (602) 276-3536. Wild flower seed, both individual species and mixes adapted to various climatic regions of the Southwest. CAT FREE, R & W, PC, M.O. \$50 WHLS.
- N7T Wildflower Nursery - 1680 Highway 25-70, Marshall, NC 28753, (704) 656-2723. Native wild flowers and shrubs. Previously known as Griffey's Nursery. CAT FREE, R & W, PC, OVER.
- N9M Wildginger Woodlands - P.O. Box 1091, Webster, NY 14580, (704) 656-2723. Native and naturalized plants of the Northeast including wild flowers, ferns, and trees and shrubs. CAT \$1.50 REFUNDABLE, RET, PC, M.O. \$10.
- Nil Wildlife Nuiseries - P.O. Box 2724, Oshkosh, WI 54903-2724, (920) 231-3780. Seeds for wildlife plantings, native grasses and legumes, grains, chufa, arrowhead, wild rice and other aquatic plants. Established in 1896. CAT \$1, RET, PC/CC/OC, OVER, M.O. \$20.
- N11M Wildseed Farms - P.O. Box 3000, Fredericksburg, TX 78624, 1-800-848-0078. Wild flower seed, both individual species and regional mixes suited to all areas of the United States. CAT \$2, R & W, PC/CC, OVER.
- N16 Willhite Seed Inc - P.O. Box 23, Poolville, TX 76487, 1-800-828-1840. Seeds of vegetables, herbs and wild flowers. Specializes in muskmelons and watermelons. CAT FREE, R & W, PC/CC, OVER.
- N17 William's Brewing - P.O. Box 2195, San Leandro, CA 94577, 1-800-759-6025. Home brewing supplies, beer and wine yeasts. *Sells the following product/s: flaked oats, rice, corn, and barley, oak barrel chips, and licorice sticks.* CAT FREE, RET, PC/CC, OVER.
- N18 Willits & Newcomb - P.O. Box 428, Arvin, CA 93203, (805) 327-9345. Specializes in citrus seed and virus-tested citrus budwood. CAT FREE, R & W, PC, OVER.
- N19 Willow Drive Nursery - 3539 Road 5 N.W., Ephrata, WA 98823, (509) 787-1555. Seedling and clonal fruit tree rootstocks, shade tree seedlings. CAT FREE, WHLS.
- N19M Willow Oak Flower & Herb Farm - 8109 Telegraph Rd., Severn, MD 21144, (410) 551-2237. Herb plants, scented geraniums, garden perennials, everlasting flowers, wreaths and other herbal products, dried herbs and spices. CAT FREE, R & W, PC, M.O. \$15.
- N20 Dave Wilson Nursery - 19701 Lake Road, Hickman, CA 95323, (209) 874-1821. Wide selection of fruit and nut trees, berry plants, grape vines, kiwi and hardy kiwi, shade trees, flowering shrubs. CAT FREE, WHLS.
- N23 Windham Wildfloweris - P.O. Box 207, Westminster Station, VT 05159, (802) 387-4096. Seeds of herbs, garden perennials, wild flowers and alpiners. Also wild flower meadow seed mixtures. Established in 1928 by Senator George D. Aiken. Previously known as Putney Nursery, Inc. CAT FREE, RET, PC/CC.
- N24M Windmill Point Farm and Nursery/S.O.S. Organic Seeds - 2103 boul. Perrot, N.D. Ile Perrot, PQ J7V 8P4, Canada, (514) 453-9757. Extensive listings for a broad range of common and unusual fruit and nut trees, berry

- plants grape vines, and perennial vegetables including many rare and unique selections. Also organic open-pollinated seeds. CAT \$4, RET, PC.
- N27 The Wine Lab - 477 Walnut St., Napa, CA 94559, (707) 224-7903. Large selection of rare wine yeasts and bacteria, both liquid and dry. CAT FREE, R & W, PC/CC, OVER, M.O. \$10.
- N29 Winter Sun Trading Co. - 107 North San Francisco St. #1, Flagstaff, AZ 86001, (520) 774-1501. Organically grown, traditionally wildcrafted herbs of the Southwest. *Sells the following product/s: dong quai extract*. CAT \$3, RET, PC/CC, M.O. \$15.
- N33 Womack's Nursery Co. - Rt. 1, Box 80, De Leon, TX 76444-9631, (817) 893-6497. Wide range of fruit and nut trees, berry plants, grape vines, ornamental trees and shrubs adapted to Texas and adjoining states. Specializes in pecans. CAT FREE, R & W, PC, M.O. \$35.
- N34 Wood Prairie Farm - 49 Kinney Rd., Bridgewater, ME 04735, 1-800-829-9765. Family farm specializing in certified organically grown potatoes for both planting and eating. Also fresh vegetables and grains. *Sells the following product/s: Mandan Bride corn meal*. CAT FREE, RET, PC/CC.
- N37M Woodlanders- 1128 Colleton Ave., Aiken, SC 29801, (803) 648-7522. Large selection of rare and hard-to-find trees and shrubs, vines, palms, garden perennials, and bamboos, both native and exotic species. CAT \$2, RET, PC, OVER, M.O. \$20.
- N38M Worcester County Horticultural Society - Tower Hill Botanical Garden, P.O. Box 598, Boylston, MA 01505, (508) 869-6111. Apple scionwood from the S. Lothrop Davenport collection. CAT FREE, RET, PC/CC, M.O. \$10.
- N39 WorksteadIndustries - P.O. Box 1083, Greenfield, MA 01302, (413) 772-6816. Specializes in low-methoxyl citrus pectin. *Sells the following product/s: Pomona's Universal Pectin*. CAT FREE, R & W, PC.
- N40 World Variety Produce - P.O. Box 21127, Los Angeles, CA 90021, 1-800-588-0151. Over 500 rare and exotic produce and gourmet food items bearing the Melissa's brand label, most of which are available through their mail order catalog. *Sells the following product/s: coquitos, nopales cactus leaves, cocktail avocados, red currants, Chile Pasado, kiwi fruit preserves, corn husks, roasted sweet corn, du-kon, whole bottled ababai, ababai marmalade, and habas peladas*. CAT FREE, R & W, PC/CC, OVER.
- N40M World Wide Exotic Seed Ca - P.O. Box 57770, Webster, TX 77598, (281) 332-0571. Palms, cacti and succulents, medicinals, house plants, exotica. CAT FREE, RET, PC/CC, OVER.
- N42 Wrenwood of Berkeley Springs - Rt. 4, Box 361, Berkeley Springs, WV 25411, (304) 258-3071. Large selection of herbs, garden perennials, scented geraniums, rock garden plants. CAT \$2.50, R & W, PC/CC, M.O. \$36.
- N43M Guy Wrinkle/Exotic Plants - 11610 Addison St., North Hollywood, CA 91601, (310) 670-8637. Rare succulents, orchids, cycads, palms. CAT \$1, R & W, PC/CC, OVER, M.O. \$25.
- N44 Wylie Mycologicals - R.R. #1, Warton, ON N0H 2T0, Canada, (519) 534-1570. Mushroom spawn and kits, mushroom growing supplies. CAT FREE, R & W, PC.
- N46 Yakima Valley Nursery - 551 Wellel Rd., Yakima, WA 98908, (509) 966-0410. Dwarf, semi-dwarf and standard fruit trees including apples, pears, apricots and plums. CAT FREE, R & W, PC.
- N49M Yoshinoya - 36 Prospect St., Cambridge, MA 02139, (617) 491-8221. Specializes in Japanese foods. *Sells the following product/s: konnvaku, pickled rakkvo, ponzu sauce, shichimi, and kinako*. CAT (CALL FOR PRICES), RET, PC/CC.
- N51 Yucca Do Nursery - Rt. 3, Box 104, Hempstead, TX 77445, (409) 826-4580. Specializes in subtropical bulbous plants of the New World. Also trees and shrubs, perennials, grasses, and woody lilies. CAT \$4, R & W, PC.
- N51M Zabar's - 2245 Broadway, Nov York, NY 10024, 1-800-697-6301. Famous New York food emporium offering gourmet items from around the world. *Sells the following product/s: Sansago cheese Valrhona chocolate with Marcona almonds, cherry wood smoked mussels, bottled Tuscan white truffles, and..... Yukon Gold-potato chips*. CAT FREE, RET, PC/CC.
- N52 Zenner Brothers Seed Co. - 2455 S.E. 11th, Portland, OR 97214, (503) 231-1019. Vegetable, herb and flower seeds. CAT FREE, R & W, PC.
- N53M Zill High Performance Plants - 6801 107th Place South, Boynton Beach, FL 33437, (561) 732-3555. Large grower of tropical fruit trees. Specializes in mango and avocado. CAT FREE, WHLS, PC, OVER.
- N54 Zingerman's - 422 Detroit Street, Ann Arbor, MI 48104, 1-888-636-8162. Unique selection of gourmet, traditionally-made foods from around the world, selected for quality and flavor. *Sells the following product/s: lemon olive oil, orange olive oil, Nevadillo olive oil, Styrian pumpkinseed oil, bottled Piquillo peppers, Seiena, Torta del Casar, Idiazabal, Ubriaco and Fromage de Vigneron cheeses, bagna cauda, salsa verde, Pimenton de La Vera honevs, Draaon Well tea, and Shanxi, Bavarian beer, Sherry, Manzanilla Sherry Rioia wine, Balsamic tradizionale, Eiswein, Trockenbeerenauslese, and Cava vinegars*. CAT FREE, R & W, PC/CC.
- N55 Ziirsun Ltd. - 754 Canyon Fhrk Ave., Twin Falls, ID 83301, 1-800-424-8881. Heirloom and unusual dried legumes, many certified organically grown. CAT FREE, R & W, PC/CC.

## OVERSEAS COMMERCIAL

- N61 Agroforestry Research Trust - 46 Hunters Moon, Dartington, Totnes, Devon TQ9 6JT, England, 1-800-424-8881. Trees and shrubs for agroforestry, nitrogen-fixing plants, unusual edibles. CAT \$2, RET, STERLING BANK DRAFT, OVER.
- N71M Conrad Appel GmbH - Bismarckstrafle 59, Darmstadt D-64293, Germai, 6151 92920. Seeds of trees, shrubs and wildflowers. CAT FREE, WHLS, PC/OC, OVER, ENGL.



- N73 Appleton's Tree Nursery - Main Road South, Wakefield, Nelson 7181, New Zealand, 03 541-8309. Grower of deciduous and evergreen, hardy and temperate climate trees and shrubs from seed. CAT FREE, WHLS, PC, OVER, M.O. 10 OF EACH.
- N74 Jim & Jenny Archibald - Bryn Collen, Ffostrasol, Llandysul, Dyfed SA44 5SR, Wales, 03 541-8309. Seeds of rare perennials, alpines and bulbs, both wild collected and home grown from wild seed. CAT FREE, RET, PC/OC, OVER.
- N78 David Austin Roses - Bowling Green Lane, Albrighton, Wolverhampton WV7 3HB, England, 01902 376-300. English roses, species roses, shrub roses, etc. CAT £3, R & W, PC/CC, OVER, M.O. £25.
- N79 Australian Native Produce Industries - 87 Harrison Rd., Dudley Park, SA 5008, Australia, 08 8346 3387 (fax). Red Ochre brand Australian native bushfoods, raw and processed. Also native food plants including unique grafted cultivars. *Sells the following products: lemon myrtle oil, warrigal spaghetti, wattle seed linguini, bush tomato jam, sauce and salsa, muntries chutney, lemon aspen conserve, quandong jam, and wild lime marmalade.* CAT FREE, R & W, PC/CC/OC, OVER.
- N79M Australian Seed Co - P.O. Box 67, Hazelbrook, NSW 2779, Australia, 2 4758-6132. Large selection of tree and shrub seeds, most of which are endemic to Australia. CAT FREE, R & W, BANK DRAFT, OVER.
- N81 Austrosaat A.G. - P.O. Box 40, Vienna A-1232, Austria, 01 616 70 23-0. Vegetable, herb and flower seeds. The historical roots of the company date to 1790. CAT FREE, R & W, BANK DRAFT, OVER.
- N84 B & T World Seeds, sari - Pagnignan, Olonzac 34210, France, 04 6891 29 63. Extremely large selection of common and exotic seeds, probably the largest of its type in the world, covering well over 35,000 species. Publishes a master catalog and a series of sub-lists in various categories. CAT \$24, R & W, CC, OVER, M.O. \$9, ENGL.
- B & T World Seeds U.K. - Little Whitnell, Nether Stowey, Bridgewater, Somerset TA5 1JE, England, 01 278 732-748. English subsidiary of B & T World Seeds, France, which see.
- N91 Bankim Prosad Ghosh & Co. - Belur Station Road, P.O. Bally, Howm, West Bengal 711 201, India, 33 654-2422 (no telephone orders). Producer and seller of a large variety of vegetable and jute seeds. Also propagates fruit, flower and ornamental plants. Established in 1920. CAT FREE, R & W, LETTER OF CREDIT, OVER, ENGL.
- O1 Ernst Benary Seed Growers Ltd. - P.O. Box 1127, Hann. Muenden D-34331, Germany, 5541-7009 0. Growers and breeders of annual and perennial flower seeds. CAT FREE, WHLS, OVER.
- 04 A. Bertolami Nurseries - S.S. 18, Km. 382, 100, Lamezia Terme (CZ) 88040, Italy, 0968 209-124 (no telephone orders). Largest nursery in the Mediterranean area for citrus and olive plants. Also grows other fruit trees and ornamentals. CAT FREE, R & W, WIRE TRANSFER, OVER.
- 019 The Borneo Collection - Treefarm, El Arish, QLD 4855, Australia, 7 4068-5263. Unique collection of seeds of tropical fruits and nuts, many collected in Borneo and introduced into Australia for the first time; Available on a seasonal basis. CAT \$3, R & W, BANK DRAFT, OVER, M.O. \$15.
- 032M Bush Thicker Supply Australia - P.O. Box B103, Boronia Park, NSW 2111, Australia, 7 4068-5263. The leading developer and supplier of Australian gourmet bushfoods to restaurants, caterers, and airlines. Founded by Vic Cherkoff, the Tucker Man, a pioneer in the field who has worked with many Aborigines in outback Australia—collecting samples of traditional foods and analyzing their nutritional value. *Sells the following products: bush tomato sauce, relish and chutney, bush tomatoes in oil, Illawarra plum sauce, lemon aspen svrup, wild lime dressing, rosella svrup and preserves, cheesefruit juice, frozen Davidson's plum, kakadu plum preserves, mumhari chutmy, Quandong fruit and seeds, frozen nberrv, lemon myrtle pasta, and native peppermint, aniseed myrtle, and lemon myrtle essential oM.* CAT FREE, R & W, CC, OVER, M.O. \$100.
- 033 Bushland Flora - 17 Trotman Cescent, Yanchep WA 6035, Australia, (09) 561-1636. Specializes in seeds of Australian native plants, including trees, shrubs, flowers, fruits and nuts. CAT \$2, RET, PC/OC, OVER, M.O. \$10.
- 042 Carnivorous & Unusual Seeds - 3 Normandy Ave., Para Hills, SA 5096, Australia, 08 8264-2825 (no telephone orders). Specializes in carnivorous plants and seeds. CAT IRC, RET, OC, OVER.
- 046 Chadwell Himalayan Plant Seed - 81 Parlaunt Rd., Slough, Berks. SL3 8BE, England, 08 8264-2825 (no telephone orders). Small seed company specializing in hardy Himalayan species suitable for rock gardens, perennial borders and larger gardens. CAT \$3, RET, PC/OC, OVER.
- 048 John Chambers Wild Flower Seeds - 15 Westleigh Road, Barton Seagrave, Kettering, Northants NN15 5AJ, England, 08 8264-2825 (no telephone orders). Large selection of seeds for British wild flowers, ornamental and cultivated grasses, everlastings, herbs, agricultural crops. CAT FREE, R & W, STERLING BANK DRAFT, IMO, OVER.
- 053 Chia Tai Company, Ltd. - 299-301 Songsawad Rd., Bangkok 10100, Thailand, 233 8191-9 (no telephone orders). Seeds of Chinese and tropical vegetables. CAT FREE, WHLS, BANK DRAFT, OVER, M.O. US \$500.
- 053M Chiltem Seeds - Bortree Stile, Ulverston, Cumbria LA 12 7PB, England, 01229 581-137. Mail-order seed company offering a wide variety of seeds of hardy plants, wild flowers, trees and shrubs, cacti, annuals, houseplants, greenhouse exotics, oriental vegetables, traditional English vegetables, and herbs. CAT \$4, RET, PC/CC/OC, OVER.
- 054 China National Seed Group Corporation - Jia-16 Xibahe, Chaoyang District, Beijing 100028, China, 86 10 6420-1837. State-owned company dealing with seed production and distribution of seeds of cereals, oil crops, vegetables, fruit trees, medicinal crops, flowers and teas. CAT FREE, WHLS, LETTER OF CREDIT, OVER, M.O. 10 KILOGRAMS, ENGL.
- 057 Paul Christian - P.O. Box 468, Wrexham, Clwyd LL13 9XR, Wales, 01 978 366-399. Specializes in rare and unusual species bulbs, corms, rhizomes and tubers plus alpine and herbaceous subjects in winter. All are raised in cultivation from stocks of known wild sources. CAT £3, R & W, CC/OC, OVER.
- 060 Clause Italia S.p.A. - Strada della Madonnina, 13, Venaria (Torino) 10078, Italy, 01 978 366-399. Vegetable and flower seeds. CAT FREE, WHLS, OVER.

- 071M **Cuciti Vivai** - Villa Barone, Casella Postale 57, Milazzo (ME) 98057, Italy, 090 928-4237 (no overseas telephone orders). Large selection of fruit trees, grape vines, olives and ornamental plants. CAT FREE, R & W, PC/CC, OVER.
- 081 **Deacon's Nursery** - G.P.O., Godshill, Isle of Wight P038 3HW, England, (01983) 840-750. Very large selection of fruit trees and small fruits, grown from certified stock, grape vines, nut trees, perennial vegetables. CAT FREE, R & W, PC/CC, OVER.
- 089 **Digger's Mail Older** - P.O. Box 300, Dromana, VIC 3936, Australia, 3 5987-1877. Supplies a wide range of seeds including heirloom vegetables, herbs, Australian natives, old fashioned varieties for cottage gardens. CAT FREE, RET, PC/CC, OVER.
- 093 **Peter B. Dow & Co** - P.O. Box 696, Gisborne 3800, New Zealand, 64 6 867-3408. Bulk seed supplier of most flowers, trees, shrubs and palms. CAT \$8.50, R & W, PC/CC/OC, OVER, M.O. \$40.
- Dow Flora (Singapore) Pte., Ltd.** - Plot 11 & 12 Joan Rd./Thomson Rd. 1129, Singapore, 252 2861. Subsidiary of Peter B. Dow & Co., New Zealand, which see.
- 094 **DPI Forestry Tree Seed Centre** - Mail Service 424, Beerwah, QLD 4519, Australia, 617 5494-0362. Supplies seed for a wide range of native and exotic trees and shrubs, with many being indigenous to Queensland. Also improved strains of Pinus. CAT FREE, RET, PC/CC/OC, OVER, M.O. \$20.
- 097 **Duncan & Davies Nurseries Ltd.** - P.O. Box 340, New Plymouth, New Zealand. Major New Zealand tree and shrub nursery. Significant young plant exporter to Europe, Asia and North America. Specializes in ornamentals, fruiting plants and New Zealand natives. CAT \$10, R & W, BANK DRAFT, OVER, M.O. 1,000 PLANTS WHLS.
- PIG **Eden Seeds** - M.S. 316, Gympie, QLD 4570, Australia, (07) 5486-5230. Specializes in traditional, non-hybrid vegetable, herb and flower seeds, preferably from local sources and bio-dynamically or organically grown. Also offers tree and shrub seed. CAT FREE, R & W, PC/CC, OVER.
- P5 **Ellison Horticultural Pty., Ltd.** - P.O. Box 365, Nowra, NSW 2541, Australia, 61 44-214255. Bulk seed supplier of Australian natives and exotic tree, shrub and palm seed and seedlings. Previously known as International Seed Supplies. CAT FREE, R & W, PC/CC/OC, OVER, M.O. \$30.
- P10 **Euroseeds** - P.O. Box 95, Novy Jicin 74101, Czech Republic, 61 44-214255. Seeds of alpine plants, dwarf shrubs and bulbous plants personally collected by proprietor Mojmir Pavelka. CAT \$2, RET, PC, OVER.
- P17M **M.L. Farrar Pty., Ltd.** - P.O. Box 1046, Bomaderry, NSW 2541, Australia, 02 44 217-966. International seed merchants specializing in seed of trees and shrubs, palms, grasses, Australian natives. CAT FREE, R & W, PC/CC/OC, OVER.
- P38 **Fruit Spirit Botanical Gardens** - Lot 69, Dorrourty, NSW 2480, Australia, 0266 895-192 (no telephone orders). Very large collection of useful plants, including tropical and subtropical fruit species and their cultivars, nuts, palms, medicinals and species suitable for agro-forestry. Most seed is personally collected to order. CAT \$2, R & W, BANK DRAFT, OVER, M.O. \$20.
- P49 **Geigle Samen GmbH** - Herrenberger Strasse 54, Nagold D-72202, Germany, 49 7452-67686 (fax). Tree and shrub seeds. CAT FREE, R & W, PC, OVER, ENGL.
- P59M **Ets Gonthier S.A.** - Rue de Leumont, 1A, Wanze B-4520, Belgium, 85 241510. Vegetable, herb and flower seeds, fruit trees. CAT FREE, R & W, OVER.
- P68M **Haberli Nursery** - Obst-und Beerenzentrum AG, Neukirch-Egnach CH-9315, Switzerland, 71 474-7080 (fax). Specializes in improved jostaberry cultivars. Also strawberries, raspberries, currants, gooseberries, hardy kiwi, and other small fruits. CAT FREE, R & W, PC, OVER, M.O. \$500.
- P75M **Hazera (1939) Ltd.** - Brurim. D.N., Shikmim 79837, Israel, 8-850-8850. Growers and breeders of vegetables and field crops. Specializes in greenhouse tomatoes, peppers and cucumbers. CAT FREE, WHLS, WIRE TRANSFER, OVER, ENGL.
- P83M **Heritage Seeds Pty. Ltd.** - P.O. Box 76, Brisbane Market, QLD 4106, Australia, 8-850-8850. Growers, processors and exporters of a wide range of grain, pasture and forage seeds. Incorporating Primac Seeds. CAT FREE, WHLS, OC, OVER.
- P92 **Hollington Nurseries Ltd.** - Woolton Hill, Newbury, Berks. RG20 9XT, England, 8-850-8850. Specializes in herb plants and scented plants. CAT £2, R & W, PC/CC, OVER, M.O. £500 EXPORT.
- Q3 **Hungnong Seed Co., Ltd.** - Woojin Bldg., 1338-20 Seocho-Dong, Seocho-ku, Seoul 137-072, South Korea, 3473-0971. Breeders and growers of vegetable seeds. CAT FREE, WHLS, OVER, ENGL.
- Q11M **Fratelli Ingegnoli S.p.A.** - Via Oreste Salomone, 65, Milano 20138, Italy, 02 5801-3113. Venerable Italian seed house established in 1817. Extensive range of vegetable, herb, flower and forage seeds. Particularly large selection of chicories. Also offers fruit trees and grapevines. CAT FREE, R & W, CC, OVER, M.O. \$30, ENGL.
- Q12 **The Inland & Foreign Trading Co.** - Block 79A, Indus Road #04-418 169589, Singapore, 272-2711. Harvesters, processors and distributors of legume cover crop, pasture, shrub and tree seeds. CAT FREE, R & W, BANK DRAFT, OVER, ENGL.
- Q15G **Israflora** - P.O. Box 502, Kiryat-Bialik 27093, Israel, 04 8737-155. Specializes in tree and shrub seed of arid and semi-arid regions in which plants are used for afforestation, conservation, grazing, windbreaks, sand dune stabilization, timber and fuel production. CAT FREE, WHLS, OVER, M.O. \$150, ENGL.
- Q18 **Jagriti Seeds Suppliers** - 113, Pandituari, P.O. Premnagar, Dehra Dun, Uttar Pradesh 248 007, India, 04 8737-155. Wide range of seeds of vegetables, fruits, forest trees, ornamentals, grasses and forages, shrubs, hedges and bamboo. CAT FREE, R & W, OC, OVER, M.O. 1 KG, ENGL.
- Q24 **Jelitto Staudensamen** - Postfach 1264, Schwarmstedt D-29685, Germany, 5071-4085. Large selection of perennial seed, over 2,000 species. CAT FREE, WHLS, PC, OVER, M.O. \$50, ENGL.
- Q28 **Kaneko Seeds Co., Ltd.** - 50-12 Furuichimachi, 1-Chome, Maebashi City, Gunma-Ken 371, Japan, 0272 51-1612. Breeders and growers of vegetable and flower seeds. CAT FREE, WHLS, OVER, ENGL.
- Q30 **Keepers Nursery** - Gallants Court, East Farleigh, Maidstone, Kent ME15 OLE, England, 0272 51-1612. Extensive collection of temperate fruit trees. Specializes in

- older and unusual cultivars. Can supply budwood overseas. CAT FREE, RET, PC.
- Q32 H.G. Kershaw Pty., Ltd. - P.O. Box 359, Avalon, NSW 2107, Australia, 02 9973-2210. Wholesale seed company handling both native and exotic species. Over 2,200 varieties of rare and popular banksias and eucalyptus, exotic ferns, indoor plants, climbers and protea. CAT FREE, WHLS, BANK DRAFT, OVER.
- Q34 Kings Herbs Limited - P.O. Box 19-084, Avondale, Auckland 2107, New Zealand, 02 9973-2210. Seeds of standard and unusual herbs, cottage garden plants, gourmet and oriental vegetables, dried flowers and bee plants. CAT \$6, RET, PC/CC, OVER, M.O. \$7.
- Q38 Karel Kniae - P.O. Box 10248, Lima 1, Peru, 02 9973-2210. Seeds and plants of cacti and succulents. CAT FREE, R & W, PC/OC, OVER, M.O. \$20, ENGL.
- Q39 Know-You Seed Co., Ltd. - 26, Chung Cheng 2nd Rd., Kaohsiung 80244, Taiwan, 07 224-1106. Breeders and growers of vegetable seeds. CAT FREE, WHLS, OVER, ENGL.
- Q40 P. Kohli & Co. - Park Road, Near Neelam Theatre, Srinagar, Kashmir 190009, India, 73061. Seeds of a broad selection of trees, shrubs, climbers, perennials, alpines and bulbs from Kashmir and the western Himalayas. Can also arrange for shipment of seeds and bulbs of Indian origin. Established in 1928. CAT 5 IRQ R & W, PC, OVER, M.O. \$30, ENGL.
- Q41 Gerhard Kohres - Wingerstrasse 33, Erzhausen/Darmstadt D-64387, Germany, 06150 7241. Seeds of succulents, palms, cacti and mesembryanthemum. CAT \$2, R & W, PC/OC, OVER.
- Q45M Kumaon Nursery & Garden - Ranikhet Road, Nainital District, Ramnagar 244 715, India, 06150 7241. Seeds of vegetables, fruits, ornamental flowering trees and flowers. Also sells papain, pure honey and beeswax. CAT FREE, R & W, BANK DRAFT, OVER, ENGL.
- Q46 Kumar International - Ajitmal 206121, Etawah, Uttar Pradesh 244 715, India, 54221. Producers, collectors and suppliers of seeds of conifers, ornamental, flowering and forest trees, palms, hedges, shrubs, herbs, bamboos, fodder and grasses, and green manures. CAT \$1, R & W, PC/CC/OC, OVER, M.O. \$50, ENGL.
- Q49M Landsendt Subtropical Fruits - 108 Parkers Road, Oratia, Auckland 244 715, New Zealand, 9 818-6914 (no telephone orders). Seeds and nursery stock of rare and commercial subtropical fruit and vegetable crops, many introduced from Andean South America. Also exotic ornamentals and timber trees. CAT FREE, R & W, PC/OC, OVER, M.O. \$500.
- Q52 Leen de Mos - P.O. Box 54, 2690 AB's, Gravenzande 244 715, Netherlands, 9 818-6914 (no telephone orders). Vegetable and flower seeds. CAT FREE, WHLS, PC, OVER.
- Q88 Mikado International Inc. - 1203 Hoshikuki, Chiba City 280, Japan, 472 65-4847 (no telephone orders). Producers, breeders and suppliers of a wide range of vegetable seeds for processors, commercial growers and gardeners. Subsidiary of Mikado Seed Growers Co., Ltd. CAT FREE, R & W, PC, OVER, ENGL.
- Q93 Mountain Views Nursery - 45 Pavilion St., Pomona, QLD 4568, Australia, 0754 85 1375. Large supplier of fully container grown commercial and exotic tropical fruit trees. Over 200,000 in stock. Regularly ships overseas. CAT FREE, R & W, PC/CC/OC, OVER.
- R0 Namdeo Umaji & Co. - 161-167 Dr. Ambedkar Road, Byculla (East), Mumba 400 027, India, 022 372-5674 or 372-2628. Seed growers and merchants handling vegetable and flower seeds, ornamentals, roses, and grafted fruit trees. CAT FREE, R & W, OC, OVER, ENGL.
- RUM Nickerson-Zwaan h.v. - P.O. Box 19, Barendrecht 2990 AA, Netherlands, 0 180-656700. Breeders and growers of vegetable seeds especially suitable for warm climates. CAT FREE, WHLS, OVER, ENGL.
- R15M NindethanaSeed Service - P.O. Box 2121, Albany WA 6331, Australia, 098 44 3533. Specialists in Australian native plant seeds. Approximately 2,200 species, many rare and difficult to obtain. CAT FREE, R & W, PC/CC, OVER.
- R22 Nurseryman's Hawn - P.O. Box 51, Holumba, Kalimpong, 734301, India, 03552-56936. Large supplier of exotic flowering bulbs, shrubs and forest tree seedlings, vegetable and fruit seeds and plants, species and hybrid orchids, and cacti. CAT FREE, R & W, PC/OC, OVER, ENGL.
- R32 The Organic Gardening Catalogue - Coombelands House, Addlestone, Surrey KT15 1HY, England, 01932 820958. Mail order branch of the Henry Doubleday Research Association and Chase Organics. Complete organic gardening catalog offers heirloom English vegetables, oriental vegetables, herbs, sprouting seeds, green manures, garden flowers and wild flowers. All purchases help to fund research and promotion of organic gardening. Previously known as Heritage Seeds. CAT FREE, RET, PC/CC/OC, OVER.
- R33M D. Orriell Seed Exporters - 45 Fmpe Avenue, Mt. Yokine, Rrth, WA 6060, Australia, 619 344-2290. Well established Australian seed house exporting to over thirty five countries. Publishes separate lists of cold-hardy Australian eucalypts, palms and cycads, drought resistant trees and shrubs, Australian natives, exotic species for greenhouse, outdoors and bonsai. CAT \$6, R & W, PC/CC/OC, OVER.
- R47 Phoenix Seeds - P.O. Box 207, Snug, TAS 7054, Australia, (03) 6267-9663. Specializes in non-hybrid seed of useful plants, including vegetables, fruit trees, herbs, native food plants, green manures and cover crops. Proceeds go towards encouraging natural, organic culture. CAT FREE, RET, PC, OVER.
- R49 Plants for a Future - The Field, Penpol, Lostwithiel, Cornwall PL22 0QL, England, (03) 6267-9663. Resource and information center for edible and other useful plants. CAT £1, RET, PC/CC, U.K. ONLY.
- R50 Pocha Seeds Pvt., Ltd. - Post Box 55, nr. Sholapur Bazar, Pune 411 040, India, 212 671-978 or 671-979. One of the oldest seed companies in Asia, established in 1884. General garden supplies, including seeds of vegetables, flowers, trees, grasses, hedges and forages, plants and bulbs. CAT \$5, R & W, BANK DRAFT, OVER, ENGL.
- R52 Potterton & Martin - Moortown Road, Nettleton, Caistor, Lines. LN7 6HX, England, 01 472-851714. Small old fashioned nursery producing most of the plants sold. Supplies alpines, dwarf shrubs and conifers, ferns, and dwarf hardy or semi-hardy bulbous plants. CAT \$3, R & W, PC/CC, OVER.
- R53M Poyntzfield Herb Nursery - Black Isle, by Dingwall, Ross & Cromarty, Highland IV7 8LX, Scotland, 44-1381-610352 (no telephone orders). Herb nursery specializing in over 300 varieties of popular, unusual and rare herb plants and seeds. All are grown using organic or

- biodynamic methods. CAT \$3, RET, RANK DRAFT, OVER, M.O. £5.
- R59M **Primavera Grandi Vivai** - Svincolo Rmte Verdura, Km. S59 136 S.S. 115, Ribera (Agrigmo) 92016, Italy, 09 256-1877 (telefax). Specializes in plants for Mediterranean climates, including fruit trees and ornamental trees and shrubs. CAT FREE, R & W, PC/CC/OC, OVER.
- R60 **Protea Seed & Nursery Suppliers** - 111 Oak Avenue, Robindale, Randburg 2194, South Africa, Oil 782-5215. Large selection of tree and shrub seed indigenous to South Africa and Australia, especially Proteaceae and Erica. CAT \$1, RET, PC/OC, OVER, M.O. R100, ENGL.
- R77 **Reads Nursery** - Hales Hall, Loddon, Norfolk NR14 6QW, England, Oil 782-5215. Extensive collection of rare and unusual fruit and nut trees, grape vines, citrus, figs, conservatory plants, climbers and wall shrubs. CAT FREE, RET, CC, OVER, M.O. £10.
- R78 **M. Renz Nachf. GmbH & Co. KG** - Oberjettinger Str. 28, Nagold-Emmingen 72202, Germany, Oil 782-5215. One of the largest European forest tree seed dealers. CAT FREE, WHLS, OVER, M.O. 100 DM.
- R78M **Reserva Rio Guaycuyacu** - Galapagos 565, #27, Quito 72202, Ecuador, (5932) 220-426 (fax). Seeds of tropical fruit trees including hard to find species from Columbia and Ecuador. CAT FREE, R & W, PC, OVER.
- R83 **R.V. Roger Ltd.** - The Nurseries, Whitby Rd., Pickering, N. Yorks. YO18 7HG, England, 01 751 472-226. An 85 year old plus family company growing over 2,500 varieties of hardy garden trees, fruits and nuts, herbs, shrubs, conifers, heathers, alpines and herbaceous plants. Also vegetable seeds and seed potatoes. CAT £1.50, R & W, PC/CC, OVER.
- R88 **Doug & Vivi Rowland** - 200 Spring Road, Kempston, Beds. MK42 8ND, England, 01 751 472-226. Specializes in cactus, succulent, desert and carnivorous plant seeds, mostly collected in their native habitat. Previously known as Southwest Seeds. CAT FREE, RET, PC/OC, OVER.
- S17 **N. Sgaravatti & C. S.p.A.** - Via Nazionale, 119, Pergine Valdarno, AR 52020, Italy, 0575 899535 (fax). Vegetable, herb and flower seeds. CAT FREE, WHLS, OVER.
- S28M **Silverhill Seeds** - P.O. Box 53108, Kenilworth 7745, South Africa, 21 762-4245. Collectors, growers and distributors of South African wild flower seed, from annuals to trees. Specialists in Proteaceae, Ericas and Pelargoniums. Previously known as Parsley's Cape Seeds. CAT \$2, R & W, PC/OC, OVER.
- S30 **Clive Simms Nursery** - Woodhurst, Essendine, Stamford, Lines. PE9 4LQ, England, 0780 55615. Small nursery specializing in plants that will bear edible fruits, especially those which are less well known. CAT FREE, R & W, OVER.
- S36 **Sodhai Ram & Sons** - D 64/146 Vidyapith Road, Varanasi, Uttar Pradesh 221002, India, 0780 55615. Grower and breeder of vegetable and flower seeds. CAT FREE, R & W, BANK DRAFT, OVER, M.O. \$25, ENGL.
- S43M **Southern Seeds** - The Vicarage, Sheffield, Canterbury 8173, New Zealand, 03 318-3814. Alpine seeds of New Zealand, especially from the Southern Alps. Some species of trees and shrubs are also available. Seeds are collected from the wild. CAT \$5, RET, PC/OC, OVER, M.O. \$25.
- S55 **Suffolk Herbs** - Monks Farm, Pantlings Lane, Kelvedon, Essex CO5 9PG, England, 03 318-3814. Large range of herbs from all over the world, native British wild flowers, unusual, heirloom and oriental vegetables. CAT £1, RET, PC/CC, OVER.
- Sunraysia Nurseries - P.O. Box 45, Gol Gol, NSW 2738, Australia, 03 50 248-551 (fax). Australia's largest producer of grape vines, over 80 cultivars. Also specializes in citrus, avocado, olives and other subtropicals. CAT FREE, RET, CC, OVER, M.O. 5 OF EACH.
- S59M **Sutton & Sons (India) Pvt. Ltd.** - P.O. Box 9207, Calcutta, 700 071, India, 91 3329-0472 (no telephone orders). Producers and sellers of flower and vegetable seeds. CAT FREE, R & W, BANK DRAFT, OVER, M.O. \$10, ENGL.
- S61 **Suttons Seeds, Ltd.** - Hele Rd., Torquay, Devon TQ2 7QJ, England, 0803 62011. Well known British company founded in 1806. Large selection of vegetables, flowers, herbs and wild flowers. CAT FREE, R & W, BANK DRAFT, OVER (WHLS ONLY), M.O. £5.
- S61M **Svalof Weibull Tradg&rd AB** - Kundnummer 200411600, Hammenhog 276 20, Sweden, 0414-443840. Vegetable, herb and flower seeds. Previously known as Hammenhogs Fro AB. CAT FREE, R & W, OVER.
- S63M **Takii & Co., Ltd.** - P.O. Box 7, GP.O., Kyoto 600-91, Japan, 075 365-0123. Breeders and growers of vegetable seed. CAT FREE, WHLS, OVER, ENGL.
- S66M **Technisem S.A.** - 7, av. du Garigliano, ZAC des Gatines, Savigny-Sur-Orge 91601, France, 075 365-0123. Specializes in vegetable seeds for tropical regions. CAT \$3, R & W, PC/OC, OVER, M.O. \$100, ENGL.
- 569 **Thuya Alpine Nursery** - Glebelands, Hartpury, Glos. GL19 3BW, England, 075 365-0123. Unusual alpine plants, shrubs and trees. CAT 3 IRC, RET, PC, OVER (E.E.C. ONLY), M.O. £4.
- 570 **Tokita Seed Co., Ltd.** - Nakagawa, Omiya-shi, Saitama-ken 330-8532, Japan, 48 683-3434. Breeders and growers of vegetable seed. CAT FREE, WHLS, OVER, ENGL.
- S75M **A.L. Tozer Ltd.** - Pyports, Downside Bridge Rd., Cobham, Surrey KT11 3EH, England, 1932 862-059. Vegetable seed breeders and growers. CAT FREE, WHLS, CC/OC, OVER.
- S92 **Vaughans Wildflower Seeds** - Private Mail Bag 2, Gingin, WA 6503, Australia, 1932 862-059. Seeds of Australian native plants. CAT \$5, R & W, BANK DRAFT, OVER.
- S93M **Verma Seed Co., Pvt. Ltd.** - 53 Kasgaian, P.B. No. 67, Bareilly, Uttar Pradesh 243 001, India, 0091 0581-74650. Growers and sellers of vegetable, flower, fruit, grass, forestry, hedge and tree seeds. CAT FREE, R & W, LETTER OF CREDIT, OVER, ENGL.
- S95M **Vilmorin s.a.** - Route du Manoir, La Menitre 49250, France, 41 794-179. Famous French seed house established in 1742. Wide range of vegetable seeds, now sold only through dealers. CAT FREE, WHLS, OVER.
- S97M **Vivero Yautepec** - Apartado Postal 447, Cuernavaca, Morelos 62000, Mexico, 739 42424 (Fax). Large selection of tropical and subtropical fruit trees. Also fruits for eating. CAT FREE, R & W, OVER (FRUIT ONLY).
- TIM **Watkins New Zealand Ltd.** - P.O. Box 468, New Plymouth, New Zealand, 06 755-2244. Vegetable, herb and flower seeds supplied commercially to market growers and nurserymen. CAT FREE, R & W, PC/CC, OVER.

- T25M Roy Young Seeds - 23 Westland Chase; West Winch, King's Lynn, Norfolk PE33 OQH, England, 1553-840867 (no telephone orders). Large selection of seeds of cactus and succulent plants from all over the world, approximately 2,000 different types. CAT 3 IRQ R & W, BANK DRAFT, OVER.
- T27M Zeraim Gedera - P.O. Box 103, Gedera 70750, Israel, 1553-840867 (no telephone orders). Seed growers company of the Israel Farmers Federation offering vegetable and field crop cultivars. CAT FREE, R & W, OVER, ENGL.

## DOMESTIC NON COMMERCIAL

- T34 American Type Culture Collection - 12301 Parklawn Dr., Rockville, MD 20852. Non-profit service institution that has what is believed to be the largest single collection of diverse biological cultures anywhere in the world. The collection includes bacteria, fungi, yeasts and algae. Distribution of cultures is restricted to individuals and organizations with appropriate credentials and laboratory facilities for handling microorganisms and genetic material.
- T41M Arnold Arboretum - 125 Arborway, Jamaica Plain, MA 02130-3519. Propagating material is available to research scientists, educators, nursery people and specialty-plant collectors. There is a fee to offset costs of providing assistance. Will not supply propagating materials for plants that are available commercially in North America.
- T49M California Rare Fruit Growers - The Fullerton Arboretum, California State University, P.O. Box 6850, Fullerton, CA 92634. Organization dedicated to the introduction and distribution of new fruits, and of superior cultivars of the more established fruits, primarily for home utilization as grown under California conditions. Services include a periodical seed exchange and an annual scion exchange.
- T54 College of Tropical Agriculture - Kauai Branch Station, University of Hawaii, 7370-A Kuamoo Road, Kapaa, Kauai, HI 96746. Provides limited quantities of propagating material to researchers and other governmental institutions.
- T66M Desert Legume Program - USDA, ARS, 2120 East Allen Rd., Tucson, AZ 85719.
- T67M Division of Agriculture - ODRD, Kolonia, Ponape State, Trust Territory of the Pacific, Eastern Caroline Islands, 96941.
- T69 ECHO (Educational Concerns for Hunger Organization) - 17430 Durrance Rd., North Fort Myers, FL 33917-2200. Non-profit research and education organization specializing in seeds and plants of underexploited but important tropical food crops. Non-commercial list includes items in short supply and is intended for their overseas network.
- T71 Fairchild Tropical Garden - 10901 Old Cutler Road, Miami, FL 33156. Plant material is available to other botanical gardens, universities, members and on a very limited basis, to commercial growers. Only small, representative samples are supplied which are collected by volunteers.
- T72M Florida Department of Agriculture - Division of Forestry, Miami Coconut Seed Orchard, 13607 Old Cutler Rd., Miami, FL 33158. Provides propagating material free of charge to other scientific institutions.
- T73M Fruit and Spice Park - 24801 S.W. 187th Avenue, Homestead, FL 33031. Unique collection of fruits, spices, nuts and economic plants from around the world. More than 500 varieties on 20 acres, plus a one acre demonstration herb and vegetable garden. Limited quantities of seed and scion wood are available to researchers and collectors.
- U7 National Center for Agricultural Utilization Research - USDA, ARS, 1815 North University St., Peoria, IL 61604. Maintains a large collection of bacteria, yeasts and molds. Cultures are available upon request to researchers and to members of the general public who have laboratory facilities.
- U7A National Germplasm Repository, Brownwood - USDA, ARS, Pecan Research, Rt 2., Box 133, Somerville, TX 77879.
- U7D National Germplasm Repository, Corvallis - USDA, ARS, 33447 Peoria Road, Corvallis, OR 97333. Government agency that distributes limited quantities of plant material for research purposes to national and international scientists free of charge. Reasonable requests from the general public are also honored.
- U7G National Germplasm Repository, Davis - USDA, ARS, University of California, Davis, CA 95616. Clonal crop germplasm of Vitis, Prunus, Juglans, Pistacia, Olea and Ficus. Available to researchers in limited quantities on request.
- U7J National Germplasm Repository, Geneva - USDA, ARS, Cornell University, Plant Genetic Resources Unit, Geneva, NY 14456-0462.
- U7N National Germplasm Repository, Hilo - USDA, ARS, P.O. Box 4487, Hilo, HI 96720.
- U7P National Germplasm Repository, Mayaguez - Tropical Agriculture Research Station, USDA, ARS, P.O. Box 70, Road 65, Mayaguez, PR 00709.
- U7T National Germplasm Repository, Miami - USDA, ARS, 13601 Old Cutler Road, Miami, FL 33158.
- U7Z National Germplasm Repository, Riverside - USDA, ARS, 1060 Martin Luther King Jr. Blvd., Riverside, CA 92507.
- U8D National Seed Storage Laboratory - USDA, ARS, 1111 South Mason St., Fort Collins, CO 80521-4500.
- U8M National Small Grains Collection - USDA, ARS, P.O. Box 307, Aberdeen, ID 83210.
- U13 North American Fruit Explorers - 1716 Apples Rd., Chapin, IL 62628. A network of amateur and professional fruit aficionados devoted to the discovery, cultivation, and appreciation of superior cultivars of fruits and nuts. Seeds and scionwood are available through an exchange page in the quarterly journal.
- U14 North Central Regional Plant Introduction Station - USDA, ARS, Iowa State University, Ames, IA 50011.
- U15 Northeast Regional Plant Introduction Station - USDA, ARS, Cornell University, Plant Genetic Resources Unit, Geneva, NY 14456-0462.

- U24 Potato Germplasm Introduction Station - USDA, ARS, 4312 Highway 42, Sturgeon Bay, WI54235.
- U26 Quail Botanical Gardens - P.O. Box 5, Encinitas, CA 92024. Government institution that honors all reasonable requests from the general public.
- U27T Rare Fruit Council International - P.O. Box 561914, Miami, FL 33256. The original society dedicated to the introduction and promotion of tropical fruit. Access is provided by seed and plant exchange programs.
- U30 Rutgers Fruit Research and Extension Center - Attn: Joseph Goffreda, No. 283, Route 539, Cream Ridge, NJ 08514. Will supply small quantities of budwood for testing. Recipients must first sign a non-propagation agreement.
- U33 Seed Savers Exchange - 3076 North Winn Rd., Decorah, LA 52101. Grassroots genetic preservation project focused on heirloom and endangered vegetables. Seeds are traded between members and non-members.
- U37M Southern Regional Plant Introduction Station - USDA, ARS, University of Georgia, 1109 Experiment St., Griffin, GA 30223-1797.
- U38 Soybean Collection - USDA, ARS, University of Illinois, 1102 South Goodwin Ave., Urbana, IL 61801. Government institution that honors all reasonable requests for seeds for research purposes.
- U45 United States National Arboretum - National Germplasm Repository, USDA, ARS, 3501 New York Ave. N.E., Washington, DC 20002.
- U53T University of Kentucky - College of Agriculture, Department of Agronomy, Lexington, KY 40546.
- U63 Western Regional Plant Introduction Station - USDA, ARS, Washington State University, 59 Johnson Hall, Pullman, WA 99164-6402. Government agency that distributes limited quantities of plant material for research purposes to national and international scientists free of charge. Reasonable requests from the general public are also honored.

## OVERSEAS NON COMMERCIAL

- U71M Agricultural Research Organization - The Volcani Center, P.O. Box 6, Bet Dagan 50-250, Israel. Government institution that publishes a list of introductions each year and an exchange of seeds takes place with other research organizations world wide.
- U76 All India Coordinated Project on Rape and Mustard - Haryana Agricultural Univeisity, Hissar, Haryana 1250004, India.
- V29M Botanical Garden - Tohoku Univeisity, Kawauchi, Sendai 980, Japan.
- V73M Botanischer Garten der Martin-Luther Universitat Halle-Wittenberg - Am Kirchtor 3, Halle (Saale) 06108, Germany.
- V84 Botanischer Garten der Universitat Bonn - Meckenheimer Allee 171, Bonn D-53115, Germai. Honors all reasonable requests from the general public.
- V84M Botanischer Garten der Universitat Erlangen-Niimberg - LoschgestraBe 3, Erlangen D-91054, Germany.
- V84T Botanischer Garten der Universitat Gottingen - Untere Karspiile, Gottingen D-37073, Germany.
- V85 Botanischer Garten der Universitat Graz - Holteigasse 6, Graz, Osterreich A-8010, Austria.
- V85M Botanischer Garten der Universitat Leipzig - Linnestrafie 1, Leipzig D-04103, Germany.
- V87 Botanischer Garten und Rhododendron Park - Marcusallee 60, Bremen D-28359, Germai. Encourages an exchange of seeds between other institutions and collectors. Does not want requests from the general public.
- W3M Central Republic Botanical Garden - Ukrainian Academy of Sciences, Timiryazevskaya St. 1, Kiev 252014, Ukraine. Government institution that honors all reasonable requests from the general public.
- W5 Central Siberian Botanical Garden - Zaeltsovsky District, Novosibirsk 630090, Russia.
- W22 Chollipo Arboretum - San 185 Uihang-Ni, Sowon-Myon, Taean-Gun, Chungchong Namdo 357-930, South Korea Non-profit, private arboretum exchanging seeds with 120 institutions and individuals worldwide.
- W35 Czech Academy of Sciences - Institute of Botaiy, Department of Hydrobotaiy, Dukelska 145, Trebon CS-379 82, Czech Republic.
- W54 Department of Plant Science - Faculty of Natural Resources, Prince of Songkla Univeisity, Haadyai, Songkla, Thailand.
- W59M Direzione Orto Botanico Dell'Universita di Palermo - Via A. Lincoln, Palermo, Sicily 90133, Italy. Honors inquiries from the general public, who should make requests through their local institution.
- W79 Estacion Experimental "Santa Catalina" - INIAP, CP. 340, Quito, Ecuador.
- W88M Faculte Mixte de Medicine et de Pharmacie - Jardin Botanique, 16, boulevard Daviers, Angers 49100, France.
- W90 Faculty of Agriculture - University of Peradeniya, Peradeniya, Sri Lanka.
- X14 Highlands Agricultural Research Station - Department of Primary Industry, Aiyuia, P.O. Box 384, Kainantu, Papua New Guinea. Government institution mandated to carry out sustainable agriculture research. Has a very limited collection of traditional vegetables for exchange.
- X33 Hortus Botanicus Principalis - Academiae Scientiarum, Moscow 127276, Russia.
- X34 Hortus Botanicus Universitatis Altaiensis - Dimitrova 66, District Altaijskaja, Barnaul 656099, Russia.
- X47 Institut Botanic de Barcelona - Parc de Montjuic, Avenida de la Muntanyans s.n., Barcelona, Catalunya 08004, Spain.
- X51 Institut des Savanes - Ministere de la Recherches Scientifique, B.P. 633, Bouake, Cote d'Ivoire.
- X54 Institut fiir Pflanzengenetik und Kulturpflanzenforschung - Coriensstr. 3, Gatersleben

- 4325, Germany Gene bank that preserves germplasm of Y40 cultivated plants (land races, obsolete and more recent cultivars) and their wild relatives. Small seed samples are available free of charge to scientific institutions and breeders and on a limited scale to interested private persons.
- X56 Institute Burkinabe de Recherche Agronomique et Zootechnique - B.P. 7192, Ougadougou, Burkina Faso.
- X62 Institute of Plant Breeding - National Plant Genetic Resources Laboratory, University of the Philippines at Los Banos, College, Laguna 4031, Philippines. Encourages the general public to make requests through their local institution.
- X77M Instituto Nacional de Investigaciones Agrarias - Jose Abascal 56, Madrid, Spain.
- X79 Instituto Nacional de Pesquisas da Amazonia - GP. 478, Manaus, Amazonas 69.000, Brazil.
- X82 International Institute of Tropical Agriculture - P.M.B. 5320, Ibadan, Nigeria.
- X88M Jardim Botânico do Rio de Janeiro - Rua Pacheco Leão 915, Rio de Janeiro, RJ 22.460, Brazil. Seeds are offered for exchange with other scientific institutions only.
- Y0M Jardín Botánico de la Universidad de San Carlos - Centro de Estudios Conservacionistas, Avenida de la Reforma 0-63, Guatemala City, Zona 10, Guatemala.
- Y2 Jardín Botánico Nacional de Cuba - Carretera del Rocfo, km 3 1/2, Calabazar, Boyeros, Havana, Cuba. Offers a free exchange of seeds to other botanical gardens and scientific institutions. Cannot accept requests from the general public.
- Y14M Jardín Botanique de la Ville et de l'Université - Place Marechal, Leclerc, Besangon F-25000, France. Will exchange seeds with other institutions and serious collectors. Does not accept requests from the general public.
- Y17M Jardín Botanique National de Belgique - Domaine de Bouchout, Meise B-1860, Belgium. Honors all requests from other institutions and collectors on an exchange basis.
- Y18 Jardín Botaniques de la Ville de Nice - 78 Corniche Fleurie, Nice F-06200, France. Encourages reciprocal exchanges between other institutions and collectors. Cannot accept requests from the general public.
- Y29 Kaunas Botanical Garden - Botanical Institute, Z88 Lithuanian Academy of Sciences, Botanikos 4, Kaunas 233019, Lithuania. Encourages the general public to make requests through their local institution.
- Y29M King's Park and Botanic Garden - Fmser Ave., West Perth, WA 6005, Australia. Surplus seed is distributed free to botanical gardens which issue seed exchange lists and to scientific institutions which require seed for research purposes. Private collectors and the general public should apply through their local official institutions.
- Loko Agroforestry Program - B.P. 1377, Bangui, Central African Republic. Project of Christian development groups working to promote agroforestry as an alternative to "slash and burn" farming in Africa, and around the world. Honors all requests from the general public.
- Y76 Nanjing Botanical Garden - 1 Qian hu hou cun, Outside Zhongshan Gate, Nanjing, Jiangsu, China.
- Y81 National Bureau of Plant Genetic Resources - Indian Agricultural Research, Institute, New Delhi 110012, India.
- Y83 National Fruit Trials - Brogdale Horticultural Trust, Brogdale Rd., Faversham, Kent ME13 8XZ, England. Will provide reasonable quantities of material for breeders and other research and official collections overseas free of charge. Cannot normally supply private individuals due to the cost and difficulties over plant health regulations.
- Y89M Nikita Botanical Gardens - GP.Q, Yalta, Crimea 334267, Ukraine.
- Z5 Philippine Root Crop Research and Training - Visayas State College of Agriculture, Baybay, Leyte 7127-A, Philippines.
- Z7M Plant Genetic Resources Laboratory - Agricultural Research Council, P.O. Box 1031, Islamabad, Pakistan.
- Z12 Plew Horticultural Experiment Station - G.P.O., Chantaburi Province, Thailand.
- Z19 Real Jardín Botánico - Plaza de Murillo, 2, Madrid 28014, Spain. Government institution that honors all reasonable requests from the general public.
- Z23M Research Center for Agrobotany - Institute for Plant Production and Qualification, Tapiosele 2766, Hungary. Government gene bank that provides material free of charge on an exchange basis. Suggests that the general public inquire through their local institution.
- Z25M Royal Botanic Garden - Inverleith Row, Edinburgh EH3 5LR, Scotland. Honors requests for plant material from its Catalog of Plants to institutions and private individuals with whom they have established plant exchange relationships. Plant material is not available to the general public, nor is material available on a sales basis.
- Z72 Unidad de Recursos Fitogenéticos - Centro Agronómico Tropical de Investigación y Enseñanza, P.O. Box 15, Turrialba, Costa Rica.
- University of Uppsala Botanic Garden - Villavagen 8, Uppsala S-752 36 Sweden. Accepts requests on an exchange basis with other institutions, collectors and commercial interests only.
- Z91 N.I. Vavilov All-Union Institute of Plant Industry - 44 Bolshaya Morskaya St., St. Petersburg 190000 Russia. Honors all requests from collectors, institutions and commercial interests on the basis of equivalent exchange. Encourages the general public to make inquiries through their local institution.

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## APPENDICES

### APPENDIX A: USAGE AND EDIBLE PARTS

ADJUVANTS, ADDITIVES - *Abelmoschus moschatus*, *Albizia odoratissima*, *Aleurites moluccana*, *Ananas comosus*, *Ariocarpus fissuratus*, *Aspergillus niger*, *Bidens pilosa*, *Buddleia asiatica*, *Carica papaya*, *Catha edulis*, *Chimaphila maculata*, *C. umbellata*, *Chondrus crispus*, *Citrus x amblycarpa*, *Ficus insipida*, *Fumaria officinalis*, *Gladiolus italicus*, *Glycine max*, *Glycyrrhiza glabra*, *Gouania lupuloides*, *Grewia asiatica*, *Guaiacum officinale*, *Guazuma ulmifolia*, *Gypsophila paniculata*, *Hibiscus bifurcatus*, *Hordeum vulgare*, *Humulus lupulus*, *Kigelia africana*, *Kydia calycina*, *Larrea tridentata*, *Ledum groenlandicum*, *Macaranga grandifolia*, *M. tanarius*, *Manilkara hexandra*, *Myrica gale*, *Myrtus communis*, *Ornithogalum narbonense*, *Phaseolus metcalfei*, *Punica granatum*, *Quillaja saponaria*, *Randia echinocarpa*, *Ruta graveolens*, *Sapindus mukorossi*, *Saponaria officinalis*, *Spondias mombin*, *Stevia serrata*, *Syzygium cumini*, *Terminalia tomentosa*, *Tetrapleura tetraptera*, *Trichodesma zeylanicum*, *Vigna caracalla*, *Vitis vinifera*, *Yucca elata*.

ALCOHOLIC BEVERAGES - *Acacia nilotica*, *Acanthopanax sessiliflorus*, *A. sieboldianus*, *Acer pseudoplatanus*, *Acrocomia aculeata*, *A. mexicana*, *Actinidia polygama*, *Agave americana*, *A. angustifolia*, *A. atrovirens*, *A. deserti*, *A. salmiana*, *A. sisal ana*, *A. tequilana*, *Amaranthus spinosus*, *Amelanchier x grandiflora*, *A. ovalis*, *Amygdalus persica*, *Anacampseros albissima*, *Anacardium giganteum*, *A. occidentale*, *Ananas comosus*, *Annona squamosa*, *Antidesma bunioides*, *Araucaria araucana*, *Arbutus unedo*, *Arenga pinnata*, *Aristolelia chilensis*, *Armeniaca mume*, *A. vulgaris*, *Arracacia xanthorrhiza*, *Artemisia absinthium*, *Artocarpus heterophyllus*, *Astrocaryum tucuma*, *Avena abyssinica*, *A. sativa*, *Azadirachta indica*, *Baccaurea motleyana*, *Bactris maraja*, *Balanites aegyptiaca*, *Berchemia discolor*, *Betula lenta*, *B. nigra*, *B. papyrifera*, *B. populifolia*, *Borassus aethiopicum*, *B. flabellifer*, *Bromus mango*, *Butia yatay*, *Byrsonima crassifolia*, *Calluna vulgaris*, *Caltha palustris*, *Cannabis sativa*, *Camegieia gigantea*, *Carya illinoensis*, *Caryota urens*, *Celtis australis*, *Ceratonia siliqua*, *Chamaenerion angustifolium*, *Chenopodium ambrosioides*, *C. quinoa*, *Citrus x aurantium*, *C. grandis*, *C. medica*, *C. x paradisi*, *C. reticulata*, *C. sinensis*, *Clausena lansium*, *Coccoloba uvifera*, *Cocos nucifera*, *Coffea arabica*, *Coix lacryma-jobi*, *C. lacryma-jobi 'Ma-Yuen'*, *Colubrina elliptica*, *Cordyline australis*, *C. fruticosa*, *Comus mas*, *C. officinalis*, *Corypha elata*, *Crataegus C. oxyacantha*, *Cryosiphila nana*, *Cucurbita ficifolia*, *Cycas revoluta*, *Cynara scolymus*, *Dacrydium cupressinum*, *Dimocarpus longan*, *Diospyros digyna*, *D. mespiliformis*, *D. virginiana*, *Drosera rotundifolia*, *Echinochloa colonum*, *E. stagnina*, *Elaeis guineensis*, *Eleusine coracana*, *E. indica*, *Empetrum atropurpureum*, *E. nigrum*, *Eragrostis tef*, *Eucalyptus gunnii*, *Eugenia uniflora*, *Euterpe oleracea*, *Fagopyrum esculentum*, *Fagus sylvatica*, *Ferocactus acanthodes*, *Ficus carica*, *Ficus sycomorus*, *Fragaria x ananassa*, *Fraxinus excelsior*, *Garcinia livingstonei*, *Gaultheria G. procumbens*, *G. shallon*, *Gaylussacia baccata*, *Gleditsia triacanthos*, *Glottiphyllum linguiforme*, *Glycosmis trifoliata*, *Gourliea*

*decorticans*, *Grewia excelsior*, *Grewia asiatica*, *G. occidentalis*, *Harpephyllum caffrum*, *Heracleum sphondylium*, *Hordeum vulgare*, *Hymenaea courbaril*, *Hypericum perforatum*, *Hyphaene coriacea*, *H. natalensis*, *Ilex aquifolium*, *Imperata cylindrica*, *Ipomoea batatas*, *Jubaea chilensis*, *Juglans regia*, *Juniperus communis*, *Khadia acutipetala*, *Lansium domesticum*, *Laurus nobilis*, *Leucanthemum vulgare*, *Litchi chinensis*, *Lycium chinense*, *Madhuca indica*, *M. longifolia*, *Mahonia aquifolium*, *Malus fusca*, *M. pumila*, *M. sylvestris*, *Mammea americana*, *Manihot esculenta*, *Manilkara hexandra*, *Marshallocereus thurberi*, *Mauritia flexuosa*, *Mimusops elengi*, *Monascus purpureus*, *Morus alba*, *M. australis*, *Musa x paradisiaca*, *Myrciaria floribunda*, *Myrica cerifera*, *M. rubra*, *Nereocystis luetkeana*, *Nypa fruticans*, *Opuntia leucotricha*, *O. megacantha*, *O. robusta*, *O. stieptacantha*, *O. tenuispina*, *Orbignya cohune*, *O. martiana*, *Oryza glaberrima*, *O. sativa*, *Oxytenanthera abyssinica*, *Parinari capensis*, *Passiflora edulis\**, *P. incarnata*, *P. mollissima*, *P. rubra*, *Pastinaca sativa*, *Pennisetum americanum*, *Persea americana*, *Phoenix dactylifera*, *P. pusilla*, *P. reclinata*, *P. sylvestris*, *Picea abies*, *P. mariana*, *Pimpinella saxifraga*, *Pinus densiflora*, *P. koraiensis*, *Plinia cauliflora*, *Podocarpus spicatus*, *Pourouma cecropiaefolia*, *Primula veris*, *Prosopis chilensis*, *P. juliflora*, *P. pubescens*, *Prunus cerasoides*, *P. cerasus*, *P. domestica*, *P. padus*, *P. pseudocerasus*, *P. salicina*, *P. spinosa*, *P. virginiana*, *P. x sp.*, *Pseudocyonia sinensis*, *Pseudophoenix vinifera*, *Pterocarpus marsupium*, *Pyrus communis*, *Quercus petraea*, *Raphia hookeri*, *R. vinifera*, *Raphionacme hirsuta*, *Reynoutria japonica*, *Rheum palmatum*, *R. rhabarbarum*, *Rhododendron mucronulatum*, *Rhodymenia palmata*, *Ribes grossularia*, *R. nigrum*, *R. sativum*, *Rosa canina*, *R. Carolina*, *R. rugosa*, *Rubus caesius*, *R. chamaemorus*, *R. crataegifolius*, *R. flagellaris*, *R. fruticosus*, *R. idaeus*, *R. parvifolius*, *R. phoenicolasius*, *R. saxatilis*, *R. strigosus*, *Saccharum officinarum*, *Sambucus canadensis*, *S. melanocarpa*, *S. nigra*, *S. racemosa*, *Sandoricum koetjape*, *Sarothamnus scoparius*, *Scheelea butyracea*, *Schinus molle*, *Sclerocarya birrea*, *S. caffra*, *Secale cereale*, *Setaria italica*, *Sicana odorifera*, *Smilax rotundifolia*, *Solanum x burbankii*, *S. tuberosum*, *Sorbus americana*, *S. aria*, *S. aucuparia*, *S. domestica*, *S. scopulina*, *S. sitchensis*, *Spondias dulcis*, *S. mombin*, *Stachytarpheta jamaicensis*, *Stenocereus stellatus*, *Syzygium cordatum*, *S. cumini*, *S. jambos*, *Taraxacum officinale*, *Terminalia bellarica*, *Theobroma cacao*, *Tilia x europaea*, *Trichodiadema stellatum*, *Triticum x aestivum*, *Tsuga canadensis*, *T. heterophylla*, *Turnera diffusa*, *Tussilago farfara*, *Uapaca kirkiana*, *Ulex europaeus*, *Ulmus pumila*, *Urtica dioica*, *Vaccinium myrtillus*, *V. uliginosum*, *Vangueria infausta*, *Verbena officinalis*, *Viburnum opulus*, *V. opulus 'Xanthocarpum'*, *V. trilobum*, *Vitis amurensis*, *V. berlandieri*, *V. californica*, *V. candicans*, *V. coignetiae*; *V. labrusca*, *V. rotundifolia*, *V. vinifera*, *V. vinifera Monopyrena Group*, *Wisteria sinensis*, *Ximenia americana*, *Zea mays*, *Zingiber officinale*.

ALKALOIDAL BEVERAGES - *Camellia sinensis*, *Catha edulis*, *Coffea arabica*, *Cola acuminata*, *C. nitida*, *Ilex paraguariensis*, *I. vomitoria*, *Paullinia cupana*, *Piper methysticum*, *Theobroma cacao*.

AROMATIC WATERS - *Amygdalus besseri*, *Blighia sapida*, *Citrus x bergamia*, *C. grandis*, *C. x paradisi*, *Jasminum sambac*, *Laurocerasus officinalis*, *Lecaniodiscus cupanioides*, *Mimosa pudica*, *Pandanus fascicularis*, *Pelargonium graveolens*, *Polianthes tuberosa*, *Rosa blanda*, *R. x damascena*.

ASHES - *Atriplex canescens*, *Juniperus utahensis*, *Sesamum indicum*.

BAKING POWDER SUBSTITUTES - *Adansonia digitata*, *A. gregorii*, *Vitis vinifera*.

BARKS - *Abies alba*, *A. balsamea*, *A. excelsior*, *Betula lenta*, *B. populifolia*, *Picea glauca*, *Pinus densiflora*, *P. edulis*; *P. sylvestris*, *Pipturus argenteus*, *Populus tremuloides*, *Salix daphnoides*, *Thuja plicata*, *Tsuga canadensis*, *T. heterophylla*, *T. mertensiana*, *Ulmus pumila*, *U. rubra*.

BEVERAGES - *Aegle marmelos*, *Agave utahensis*, *Amygdalus communis*, *Annona muricata*, *Arbutus unedo*, *Arctostaphylos Columbiana*, *A. glauca*, *A. patula*, *Atriplex canescens*, *Banksia marginata*, *Batis maritima*, *Bauhinia canonii*, *B. hookeri*, *Beccariophoenix madagascariensis*, *Borago officinalis*, *Borojoa patinoi*, *Canarium ovatum*, *Centella asiatica*, *Chaenomeles speciosa*, *Cicer arietinum*, *Citrus x aurantifolia*, *C. limon*, *C. medica*, *C. x natsudaidai*, *C. x paradisi*, *C. reticulata*, *C. sinensis*, *Clausena lansium*, *Cocos nucifera*, *Codonopsis lanceolata*, *Coffea arabica*, *Colubrina elliptica*, *C. texensis*, *Corylus avellana*, *C. x columnoides*, *C. maxima*, *Costus guanaiensis*, *Crescentia alata*, *Curcuma xanthorrhiza*, *Cydonia oblonga*, *Cyperus esculentus*, *Dahlia pinnata*, *Dasylium texanum*, *D. wheeleri*, *Descurainia pinnata*, *Dialium guineense*, *Dimocarpus longan*, *Duabanga sonneratioides*, *Eleusine coracana*, *Embelia ribes*, *Eucalyptus dumosa*, *E. gummifera*, *E. intermedia*, *E. pachyphylla*, *Eugenia uvalha*, *Euterpe precatoria*, *Feronia limonia*, *Ficus pumila* var. *awkeotsang*, *Fouquieria splendens*, *Galium verum*, *Genipa americana*, *Grevillea juncifolia*, *G. robusta*, *Grewia asiatica*, *Guazuma ulmifolia*, *Hakea eyreana*, *H. suberea*, *Helianthus annuus*, *Hibiscus sabdariffa*, *Honkenya peploides*, *Hordeum vulgare*, *H. vulgare* Coeleste Group, *Hymenaea courbaril*, *Hyphaene natalensis*, *Hyptis suaveolens*, *Imperata cylindrica*, *Jessenia bataua*, *J. polycarpa*, *Juglans regia*, *Kaempferia galanga*, *Karatas plumieri*, *Lecaniodiscus cupanioides*, *Leptospermum coriaceum*, *Linum usitatissimum*, *Mahonia aquifolium*, *Malus angustifolia*, *M. coronaria*, *M. pumila*, *Medicago laciniata*, *Melicoccus bijugatus*, *Mespilus germanica*, *Mimusops caffra*, *Mirabilis expansa*, *Mitranthes sartoriana*, *Modiola caroliniana*, *Morinda citrifolia*, *Nuphar luteum*, *Nyssa ogeche*, *Ocimum basilicum*, *O. canum*, *O. sanctum*, *Oenocarpus distichus*, *Orbignya martiana*, *Orchis mascula*, *O. morio*, *Pandanus tectorius*, *Panicum sonorum*, *Parinari capensis*, *Parkia filicoidea*, *Passiflora alata*, *P. antioquiensis*, *P. caerulea*, *P. edulis*; *P. incarnata*, *P. laurifolia*, *P. ligularis*, *P. maliformis*; *P. manicata*, *P. mollissima*, *P. pinnatistipula*, *P. platyloba*, *P. tripartita*, *P. vitifolia*, *Photinia arbutifolia*, *Phytelephas macrocarpa*, *Pithecellobium dulce*, *Podophyllum peltatum*, *Polymnia sonchifolia*, *Rmteria lucuma*, *P. sapota*, *Prosopis chilensis*, *P. juliflora*, *Prunella vulgaris*, *Prunus cerasus*, *Pseudocydonia sinensis*, *Psoralea glandulosa*, *Pyrus communis*, *Raphia farinifera*, *Rhus aromatica*, *R. copallina*, *R. coriaria*, *R. glabra*, *R. integrifolia*, *R. trilobata*, *R. typhina*, *Robinia pseudacacia*, *Rubus glaucus*, *R. ursinus*, *Saccharum officinarum*, *Salvia apiana*, *S. carduacea*, *S. columbariae*, *S. hispanica*, *S. reflexa*, *S. tiliaefolia*, *Sambucus melanocarpa*, *S.*

*racemosa*, *Schinus molle*, *Solanum pectinatum*, *S. pseudolulo*, *S. quitoense*, *S. sessiliflorum*, *S. sessiliflorum* var. *alibile*, *S. vestissimum*, *Soighum bicolor*, *Sterculia apetala*, *Strychnos cocculoides*, *S. spinosa*, *Symphytum x uplandicum*, *Tagetes patula*, *Tamarix aphylla*, *Telopea speciosissima*, *Terminalia glabra*, *Teucrium polium*, *Theobroma cacao*, *Treculia africana*, *Triticum x aestivum*, *Vitis amurensis*; *V. labrusca*, *V. rotundifolia*, *V. vinifera*.

BITTERS, BITTER TONICS - *Achillea erba-rotta* ssp. *moschata*, *Aloe barbadensis*, *Artemisia absinthium*, *Carissa edulis*, *Centaureum erythraea*, *Cetraria islandica*, *Cinchona succubra*, *Cinnamomum camphora*, *Cnicus benedictus*, *Commiphora myrrha*, *Curcuma zedoaria*, *Galipea officinalis*, *Gentiana cruciata*, *G. lutea*, *G. punctata*, *G. purpurea*, *Picrasma excelsa*, *Quassia amara*, *Rheum officinale*, *Swertia chirata*, *Vernonia amygdalina*.

BULBILS, AERIAL ROOTS - *A. ampeloprasum* var. *babingtonii*, *Allium canadense*, *A. x proliferum*, *A. sativum*, *A. ursinum*, *Dioscorea alata*, *D. bulbifera*, *D. japonica*, *Pandanus tectorius*, *Ranunculus ficaria*.

CALYCES - *Abelmoschus esculentus*, *Anogeissus leiocarpus*, *Bombax buonopozense*, *Calonyction album*, *Dillenia indica*, *Hibiscus heterophyllus*, *H. sabdariffa*, *Salmalia malabarica*.

CAPERS, CAPER SUBSTITUTES - *Allium ursinum*, *Bauhinia variegata*, *Bellis perennis*, *Berberis vulgaris*, *Boscia albitrunca*, *Caltha leptosepala*, *C. palustris*, *Capparis decidua*, *C. sepriaria*, *C. spinosa*, *Cassia tomentosa*, *Cercis canadensis*, *C. occidentalis*, *C. siliquastrum*, *Clematis maximowicziana*, *Drimys lanceolata*, *Genista tinctoria*, *Larrea tridentata*, *Levisticum officinale*, *Muscari botryoides*, *Piper nigrum*, *Ranunculus ficaria*, *Rhus coriaria*, *Sambucus canadensis*, *Sarothamnus scoparius*, *Staphylea colchica*, *Tropaeolum majus*, *T. minus*, *Ulex europaeus*, *Zygophyllum fabago*.

CHOCOLATE SUBSTITUTES - *Astrocaryum murumura*, *Butyrospermum paradoxum* ssp. *parkii*, *Camellia sinensis*, *Canarium ovatum*, *Castanea dentata*, *Ceratonia siliqua*, *Chenopodium pallidicaule*, *Cinnamomum japonicum*, *Geum canadense*, *G. rivale*, *Irvingia gabonensis*, *Nephelium mutabile*, *Oenocarpus bacaba*, *Orbignya martiana*, *Salvadora persica*, *Sapium sebiferum*, *Shorea robusta*, *S. stenoptera*, *Simmondsia chinensis*, *Theobroma bicolor*, *T. grandiflorum*, *Tilia americana*.

COFFEE SCENTS - *Abelmoschus ficulneus*, *A. moschatus*.

COFFEE SUBSTITUTES - *Abelmoschus esculentus*, *A. ficulneus*, *A. moschatus*, *Acacia giraffae*, *A. karroo*, *Adansonia digitata*, *Arachis hypogaea*, *Arctium minus*, *Asparagus officinalis*, *Astragalus boeticus*, *Avena sativa*, *Balsamorhiza sagittata*, *Beta vulgaris* Crassa Group, *Boscia albitrunca*, *Brabejum stellatifolium*, *Brachychiton diversifolium*, *Brosimum alicastrum*, *Canavalia ensiformis*, *Cannabis sativa*, *Cassia auriculata*, *C. bicapsularis*, *C. floribunda*, *C. occidentalis*, *C. tora*, *Castanea dentata*, *C. sativa*, *Ceratonia siliqua*, *Cicer arietinum*, *Cichorium intybus*, *Cocos nucifera*, *Coffea canephora*, *C. liberica*, *C. racemosa*, *C. stenophylla*, *Coix lacryma-jobi* 'Ma-Yuen', *Copernicia prunifera*, *Cornus mas*, *Crataegus oxyacantha*, *Crescentia cujete*, *Cyperus esculentus*, *Daucus carota*, *Diospyros kaki*, *D. virginiana*, *D. whyteana*, *Echinochloa crusgalli*, *Eriobotrya japonica*, *Fagus grandifolia*, *Ficus carica*, *Galium aparine*, *Genista tinctoria*, *Glycine max*, *Gossypium herbaceum*, *Gymnocladus dioica*, *Helianthus annuus*, *H. annuus* ssp. *lenticularis*, *H. tuberosus*, *Hibiscus sabdariffa*, *Hordeum jubatum*, *H. vulgare*, *Ilex latifolia*, *Iris missouriensis*, *I. setosa*, *Juniperus communis*, *J. horizontalis*,

*J. scopulorum*, *Lathyrus japonicus* ssp. *maritimus*, *Leontodon hispidus*, *Leucaena latisiliqua*, *Linum usitatissimum*, *Lupinus albus*, *L. luteus*, *Lycium chinense*, *Mahonia swaseyi*, *Musa x paradisiaca*, *Nelumbo nucifera*, *Parkia bjglandulosa*, *P. biglobosa*, *Paullinia cupana*, *Phoenix dactylifera*, *P. reclinata*, *Phytelephas macrocarpa*, *Pinus edulis*, *Pisum sativum*, *Pithecellobium flexicaule*, *Psophocarpus tetragonolobus*, *Psychotria nervosa*, *Quercus dentata*, *Q. petraea*, *Q. robur*, *Q. stellata*, *Ruscus aculeatus*, *Sarothamnus scoparius*, *Scolymus hispanicus*, *Scorzonera hispanica*, *Secale cereale*, *Setaria viridis*, *Silybum marianum*, *Simmondsia chinensis*, *Sium sisarum*, *Sonchus arvensis*, *Sorbus aucuparia*, *Sterculia urens*, *Strychnos potatorum*, *Symphytum officinale*, *S. tuberosum*, *Tamarindus indica*, *Taraxacum officinale*, *Tephrosia purpurea*, *Tetragonolobus purpureus*, *Trigonella foenum-graecum*, *Trioseum aurantiacum*, *T. perfoliatum*, *Triticum x aestivum*, *Triticum spelta*, *Ugni molinae*, *Umbellularia californica*, *Vicia tetrasperma*, *Vigna angularis*, *V. urguiculata*, *Voandzeia subterranea*, *Zea mays*, *Z. mexicana*, *Ziziphus jujuba*, *Z. mucronata*.

**Egg Substitutes** - *Althaea officinalis*, *Glycine max*, *Linum usitatissimum*, *Malva neglecta*, *Opuntia pottsii*, *Prunus domestica*, *Vitis vinifera*.

**Fat Substitutes; Fat Replacers** - *Avena sativa*, *Cucurbita moschata*, *C. pepo*, *Glycine max*, *Ipomoea batatas*, *Malus pumila*, *Musa x paradisiaca*, *Prunus domestica*.

**Fats** - *Astrocaryum murumura*, *Butyrospermum paradoxum* ssp. *parkii*, *Byrsonima crassifolia*, *Garcinia cambogia*, *G. indica*, *G. morella*, *Irvingia gabonensis*, *Madhuca longifolia*, *Mangifera indica*, *Pentadesma butyracea*, *Raphia farinifera*, *Salvadora persica*, *Sapium sebiferum*, *Shorea robusta*, *S. stenoptea*, *Terminalia kaernbachii*, *Theobroma bicolor*, *T. cacao*, *T. grandiflorum*, *Tieghemella heckelii*, *Virola surinamensis*.

**Fermentation Product Substrates** - *Abelmoschus esculentus*, *Aleurites moluccana*, *Allium chinense*, *Ananas comosus*, *Annona muricata*, *Apium graveolens Rapaceum Group*, *Arachis hypogaea*, *Artocarpus altilis*, *Avena sativa*, *Bambusa arundinacea*, *Beta vulgaris Crassa Group*, *Brassica juncea*, *B. oleracea Capitata Group*, *B. rapa Chinensis Group*, *B. rapa Pekinensis Group*, *B. rapa Rapifera Group*, *Cajanus cajan*, *Camellia sinensis*, *Canavalia ensiformis*, *C. gladiata*, *Capsicum annuum*, *Carica papaya*, *Cassia obtusifolia*, *Ceiba pentandra*, *Chenopodium quinoa*, *Cicer arietinum*, *Citrullus lanatus*, *C. lanatus* ssp. *colocynthoides*, *Cocos nucifera*, *Colocasia esculenta*, *Cucumis melo Conomon Group*, *C. sativus*, *Cycas revoluta*, *Cyrtosperma chamissonis*, *Daucus carota Sativus Group*, *Durio zibethinus*, *Eleusine coracana*, *Ensete ventricosum*, *Eragrostis tef*, *Eutrema wasabi*, *Faba vulgaris*, *Glycine max*, *Gossypium herbaceum*, *Gynandropsis gynandra*, *Helianthus annuus*, *Hibiscus cannabinus*, *H. sabdariffa*, *H. tiliaceus*, *Honkenya peploides*, *Hordeum vulgare*, *Hordeum vulgare Coeleste Group*, *Ipomoea batatas*, *Lablab purpureus*, *Leucaena latisiliqua*, *Lupinus angustifolius*, *Lycopersicon lycopersicum*, *Manihot esculenta*, *Mucuna pruriens*, *Olea europaea*, *Oryza sativa*, *O. sativa Glutinosa Group*, *Oxalis oregana*, *Oxyria digyna*, *Pangium edule*, *Panicum miliaceum*, *Parkia bjglandulosa*, *P. bjglobosa*, *P. filicoidea*, *Paspalum scrobiculatum*, *Pennisetum americanum*, *Phaseolus lanatus*, *P. vulgaris*, *Pisum sativum*, *Polygonum odoratum*, *Psophocarpus tetragonolobus*, *Raphanus sativus Longipinnatus Group*, *Ricinus communis*, *Secale cereale*, *Sesamum indicum*, *Sesbania grandiflora*, *S. sesban*, *Solanum anomalum*, *S. curtilobum*, *S. x juzepczukii*, *S. tuberosum*, *Soighum bicolor*, *Telfairia occidentalis*, *Theobroma cacao*, *Triticum x aestivum*, *T. durum*, *Vigna aconitifolia*, *V.*

*mungo*, *V. radiata*, *V. unguiculata*, *Zea mays*, *Zingiber officinale*, *Ziziphus jujuba*. (also see *Alcoholic Beverages and Vinegars*)

**Fermentatives** - (see *bacteria, molds and yeasts* in the *Botanical listings*)

**Flavorings** - *Abelmoschus moschatus*, *Abies balsamea*, *Abrus pulchellus*, *Acacia concinna*, *A. dealbata*, *A. famesiana*, *A. leucophloea*, *A. nilotica*, *Acanthopanax divaricatus*, *Achillea atrata*, *A. decolorans*, *A. erba-rotta* ssp. *moschata*, *A. ligustica*, *A. millefolium*, *A. nana*, *Acinos alpinus*, *A. arvensis*, *Acorns calamus*, *A. gramineus*, *Adansonia digitata*, *Adiantum capillus-veneris*, *Aegle marmelos*, *Aframomum angustifolium*, *A. korarima*, *A. melegueta*, *Agaricus bisporus*, *Agastache cana*, *A. foeniculum*, *A. mexicana*, *A. neomexicana*, *A. rugosa*, *Aleurites moluccana*, *Alliaria petiolata*, *Allium ampeloprasum*, *A. ampeloprasum Porrum Group*, *A. cepa*, *A. cernuum*, *A. drummondii*, *A. fistulosum*, *A. obliquum*, *A. paniculatum*, *A. x proliferum*, *A. ramosum*, *A. rubellum*, *A. sativum*, *A. sativum Ophioscorodon Group*, *A. schoenoprasum*, *A. schoenoprasum* var. *sibiricum*, *A. scorodoprasum*, *A. validum*, *A. wallichii*, *Aloe barbadensis*, *Aloysia triphylla*, *Alpinia galanga*, *A. officinarum*, *Amelanchier canadensis*, *Ammi majus*, *A. visnaga*, *Amomum compactum*, *A. subulatum*, *A. xanthioides*, *Amorpha fruticosa*, *Amygdalus besseriana*, *A. communis 'Amara'*, *A. davidiana*, *A. persica*, *Anacardium occidentale*, *Anacyclus pyrethrum*, *Anchusa azurea*, *Anethum graveolens*, *Angelica archangelica*, *Aniba rosaeodora*, *Annona senegalensis*, *Anthemis cotula*, *Anthriscus cerefolium*, *A. nemorosa*, *A. sylvestris*, *Antidesma bunius*, *A. ghaesembilla*, *Apium graveolens*, *A. prostratum*, *Arabis alpina*, *Aralia nudicaulis*, *A. racemosa*, *Aristolochia serpentaria*, *Armeniaca mume*, *A. vulgaris*, *Armoracia rusticana*, *Artemisia abrotanum*, *A. absinthium*, *A. afra*, *A. asiatica*, *A. dracunculus*, *A. dracunculus 'Sativa'*, *A. frigida*, *A. genipi*, *A. glacialis*, *A. judaica*, *A. ludoviciana*, *A. maritima*, *A. pallens*, *A. pontica*, *A. princeps*, *A. stelleriana*, *A. umbelliforme*, *A. vulgaris*, *Asarum canadense*, *A. caudatum*, *Athamanta cretensis*, *Atropa belladonna*, *Backhousia anisata*, *B. citriodora*, *B. myrtifolia*, *Balsamita major*, *Barbarea verna*, *Barosma betulina*, *B. crenulata*, *Bauhinia malabarica*, *B. tomentosa*, *Berberis vulgaris*, *Berlandiera lyrata*, *Betula alleghaniensis*, *B. lenta*, *Bischofia javanica*, *Bixa orellana*, *Blumea balsamifera*, *Borago officinalis*, *Boronia megastigma*, *Boswellia sacra*, *Bouea macrophylla*, *Brassica juncea*, *B. nigra*, *B. rapa*, *Bunium bulbocastanum*, *B. persicum*, *Bupleurum rotundifolium*, *Bursera fagaroides*, *Caesalpinia gilliesii*, *Calamintha grandiflora*, *C. nepeta*, *C. sylvatica*, *Calathea allouia*, *Calendula arvensis*, *C. officinalis*, *Calycanthus floridus*, *C. occidentalis*, *Cananga odorata*, *Canarium album*, *C. commune*, *C. schweinfurthii*, *Canavalia maritima*, *Canella winterana*, *Cannabis sativa*, *Cantharellus cibarius*, *Capsella bursa-pastoris*, *Capsicum annuum*, *C. annuum* var. *aviculare*, *C. baccatum*, *C. cardenasii*, *C. chacoense*, *C. chinense*, *C. frutescens*, *C. pubescens*, *Cardamine amara*, *Cardaria draba*, *Carica papaya*, *Carissa edulis*, *Carum carvi*, *C. roxburghianum*, *Carya illinoensis*, *Ceiba pentandra*, *Celtis occidentalis*, *Chaenomeles japonica*, *C. speciosa*, *Chamaemelum nobile*, *Chamomilla aurea*, *Chenopodium ambrosioides*, *Chimaphila umbellata*, *Chrysanthemum coronarium*, *Cicca acida*, *Cimicifuga simplex*, *Cinchona succirubra*, *Cinnamomum aromaticum*, *C. burmannii*, *C. camphora*, *C. iners*, *C. japonicum*, *C. loureiri*, *C. tamala*, *C. zeylanicum*, *Cissus discolor*, *Cistus albidus*, *C. ladanifer*, *C. salviifolius*, *C. villosus*, *X Citrofortunella mitis*, *Citrullus lanatus* ssp. *colocynthoides*, *Citrus x amblycarpa*, *C. aurantifolia*, *C. aurantium*, *C. x bergamia*, *C. hystrix*, *C. x jambhiri*, *C. x junos*, *C. x latipes*, *C. x limetta*, *C. limon*, *C. x limonia*, *C. x paradisi*, *C. x pennivesiculata*, *C. reticulata*, *C. sinensis*, *C. x sunki*, *Clausena excavata*, *C. lansium*, *Cleome*

viscosa, *Clinopodium vulgare*, *Cnicus benedictus*, *Coffea arabica*, *Cola acuminata*, *C. nitida*, *Commiphora molmol*, *C. myrrha*, *Comptonia peregrina*, *Conradina verticillata*, *Conringia orientalis*, *Conyza canadensis*, *Copernicia prunifera*, *Coptis trifolia*, *Cordia alliodora*, *Coriandrum sativum*, *Cornus mas*, *Crambe orientalis*, *Crataegus pubescens*, *Crithmum maritimum*, *Crocus longiflorus*, *C. sativus*, *Cryptotaenia canadensis*, *C. japonica*, *Cucumis melo* Conomon Group, *Cuminum cyminum*, *Curcuma aromatica*, *C. longa*, *C. zedoaria*, *Cymbopogon citratus*, *C. flexuosus*, *C. martinii*, *C. nardus*, *Cyperus esculentus*, *C. longus*, *Daemonorops draco*, *Dahlia pinnata*, *Daucus carota*, *D. carota* Sativus Group, *Dentaria diphylla*, *D. laciniata*, *Descurainia sophia*, *Dianthus caryophyllus*, *Dillenia philippensis*, *Diospyros kaki*, *Dovyalis hebecarpa*, *Dracontomelon dao*, *Drimys lanceolata*, *D. winteri*, *Durio zibethinus*, *Echinocaulos perfoliatus*, *Echinocactus grandis*, *Elettaria cardamomum*, *Elsholtzia ciliata*, *Embelia ribes*, *Emblia officinalis*, *Eriodictyon californicum*, *Eruca sativa*, *Eryngium foetidum*, *Erythroxylum coca*, *Eucalyptus dives*, *E. globulus*, *E. leucoxylon*, *E. polybractea*, *E. smithii*, *Euterpe oleracea*, *Eutrema wasabi*, *Evernia prunastri*, *Fagara rhetsa*, *Ferula assa-foetida*, *Filipendula ulmaria*, *Foeniculum vulgare*; *F. vulgare* Azoricum Group, *Fortunella hindsii*, *Fraxinus angustifolia*, *F. excelsior*, *Freesia hybrida*, *Fucus vesiculosus*, *Fumaria officinalis*, *Galinsoga parviflora*, *Galipea officinalis*, *Garcinia cambogia*, *G. cochinchinensis*, *G. indica*, *G. kola*, *G. parvifolia*, *Gaultheria procumbens*, *Gentiana cruciata*, *G. lutea*, *G. punctata*, *G. purpurea*, *Geum rivale*, *G. urbanum*, *Glechoma hederacea*, *Glehnia littoralis*, *Globba marantina*, *Glycyrrhiza echinata*, *G. glabra*, *G. lepidota*, *Gouania lupuloides*, *Guaiacum officinale*, *Guazuma ulmifolia*, *Gynandropsis gynandra*, *Gynura sarmentosa*, *Hamatocactus hamatocanthus*, *Hedeoma pulegioides*, *Hedychium coronarium*, *Hedyosmum mexicanum*, *Helichrysum italicum*, *H. petiolatum*, *Hemerocallis lilio-asphodelus*, *Hemidesmus indicus*, *Heracleum lanatum*, *H. persicum*, *H. spondylium*, *Hibiscus acetosella*, *H. sabdariffa*, *H. surattensis*, *Humulus lupulus*, *Hyptis suaveolens*, *Hyssopus officinalis*, *Iberis amara*, *Ilex vomitoria*, *Illicium verum*, *Inula helenium*, *Iris x germanica*, *I. x germanica* 'Florentina', *I. pallida*, *Ixora coccinea*, *Jasminum humile*, *J. officinale*, *J. sambac*, *Juglans nigra*, *Juniperus communis*, *J. scopulorum*, *J. utahensis*, *Kaempferia galanga*, *Lansea grandis*, *Laserpitium latifolium*, *L. siler*, *Laurelia serrata*, *Laurocerasus officinalis*, *Laurus nobilis*, *Lavandula angustifolia*, *L. x intermedia*, *L. latifolia*, *Lens culinaris*, *Lentinus edodes*, *Leonotis raineriana*, *Leonurus cardiaca*, *Lepidium campestre*, *L. fremontii*, *L. latifolium*, *L. meyenii*, *L. sativum*, *L. virginicum*, *Leptotes bicolor*, *Levisticum officinale*, *Ligularia kaempferi*, *Ligusticum monnieri*, *Lilium brownii*, *Limnophila aromatica*, *Lindera benzoin*, *L. communis*, *L. glauca*, *Linum lewisii*, *L. perenne*, *Lippia alba*, *L. graveolens*, *L. micromera*, *Liquidamber orientalis*, *L. styraciflua*, *Liriodendron tulipifera*, *Litchi chinensis*, *Litsea cubeba*, *L. glaucescens*, *Lobularia maritima*, *Lunaria annua*, *Lysimachia clethroides*, *Magnolia denudata*, *M. grandiflora*, *M. hypoleuca*, *M. kobus*, *M. virginiana*, *Mangifera caesia*, *Manihot esculenta*, *Marrubium vulgare*, *Medicago laciniata*, *Melaleuca leucadendron*, *Melilotus alba*, *M. altissima*, *M. officinalis*, *Melissa officinalis*, *Mentha aquatica*, *M. aquatica* var. *crispa*, *M. arvensis*, *M. arvensis* f. *piperascens*, *M. arvensis* var. *villosa*, *M. australis*, *M. diemenica*, *M. x gentilis*, *M. longifolia*, *M. x piperita*, *M. pulegium*, *M. requienii*, *M. x smithiana*, *M. spicata*, *M. suaveolens*, *M. x villosa*, *M. x villosa-nervata*, *Meum athamanticum*, *Michelia champaca*, *Micromeria brownei*, *Milium effusum*, *Mirabilis jalapa*, *Monarda austromontana*, *M. citriodora*, *M. didyma*, *M. fistulosa*, *M. fistulosa* var. *menthaefolia*, *Monascus purpureus*, *Monodora myristica*, *Morchella esculenta*, *Moringa oleifera*, *M. ovalifolia*, *Murraya koenigii*, *M. paniculata*, *Myrica cerifera*, *M. gale*, *M.*

*heterophylla*, *M. pensylvanica*, *Myristica argentea*, *M. fragrans*, *Myroxylon balsamum*, *M. balsamum* var. *pereirae*, *Myrrhis odorata*, *Myrsine africana*, *Myrtus communis*, *Nasturtium officinale*, *Nelumbo nucifera*, *Nepeta cataria*, *Nigella damascena*, *N. orientalis*, *N. sativa*, *Nothoscordum inodorum*, *Ocimum basilicum*, *O. canum*, *O. gratissimum*, *O. gratissimum* var. *viride*, *O. kilimandscharicum*, *O. micranthum*, *O. sanctum*, *Oenanthe javanica*, *Olea africana*, *O. europaea*, *Oncosperma filamentosum*, *Onopordum acanthium*, *Origanum dictamnus*, *O. majorana*, *O. x majoricum*, *O. onites*, *O. pulchellum*, *O. syriacum*, *O. tythanthum*, *O. vulgare*, *O. vulgare* ssp. *hirtum*, *Osmorhiza claytonii*, *O. longistylis*, *Oxalis corniculata*, *O. tuberosa*, *Paeonia officinalis*, *Panax ginseng*, *P. japonica*, *Panda oleosa*, *Pandanus amaryllifolius*, *P. fascicularis*, *Papaver orientale*; *P. rhoeas*, *Parkia biglandulosa*, *P. bjglobosa*, *P. filicoidea*, *P. javanica*, *P. speciosa*, *Pastinaca sativa*, *Paullinia cupana*, *Pectis angustifolia*, *Peganum harmala*, *Pelargonium citronellum*, *P. crispum*, *P. exstipulatum*, *P. x fragrans*, *P. graveolens*; *P. x melissinum*, *P. x nervosum*, *P. odoratissimum*, *P. tomentosum*, *Peperomia maculosa*, *Perideridia gairdneri*, *P. kelloggii*, *Perilla frutescens*, *Peisea americana*, *P. borbonia*, *Persicaria hydropiper*, *P. hydropiper* 'Fastigiatum', *Petasites japonicus*, *Petioselinum crispum*, *P. crispum* Hortense Group, *Pfeucedanum ostruthium*, *P. palustre*, *Peumus boldus*, *Phoenix dactylifera*, *Pholiota nameko*, *Phrynium capitatum*, *Phyla scaberrima*, *Picea glauca*, *P. mariana*, *Picrasma excelsa*, *Pimenta dioica*, *P. racemosa*, *Pimpinella anisum*, *P. major*, *P. saxifraga*, *Pinus halepensis*\* *P. mugo* var. *pumilio*; *P. pinea*, *P. sylvestris*, *Piper aduncum*, *P. auritum*, *P. cubeba*, *P. guineense*; *P. longum*, *P. njgrum*, *P. sanctum*, *Pistacia atlantica*, *P. chinensis* ssp. *integerrima*, *P. lentiscus*, *Pisum sativum*, *Platymiscium pinnatum*, *Plectranthus amboinicus*, *Pleurotus ostreatus*, *Pluchea indica*, *Pogostemon cablin*, *P. heyneanus*, *Polianthes tuberosa*, *Poliomntha incana*, *P. longiflora*, *Polygonum odoratum*, *P. punctatum*, *Polyscias fruticosa*, *Poncirus trifoliata*, *Populus balsamifera*, *Portulacaria afra*, *Potentilla erecta*, *Pothomorphe umbellata*, *Prostanthera rotundifolia*, *Prunus avium*, *P. cerasifera* ssp. *divaricata*, *P. cerasus*\* *P. mahaleb*; *P. serotina*, *P. spinosa*, *P. virginiana*, *Pseudotsuga menziesii*, *Psoralea esculenta*, *Pulmonaria officinalis*, *Punica granatum*, *Pycnanthemum virginianum*, *Quassia amara*, *Quillaja saponaria*, *Raphanus raphanistrum*, *R. raphanistrum* ssp. *maritimus*, *Reseda odorata*, *Rhamnus purshianus*, *Rheum officinale*, *Rhus coriaria*, *R. ovata*, *Ribes nigrum*, *Ridolfia segetum*, *Ricinus communis*, *Rosa centifolia*, *R. x damascena*, *R. gallica*, *Rosa rubiginosa*, *Rosmarinus officinalis*, *Rumex acetosella*, *R. sagittatus*, *R. scutatus*, *Rungia klossii*, *Ruta chalepensis*, *R. graveolens*, *Saccharum officinarum*, *Salacca conferta*, *S. wallichiana*, *Salvadora persica*, *Salvia apiana*, *S. develanda*, *S. columbariae*, *S. dorisiana*, *S. fruticosa*, *S. glutinosa*, *S. indica*, *S. lavandulifolia*, *S. mellifera*, *S. officinalis*, *S. pomifera*, *S. pratensis*, *S. rutilans*, *S. sclarea*, *S. verbenaca*, *S. viridis*, *Sanguisorba minor*, *S. officinalis*, *Santalum album*, *Santolina chamaecyparissus*, *Sassafras albidum*, *Satureja biflora*, *S. hortensis*, *S. montana*, *S. thymbra*, *S. viminea*, *Saussurea lappa*, *Schinus molle*, *S. terebinthifolius*, *Scolymus hispanicus*, *Scoparia dulcis*, *Scorodocarpus bomeensis*, *Sedum acre*, *Sesamum indicum*, *Sicana odorifera*, *Sinapis alba*, *S. arvensis*, *Sison amomum*, *Sisymbrium altissimum*, *S. officinale*, *Skimmia laureola*, *Smilax herbacea*, *S. medica*, *S. officinalis*, *Smyrniolum olusatrum*, *Solanum aethiopicum*, *S. anomalum*, *S. demissum*, *S. quitoense*, *Sonneratia caseolaris*, *Sorbus aucuparia*, *S. sitchensis*, *Soighum bicolor*, *Spirulina platensis*, *Spondias dulcis*, *S. mangifera*, *S. mombin*, *Stachytarpheta jamaicensis*, *Styrax benzoin*, *S. officinalis*, *S. tonkinense*, *Suaeda maritima*, *Swertia chirata*, *Symphytum officinale*, *Syzygium aromaticum*, *S. jambos*, *S. polyanthum*, *Tagetes anisatum*, *T. filifolia*, *T. lemmonii*, *T. lucida*, *T. minuta*,

*T. patula*, *Tanacetum parthenium*, *T. vulgare*, *Tephrosia purpurea*, *Tetralinis articulata*, *Tetrapleura tetraptera*, *Tetrastigma harmandii*, *Teucrium chamaedrys*, *T. polium*, *Theobroma cacao*, *Thlaspi arvense*, *Thymra spicata*, *Thymus caespitius*, *T. capitatus*, *T. x citriodorus*, *T. herba-barona*, *T. mastichina*, *T. praecox* ssp. *arcticus*, *T. pulegioides*, *T. quinquecostatum*, *T. vulgaris*, *T. zygis*, *Tilia tomentosa*, *Tordylium apulum*, *Trachyspermum ammi*, *Trifolium ornithopodioides*, *Trigonella arabica*, *T. caerulea*, *T. corniculata*, *T. foenum-graecum*, *Tropaeolum majus*, *Tsuga canadensis*, *T. heterophylla*, *Tuber aestivum*, *T. brumale*, *T. gibbosum*, *T. magnatum*, *T. melanosporum*, *Tulbaghia violacea*, *Tumera diffusa*, *T. ulmifolia*, *Umbellularia californica*, *Urena lobata*, *Vaccinium scoparium*, *Valeriana officinalis*; *Vangueria infausta*, *Vanilla planifolia*, *Verbascum thapsus*, *Verbena officinalis*; *Vetiveria zizanioides*, *Viola canadensis*; *V. odorata*, *V. sororia*, *Vitex agnus-castus*; *V. negundo*, *Vitis vinifera*, *Volvriella volvacea*, *Wedelia biflora*, *Xylopia aethiopia*, *X. frutescens*, *Zanthoxylum armatum*, *Z. piperitum*, *Z. simulans*, *Zingiber mioga*, *Z. officinale*, *Z. spectabile*, *Z. zerumbet*.

FLOWERS - *Abelmoschus esculentus*, *A. manihot*, *Abutilon guineense*, *A. megapotamicum*, *Acacia concinna*, *A. nilotica*, *A. podalyriaefolia*, *A. spectabilis*, *Adansonia digitata*, *Aegie marmelos*, *Agastache foeniculum*, *A. mexicana*, *Agave bovicomuta*, *A. deserti*, *A. stricta*, *Albizia julibrissin*, *Alcea rosea*, *Allium cernuum*, *A. fistulosum*, *A. sativum*, *A. schoenoprasum*, *A. triquetrum*, *A. tuberosum*, *Aloe A. greatheadii*, *A. littoralis*, *A. zebrina*, *Alpinia galanga*, *A. speciosa*, *Alternanthera sessilis*, *Althaea officinalis*, *Amygdalus persica*, *Anchusa azurea*, *A. capensis*, *A. officinalis*, *Anethum graveolens*, *Annona senegalensis*, *Antigonon leptopus*, *Antirrhinum majus*, *Aquilegia buergeriana*, *A. caerulea*, *Arabis alpina*, *Asarum canadense*, *Asclepias speciosa*, *Asphodeline lutea*, *Averrhoa bilimbi*, *A. carambola*, *Azadirachta indica*, *Balanites aegyptiaca*, *Balsamita major*, *Bauhinia purpurea*, *B. variegata*, *Begonia x tuberhybrida*, *Bellis perennis*, *Beloperone californica*, *Benincasa hispida*, *Berberis aristata*, *Borago officinalis*, *Boswellia serrata*, *Brassica oleracea*, *Brodiaea pulchella*, *Caesalpinia pulcherrima*, *Calamintha sylvatica*, *Calendula arvensis*, *C. officinalis*, *Calochortus gunnisonii*, *C. nuttallii*, *Caltha leptosepala*, *C. palustris*, *Calyptronoma dulcis*, *Camellia japonica*, *C. sinensis*, *Campanula glomerata*, *C. punctata*, *C. versicolor*, *Canavalia maritima*, *Capparis decidua*, *Cardamine hirsuta*, *Carica papaya*, *Cassia auriculata*, *C. fistula*, *C. occidentalis*, *C. siamea*, *C. tomentosa*, *Carthamus tinctorius*, *Castilleja linariaefolia*, *Catalpa ovata*, *Cecropia peltata*, *Ceiba pentandra*, *Centaurea cyanus*, *C. nigra*, *Cereis canadensis*, *C. occidentalis*, *C. siliquastrum*, *Chenopodium giganteum*, *Chimonanthus praecox*, *Chrysanthemum coronarium*, *C. indicum*, *C. x morifolium*, *Cichorium intybus*, *Citrus x bergamia*, *C. limon*, *C. sinensis*, *Clematis maximowicziana*, *Cleome integrifolia*, *Commelina communis*, *Cordia dichotoma*, *C. myxa*, *Coriandrum sativum*, *Costus guanaensis*, *Crataegus monogyna*, *Crateva religiosa*, *Crithmum maritimum*, *Crotalaria longirostrata*, *Cucurbita foetidissima*, *C. maxima*, *C. mixta*, *C. moschata*, *C. pepo*, *Curcuma alismatifolia*, *C. parviflora*, *Cydonia oblonga*, *Dahlia pinnata*, *Dianthus barbatus*, *D. caryophyllus*, *D. plumarius*, *Diphysa robinoides*, *Diploaxis muralis*, *Dolichandrone rheedii*, *Dombeya rotundifolia*, *Drimys lanceolata*, *Durio zibethinus*, *Echium vulgare*, *Epigaea repens*, *Erechtites valerianifolia*, *Eriogonum fasciculatum*, *Eruca sativa*, *Erythrina americana*, *E. berteriana*, *E. herbacea*, *E. rubrinervia*, *Erythronium albidum*, *E. americanum*, *Eruca sativa*, *Euterpe oleracea*, *Eutrema wasabi*, *Feijoa sellowiana*, *Fernaldia pandurata*, *Ferocactus acanthodes*, *F. viridescens*^ *F. wislizenii*, *Filipendula ulmaria*, *Fouquieria splendens*, *Freesia hybrida*, *Freycinetia*

*banksii*, *Fritillaria verticillata*, *Galinsoga parviflora*, *Galium odoratum*, *Gardenia jasminoides*, *Geranium viscosissimum*, *Gladiolus dalenii*, *Gliricidia sepium*, *Gmelina arborea*, *Gynandropsis gynandra*, *Hamatocactus hamatacanthus*, *Hedychium coronarium*, *Helianthus annuus*, *Hemerocallis dumortieri*, *H. fulva*, *H. fulva 'Kwanso'*, *H. lilio-asphodelus*, *H. minor*, *Hesperis matronalis*, *Hesperoyucca whipplei*, *Hibiscus cannabinus*, *H. diversifolius*, *H. heterophyllus*, *H. rosa-sinensis*, *H. sabdariffa*, *H. syriacus*, *H. tiliaceus*, *Hirschfeldia incana*, *Hylocereus undatus*, *Hyssopus officinalis*, *Indigofera pseudo-tinctoria*, *Ixora coccinea*, *I. javanica*, *Jasminum officinale*, *Lablab purpureus*, *Lamium album*, *L. amplexicaule*, *L. purpureum*, *Lavandula angustifolia*, *Lavatera trimestris*, *Lecaniodiscus cupanioides*, *Leichhardtia australis*, *Leonotis nepetaefolia*, *Leonurus cardiaca*, *Lespedeza bicolor*, *Leucaena esculenta*, *L. latisiliqua*, *Lilium lancifolium*, *L. longiflorum*, *L. maculatum*, *Litsea cubeba*, *Lobularia maritima*, *Lonicera japonica*, *Luffa acutangula*, *L. cylindrica*, *Lysimachia clethroides*, *Madhuca indica*, *M. longifolia*, *Magnolia denudata*, *M. grandiflora*, *M. hypoleuca*, *M. kobus*, *Mahonia aquifolium*, *Malus pumila*, *M. sylvestris*, *Malva sylvestris*, *Mangifera indica*, *Marshallocereus thurberi*, *Matthiola incana*, *Medicago polymorpha*, *Mentha spicata*, *Mimosa pudica*, *Mimulus guttatus*, *Monarda didyma*, *M. fistulosa*, *Montia perfoliata*, *Moringa oleifera*, *Musa x paradisiaca*, *Muscari botryoides*, *M. neglectum*, *Myosotis sylvatica*, *Myrtillocactus geometrizans*, *Myrtus communis*, *Narcissus jonquilla*, *Nauclea latifolia*, *Nelumbo nucifera*, *Nuphar luteum*, *Nymphaea odorata*, *N. stellata*, *Nymphoides indica*, *N. peltata*, *Ocimum basilicum*, *O. sanctum*, *Oenothera biennis*, *Oncosperma filamentosum*, *Opuntia basilaris*, *Origanum majorana*, *O. vulgare*, *Omithogalum umbellatum*, *Oroxylum indicum*, *Oxalis deppei*, *O. stricta*, *O. violacea*, *Pachira aquatica*, *P. insignis*, *Pachycereus pringlei*, *Paeonia officinalis*; *P. suffruticosa*, *Pandanus tectorius*, *Papaver orientale*; *P. rhoeas*, *Passiflora caerulea*, *P. incarnata*, *Patrinia scabiosaefolia*, *P. villosa*, *Paullinia pinnata*, *Paulownia tomentosa*, *Pelargonium graveolens*, *Peltaria alliacea*, *Pentaglottis sempervirens*, *Pergularia daemia*, *Perilla frutescens*, *Perovskia atriplicifolia*, *Petasites frigidus*; *P. japonicus*, *P. palmatus*, *Petunia x hybrida*, *Phaseolus coccineus*; *P. vulgaris*, *Phlomis armeniaca*, *Pistacia terebinthus*, *Pisum sativum*, *Pithecellobium lobatum*, *Plumeria rubra*, *Polianthes tuberosa*, *Poliomintha incana*, *Primula veris*, *P. vulgaris*, *Prosopis juliflora*, *Prostanthera rotundifolia*, *Prunus domestica*, *P. gra>ana*, *P. jamaakura*, *P. maximowiczii*, *P. padus*, *P. pseudocerasus*; *P. spinosa*, *P. subhirtella*, *Psophocarpus tetragonolobus*, *Pterocarpus indicus*; *P. marsupium*, *Pueraria lobata*, *Punica granatum*, *Pyrus betulifolia*, *Ranunculus bulbosus*, *Reseda odorata*, *Rhododendron arboreum*, *R. mucronulatum*, *Ribes cereum*, *R. nigrum*, *Robinia neomexicana*, *R. pseudacacia*, *Rosa blanda*, *R. canina*, *R. Carolina*, *R. centifolia*, *R. chinensis*, *R. gallica*, *R. moschata*, *R. multiflora*, *R. rubiginosa*, *R. rugosa*, *R. virginiana*, *Rosmarinus officinalis*, *Rumex acetosa*, *Salmalia malabarica*, *Salvia gesneriflora*, *S. officinalis*, *S. rutilans*, *S. sclarea*, *S. verbenaca*, *Sambucus canadensis*, *S. glauca*, *S. mexicana*, *S. nigra*, *Sanguisorba officinalis*, *Saponaria officinalis*, *Saraca bijuga*, *Sarothamnus scoparius*, *Satureja hortensis*, *S.*, *Sauropus androgynus*, *Scorzonera hispanica*, *Sedum sarmentosum*, *Sesbania grandiflora*, *S. sesban*, *Sinapis arvensis*, *Sisymbrium irio*, *Sonchus asper*, *Sophora japonica*, *Stellaria media*, *Stenocereus stellatus*, *Syringa vulgaris*, *Syzygium jambos*, *Syzygium malaccense*, *Tagetes enecta*, *T. lucida*, *T. patula*, *T. tenuifolia*, *Tamarindus indica*, *Tanacetum vulgare*; *Taraxacum officinale*, *Telosma cordata*, *Thelesperma gracile*, *Thespesia populnea*, *Thymus vulgaris*, *Tilia americana*, *T. x europaea*, *Tillandsia erubescens*, *Trachycarpus fortunei*, *Tradescantia virginiana*, *Tragopogon porrifolius*, *T. pratensis*, *Trevesia palmata*, *Trifolium hybridum*, *T. pratense*, *T. repens*, *Tropaeolum majus*, *T. minus*, *T.*

tuberosum, Tulbaghia alliacea, T. violacea, Tulipa x sp., Tussilago farfara, Valerianella locusta, Veltheimia bracteata, Verbena officinalis, Viburnum trilobum, Viola canadensis V. odorata, V. papilionacea, V. pedata, V. tricolor, V. x wittrockiana, Wisteria floribunda, W. frutescens W. sinensis, Xanthoceras sorbifolium, Ximenia americana, Yucca aloifolia, Y. baccata, Y. brevifolia, Y. elata, Y. elephantipes Y. filamentosa, Y. glauca, Y. schidigera, Zanthoxylum piperitum, Zingiber mioga.

**FOOD BINDERS, THICKENERS** - Abelmoschus esculentus, Adansonia digitata, Amaranthus cruentus, Ascophyllum nodosum, Brasenia schreberi, Callirhoe involucrata, Carya illinoensis, C. ovata, Castanea sativa, Ceiba pentandra, Ceratonia siliqua, Ceratothera sesamoides, Chamaenerion angustifolium, Chondrus crispus, Citrullus lanatus ssp. colocynthoides, Colocasia esculenta, Corchorus olitorius, Dioscoia alata, D. japonica, Epidendrum cochleatum, Erythronium japonicum, Fagopyrum esculentum, Glyceria fluitans, Gracilaria coronopifolia, Juglans regia, Laminaria digitata, Larix occidentalis, Lewisia rediviva, Liliun brownii, L. superbum, Lycopersicon lycopersicum, Manihot esculenta, Maranta arundinacea, Nelumbo lutea, Nostoc commune, Nuphar advena, Opuntia polyacantha, O. vulgaris, Oryzopsis hymenoides, Pedalium murex, Plantago ovata, P. psyllium, Portulaca oleracea, Proboscidea louisianica, Psoralea esculenta, Pueraria lobata, Quercus garryana, Rhodymenia palmata, Sassafras albidum, Sesamum indicum, Sesamum radiatum, Stellaria media, Telfairia occidentalis, Urena lobata, Vaccinium scoparium, Viola pedata, V. sororia, Xanthomonas campestris, Zizania aquatica.

**FOOD DYES** - Aeginetia indica, Alcea rosea 'Nigra', Allium cepa, Amaranthus cruentus, A. quitensis, A. x sp., Anchusa officinalis, Artemisia japonica, A. princeps, A. vulgaris, Atriplex canescens, Basella alba, Beta vulgaris Crassa Group, Bixa orellana, Borago officinalis, Brassica oleracea Capitata Group, Buddleia asiatica, B. officinalis, Calendula officinalis, Capsicum annuum, C. frutescens, Carthamus tinctorius, Ceiba pentandra, Celosia argentea f. cristata, Centaurea cyanus, Chenopodium capitatum, Chrozophora plicata, Cicca acida, Clitoria ternatea, Cola acuminata, Coptis trifolia, Crocosmia aurea, Crocus longiflorus, C. sativus, Curcuma aromatica, C. longa, Daeonorops draco, Daucus carota Sativus Group, Dracaena angustifolia, Escobedia scabrifolia, Eonymus europaeus, E. japonicus, Galium verum, Gardenia jasminoides, Glycyrrhiza glabra, Grevillea robusta, Helichrysum arenarium, Hibiscus rosa-sinensis, H. sabdariffa, Hierochloa odorata, Hylocereus undatus, Indigofera tinctoria, Inga micheliana, Iresine herbstii, Jessenia bataua, Juniperus utahensis, Kaempferia galanga, Malva sylvestris 'Mauritiana', Medicago sativa, Mirabilis jalapa, Monascus purpureus, Musa x paradisiaca, Nopalea cochenillifera, Nyctanthes arbor-tristis, Opuntia ficus-indica, O. soehrensii, O. tomentosa, O. tuna, Pandanus amaryllifolius, Papaver rhoeas, Perilla frutescens, Peristrophe speciosa, Petroselinum crispum Hortense Group, Phrynium capitatum, Phytolacca americana, P. dioica, Pterocarpus santalinus, Rhamnus crocea, Rheum rhabarbarum, Rhododendron arboreum, Rubus fruticosus, Saccharum officinarum, Sambucus nigra, Sapindus mukorossi, Sauropus androgynus, Tagetes eiecta, T. patula, Taraxacum officinale, Tectona grandis, Tetrastigma harmandii, Theobroma cacao, Tiliacora triandra, Trigonella caerulea, Vaccinium maciocarpon, V. myrtillus> V. uliginosum, Vitis vinifera, Zea mays.

**FOOD SUPPLEMENTS** - Acetobacter aceti ssp. xylinum, Alaria marginata, Allium sativum, Aloe barbadensis, Aphanizomenon flos-aquae, Aspergillus niger, A. oryzae; Avena sativa, Bacillus laterosporus, Borago officinalis, Carica papaya, Celosia argentea, Chlorella pyrenoidosa, C. vulgaris, Dunaliella salina, Enterococcus

faecium, Eucalyptus calophylla, E. marginata, E. wandoo, Glycine max, Helianthus tuberosus, Hordeum vulgare, Kluyveromyces marxianus, Lactobacillus acidophilus, Linum usitatissimum, Malpighia puniceifolia, Medicago sativa, Myrciaria paraensis, Oenothera biennis, Panax ginseng, Ribes nigrum, Rosa acicularis, R. moyesii, Scenedesmus obliquus, Secale cereale, Spirulina maxima, S. platensis, Triticum x aestivum, T. polonicum, Ulmus rubra.

**FOOD TONICS** - Abies alba, Angelica sinensis, Astragalus membranaceus, Atractylodes macrocephala, Bourreria ovata, Carissa edulis, Centella asiatica, Codonopsis pilosula, Colubrina arborescens, C. elliptica, Commiphora mukul, Cordyceps sinensis, Dioscorea opposita, Dovyalis abyssinica, Eleutherococcus senticosus, Embelia ribes, Emblica officinalis, Eucommia ulmoides, Euryale ferox, Gouania lupuloides, Kaempferia rotunda, Lycium barbarum, Mesua ferrea, Ophiopogon japonicus, Oroxyllum indicum, Panax ginseng, P. japonica, P. notoginseng, P. quinquefolius, Pfaffia paniculata, Piper longum, Plocaria tenax, Polygonatum odoratum, Polygonum multiflorum, Poria cocos, Ptychopetalum olacoides, Pueraria lobata, Rehmannia glutinosa, Rhamnus prinoides; Tabebuia impetiginosa, Tarchonanthus camphoratus, Terminalia bellarica, T. chebula, Thladiantha grosvenorii, Tinospora cordifolia, Tremella fuciformis, Withania somnifera.

**FOOD WRAPPERS** - Abelmoschus manihot, Acer pseudoplatanus, Agave atrovirens, A. salmiana, Alaria marginata, Allium fistulosum, Alpinia speciosa, Amaranthus tricolor, Ananas comosus, Areca catechu, Artemisia vulgaris, Ascophyllum nodosum, Beta vulgaris Cicla Group, Borassus flabellifer, Brassica oleracea Capitata Group, Calathea allouia, Camellia japonica, Canna edulis, Carica papaya, Castanea sativa, Cephalostachyum pergracile, Chrysanthemum coronarium, Cichorium endivia, C. intybus, Cnidioscolus chayamansa, Cocos nucifera, Colocasia esculenta, Cordyline fruticosa, Corylus avellana, Cucurbita pepo, Curcuma longa, Cydonia oblonga, Cymbopogon citratus, Elettaria cardamomum, Erythrina variegata, Reus carica, F. insipida, Glycine max, Indocalamus tessellatus, Inga micheliana, Juglans regia, Lactuca indica, L. sativa, Lagenaria siceraria 'Clavata', Laminaria dentigera, L. japonica, Laurus nobilis, Licuala spinosa, Manihot esculenta, Melaleuca preissiana, M. quinquerivaria, Morinda citrifolia, Musa acuminata, M. balbisiana, M. x paradisiaca, Nelumbo nucifera, Ocimum basilicum, Oenanthe javanica, Oryza sativa, Pandanus amaryllifolius, Pangium edule, Perilla frutescens, Petasites japonicus, Phrynium capitatum, Picea abies, Piper auritum, P. betle, P. sanctum, P. sarmentosum, Porphyra perforata, P. tenera, P. yezoensis, Pothomorphe peltata, P. umbellata, Quercus dentata, Roystonea regia, Sasa palmata, Solanum melongena, S. tuberosum, Spinacia oleracea, Sterculia tragacantha, Thaumtococcus daniellii, Triticum x aestivum, Undaria pinnatifida, Urtica dioica, Vitis californica, V. labrusca, V. vinifera, Wedelia biflora, Xanthosoma violaceum, Zea mays, Zingiber officinale, Z. zerumbet.

**FORAGE FLAVORINGS** - Amygdalus persica, Arachis hypogaea, Calluna vulgaris, Colocasia esculenta, Cynara scolymus, Ficus carica, Foeniculum vulgare, Ipomoea batatas, Opuntia ficus-indica, Pastinaca sativa, Piper auritum, Quercus ilex ssp. ballota, Q. suber, Xylopiya frutescens, Zizania aquatica.

**FRUITS** - Abelmoschus esculentus, A. moschatus, Acacia concinna, A. farnesiana, A. greggii, A. leucophloea, A. nilotica, Acanthocereus tetragonus, Acanthosicyos horridus, A. naudinianus, Acrocomia aculeata, A. sclerocarpa, Acronychia acidula, A. oblongifolia, Actinidia arguta, A. arguta var. cordifolia, A. callosa,



- A. chinensis*, *A. coriacea*, *A. deliciosa*, *A. eriantha*, *A. kolomikta*, *A. melanandra*, *A. polygama*, *A. purpurea*, *Adansonia digitata*, *A. gregorii*, *Adinandra bockiana*, *Aechmea magdalena*, *Aegie marmelos*, *Aframomum angustifolium*, *A. melegueta*, *Akebia quinata*, *A. trifoliata*, *Alpinia caerulea*, *A. galanga*, *Amelanchier alnifolia*, *A. arborea*, *A. asiatica*, *A. bartramiana*, *A. canadensis*, *A. denticulata*, *A. x grandiflora*, *A. laevis*, *A. obovalis*, *A. ovalis*, *A. stolonifera*, *A. utahensis*, *Amygdalus besseriana*, *A. davidiana*, *A. persica*, *Anacardium giganteum*, *A. occidentale*, *Anacolata luzoniensis*, *Ananas comosus*, *Annona x atemoya*, *A. cherimola*, *A. cinerea*, *A. diversifolia*, *A. glabra*, *A. montana*, *A. muricata*, *A. purpurea*, *A. reticulata*, *A. scleroderma*, *A. senegalensis*, *A. squamosa*, *Anonidium manni*, *Antidesma bunioides*, *A. dallachyanum*, *A. ghaesembilla*, *Arachis hypogaea*, *Aralia racemosa*, *Arbutus menziesii*, *A. unedo*, *Arctostaphylos Columbiana*, *A. glauca*, *A. patula*, *A. stanfordiana*, *A. uva-ursi*, *Areca catechu*, *Aristolotelia chilensis*, *Armeniacia brigantina*, *A. x dasycarpa*, *A. mandshurica*, *A. mume*, *A. vulgaris*, *A. vulgaris 'Ansu'*, *Aronia arbutifolia*, *A. melanocarpa*, *Artocarpus altilis*, *A. anisophyllus*, *A. elasticus*, *A. gomezianus*, *A. heterophyllus*, *A. hypargyreaus*, *A. integer*, *A. lakoocha*, *A. odoratissimus*, *A. sarawakensis*, *A. sericarpus*, *Asclepias incarnata*, *A. speciosa*, *A. syriaca*, *Asimina obovata*, *A. parviflora*, *A. triloba*, *Asparagus cochinchinensis*, *Astragalus crassicaerpus*, *Astrocyum murumura*, *A. tucuma*, *Atriplex semibaccata*, *Austromyrtus dulcis*, *Averrhoa bilimbi*, *A. carambola*, *Azanza garckeana*, *Baccaurea dulcis*, *B. macrocarpa*, *B. motleyana*, *Bactris maraja*, *Balanites aegyptiaca*, *B. wilsoniana*, *Bauhinia variegata*, *Beilschmiedia anay*, *Benincasa hispida*, *Berberis aristata*, *B. asiatica*, *B. buxifolia*, *B. darwinii*, *B. lycium*, *B. vulgaris*, *Berchemia discolor*, *Billardiera cymosa*, *B. longiflora*, *B. scandens*, *Bischofia javanica*, *Blighia sapida*, *Bombax buonopozense*, *Borassus aethiopicus*, *B. flabellifer*, *Borojoa patinoi*, *Boscia albitrunca*, *Bouea macrophylla*, *Bourreria ovata*, *Brahea dulcis*, *Brassica oleracea*, *Bridelia cathartica*, *Brodiaea douglasii*, *Bromelia pinguin*, *Buchanania lanzan*, *Bunchosia argentea*, *B. armeniacia*, *Butia capitata*, *B. yatay*, *Butyrospermum paradoxum* ssp. *parkii*, *Byrsonima crassi folia*, *B. spicata*, *Cajanus cajan*, *Cakile edentula*, *C. maritima*, *Calophyllum inophyllum*, *Camellia kissi*, *C. sinensis*, *Campomanesia lineatifolia*, *Canarina canariensis*, *Canarium album*, *C. odontophyllum*, *C. ovatum*, *C. schweinfurthii*, *Canavalia ensiformis*, *C. gladiata*, *C. maritima*, *Capparis decidua*, *C. mitchellii*, *C. spinosa*, *Capsicum annuum*, *C. cardenasii*, *C. frutescens*, *C. pubescens*, *Caragana arborescens*, *Carica goudotiana*, *C. x heilbornii*, *C. monoica*, *C. papaya*, *C. parviflora*, *C. pubescens*, *C. quercifolia*, *C. stipulata*, *Carissa bispinosa*, *C. carandas*, *C. edulis*, *C. macrocarpa*, *Carludovica palmata*, *Carnegiea gigantea*, *Carpobrotus aequilaterus*, *C. deliciosus*, *C. edulis*, *Carya laciniosa*, *Caryocar villosum*, *Casasia clusiifolia*, *Casimiroa edulis*, *C. tetrameria*, *Cassia auriculata*, *C. bicapsularis*, *C. fistula*, *C. grandis*, *C. occidentalis*, *C. tomentosa*, *Catalpa ovata*, *Cecropia palmata*, *Ceiba aesculifolia*, *C. pentandra*, *Celtis australis*, *C. laevigata*, *C. occidentalis*, *C. reticulata*, *C. sinensis*, *Cephalotaxus harringtonia*, *Ceratonia siliqua*, *Cercidium floridum*, *Cereis canadensis*, *C. occidentalis*, *Cereus hexagonus*, *C. jamaicaru*, *C. pernambucensis*, *C. peruvianus*, *Chaenomeles cathayensis*, *C. japonica*, *C. speciosa*, *Chamaerops humilis*, *Chenopodium capitatum*, *Chiogenes hispidula*, *Chionanthus virginicus*, *Chrysobalanus icaco*, *Chrysophyllum albidum*, *C. cainito*, *C. lacourianum*, *C. oliviforme*, *Cicca acida*, *Cicer arietinum*, *Cissus quadrangularis*, *X Citremocitrus* sp., *X Citrofortunella mitis*, *X Citroncirus webberi*, *Citrullus colocynthis*, *C. lanatus*, *Citrus x aurantifolia*, *C. aurantium*, *C. x depressa*, *C. grandis*, *C. hystrix*, *C. ichangensis*, *C. x latipes*, *C. x limetta*, *C. x limettioides*, *C. limon*, *C. x macrophylla*, *C. medica*, *C. x natsudaikai*, *C. x nobilis*, *C. x paradisi*, *C. reticulata*, *C. sinensis*, *C. x sp.*, *Clausena excavata*, *C. lansium*, *Cleistocalyx operculatus*, *Cleome integrifolia*, *C. viscosa*, *Clitoria tematea*, *Coccinia grandis*, *Coccoloba diversifolia*, *C. uvifera*, *Cocos nucifera*, *Collinia elegans*, *Colubrina texensis*, *Combretum hereroense*, *Comptonia peregrina*, *Corchorus olitorius*, *Cordia alliodora*, *C. dichotoma*, *C. myxa*, *C. sebestena*, *Cornus canadensis*, *C. capitata*, *C. kousa*, *C. mas*, *C. officinalis*, *Coryphantha vivipera* var. *arizonica*, *Costus speciosus*, *Couepia polyandra*, *X Crataegosorbus miezurinii*, *Crataegus aestivalis*, *C. azarolus*, *C. douglasii*, *C. flava*, *C. marshalli*, *C. monqygna*, *C. oxyacantha*, *C. pinnatifida*, *C. pubescens*, *C. succulenta*, *C. tanacetifolia*, *Crateva religiosa*, *Crescentia alata*, *C. cujete*, *Cryosophila nana*, *Cucumis africanus*, *C. anguria*, *C. dipsaceus*, *C. melo*, *C. melo Conomon Group*, *C. melo Flexuosus Group*, *C. melo ssp. agrestis*, *C. metuliferus*, *C. prophetarum*, *C. sativus*, *Cucurbita ficifolia*, *C. foetidissima*, *C. maxima*, *C. mixta*, *C. moschata*, *C. pepo*, *Cudrania tricuspidata*, *Cyamopsis tetragonolobus*, *Cycas circinalis*, *Cyclanthera explodens*, *C. pedata*, *Cydonia oblonga*, *Cylindropuntia fulgida*, *C. imbricata*, *Cynometra cauliflora*, *Cyphomandra betacea*, *C. casana*, *C. crassifolia*, *C. fragrans*, *C. hartwegii*, *Dacrydium cupressinum*, *Dacryodes edulis*, *D. rostrata*, *Davidsonia pruriens*, *Debregeasia edulis*, *Descourainia pinnata*, *Dialium guineense*, *D. indum*, *Dillenia indica*, *D. philippensis*, *Dimocarpus longan*, *Diospyros digyna*, *D. discolor*, *D. kaki*, *D. lotus*, *D. mespiliformis*, *D. texana*, *D. viiginiana*, *D. whyteana*, *Diploglottis cunninghamii*, *Diplothemium maritimum*, *Docynia delavayi*, *D. indica*, *Dolichandrone rheedii*, *Dolichos lignosus*, *Dombeya rotundifolia*, *Dovyalis abyssinica*, *D. caffra*, *D. hebecarpa*, *D. x sp.*, *Dracaena angustifolia*, *Dracontomelon dao*, *Duabanga sonneratioides*, *Durio dulcis*, *D. graveolens*, *D. kutejensis*, *D. oblongus*, *D. zibethinus*, *Echinocactus horizontalonius*, *Echinocereus conglomeratus*, *E. dasyacanthus*, *E. engelmannii*, *E. stramineus*, *E. triglochidiatus*, *Ehretia acuminata*, *E. microphylla*, *Elaeagnus angustifolia*, *E. angustifolia* var. *orientalis*, *E. commutata*, *E. latifolia*, *E. multiflora*, *E. philippensis*, *E. pungens*, *E. umbel lata*, *Elaeocarpus grandis*, *E. serratus*, *Embelia ribes*, *Emblia officinalis*, *Empetrum atropurpureum*, *E. nigrum*, *E. nigrum* ssp. *hermaphroditum*, *E. rubrum*, *Enchylaena tomentosa*, *Ephedra distachya*, *Eremocitrus glauca*, *Eriobotrya japonica*, *Erythra armata*, *E. edulis*, *Escontria chiotilla*, *Espositoa lanata*, *Eucarya acuminata*, *Euclea crispa*, *Eugenia aggregata*, *E. cabelludo*, *E. dombeyi*, *E. klotzschiana*, *E. reinwardtiana*, *E. smithii*, *E. stipitata*, *E. uniflora*, *E. uvalha*, *E. victoriana*, *Eupomatia laurina*, *Euryale ferox*, *Euterpe edulis*, *E. oleracea*, *E. precatorea*, *Faba vulgaris*, *Feijoa sellowiana*, *Ferocactus acanthodes\**, *F. histrix*, *F. viridescens\**, *F. wislizenii*, *Feronia limonia*, *Heus auriculata*, *F. capensis*, *F. carica*, *F. hirta*, *F. insipida*, *F. lacor*, *F. palmata*, *F. pseudopalma*, *F. pumila*, *F. pumila* var. *awkeotsang*, *F. racemosa*, *F. sycomorus*, *Flacourtia cataphracta*, *F. indica*, *F. inermis\**, *F. rukam*, *Flagellaria indica*, *Forestiera neo-mexicana*, *Fortucitrocirus* sp., *Fortunella x crassifolia*, *F. hindsii*, *F. japonica*, *F. margarita*, *F. obovata*, *Fouquieria splendens*, *Fratria x ananassa*, *F. californica*, *F. chiloensis*, *F. moschata*, *F. ovalis\**, *F. vesca*, *F. vesca* var. *americana*, *F. virginiana*, *F. viridis*, *Fraxinus excelsior*, *Freycinetia banksii*, *Friesodielsia obovata*, *Fuchsia exzorticata*, *F. splendens*, *Garcinia benthami*, *G. cambogia*, *G. cochinchinensis*, *G. dulcis*, *G. hombroniana*, *G. indica*, *G. kola*, *G. livingstonei*, *G. mangostana*, *G. morella*, *G. parvifolia*, *G. pictorius*, *G. prainiana*, *G. venulosa*, *Gardenia jasminoides*, *Gaultheria G. antipoda*, *G. hispida*, *G. miqueliana*, *G. myrsinites*, *G. ovatifolia*, *G. procumbens*, *G. shallon*, *Gaylussacia baccata*, *G. dumosa*, *G. frondosa*, *Genipa americana*, *Gleditsia triacanthos*, *Glycosmis pentaphylla*, *Gmelina arborea*, *Gnetum gnemon*, *Gossypium hirsutum*, *Gourliea decorticans*, *Grewia asiatica*, *G. caffra*, *G. occidentalis*, *G. tenax*,

Grias cauliflora, Guazuma ulmifolia, Gustavia superba, Halesia carolina, Halleria lucida, Hamatocactus hamatacanthus, Hancornia speciosa, Harpephyllum caffrum, Hedyosmum mexicanum, Hesperis matronalis, Hexalobus crispiflorus, Hibiscus sabdariffa, Hippophae rhamnoides, H. salicifolia, Hodgsonia macrocarpa, Holboellia coriacea, H. fargesii, H. latifolia, Holodiscus discolor, Hoslundia opposita, Houttuynia cordata, Hylocereus guatemalensis, H. ocamponis, H. polyrhizus, H. undatus, Hymenaea courbaril, Hyphaene coriacea, H. thebaica, Ibicella lutea, Inga I. edulis, I. feuillei, I. laurina, I. paterno, I. preussii, I. spectabilis, Isomeris arborea, Ixora coccinea, I. javanica, Jaltomata procumbens, Jessenia polycarpa, Jubaea chilensis, Juglans cineiea, J. nigra, J. regia, Juniperus communis, J. pachyphlaea, J. scopulorum, J. utahensis, Karatas plumieri, Krugiodendron ferreum, Kunzea pomifera, Lablab purpureus, Lagenaria siceraria, Lansium domesticum, Lapageria rosea, Lardizabala biternata, Lathyrus davidii, L. japonicus ssp. maritimus, L. sativus, Laurocerasus ilicifolia, L. lyonii, Lecaniodiscus cupanioides, Leichhardtia australis, Lemaireocereus chichipe, L. queretaroensis, Lens culinaris, Lepidium campestre, L. virginicum, Leptactina benguelensis, Leptomeria acida, Leucaena esculenta, L. latisiliqua, L. sp., Leycesteria formosa, Licania platypus, Liliun brownii, Linum usitatissimum, Litchi chinensis, Litsea garciae, L. thunbergii, Livistona saribus, Lonicera caerulea var. edulis, L. kamtchatica, Lophocereus schottii, Lotus corniculatus, Luffa acutangula, L. cylindrica, Lupinus albus Saccharatus Group, Lycium carolinianum, L. chinense, L. pallidum, Lycopersicon lycopersicum, L. pimpinellifolium, Lysimachia clethroides, Machaerocereus gummosus, Macleania popenoei, Madhuca indica, Mahonia aquifolium, M. haematocarpa, M. nervosa, M. repens, M. swaseyi, M. trifoliolata, Malpighia coccigera, M. punicifolia, Malus angustifolia, M. baccata, M. coronaria, M. fusca, M. hupehensis, M. ioensis, M. x micromalus, M. prunifolia, M. pumila, M. pumila 'Niedzwetzkiana', M. x robusta, M. sylvestris, Malva neglecta, M. parviflora, M. sylvestris, Mammee africana, M. americana, Mammillaria meiacantha, M. simplex, Mangifera caesia, M. foetida, M. indica, M. odorata, Manilkara M. hexandra, M. kauki, M. zapota, Margyricarpus pinnatus, Marshallocereus thurberi, Matthiola incana, Mauritia flexuosa, M. martiana, Medemia argun, Melicoccus bijugatus, Melocactus communis, Mespilus germanica, Mesua ferrea, Metroxylon sagu, Michelia champaca, X Microcitronella sp., Microcitrus australasica, Mimusops caffra, M. elengi, M. obovata, Mitchellia repens, Mitranthes sartoriana, Momordica balsamina, M. charantia, M. cochinchinensis, M. dioica, Monstera deliciosa, Morinda citrifolia, Moringa oleifera, M. ovalifolia, Morus alba, M. alba var. indica, M. australis, M. laevigata, M. nigra, M. rubra, Mucuna pruriens, Muntingia calabura, Murraya koenigii, M. paniculata, Musa acuminata, M. balbisiana, M. x paradisiaca, M. troglodytarum, Myrceogenella apiculata, Myrciaria floribunda, M. glomerata, M. paraensis, Myrianthus arboreus, Myrica cerifera, M. rubra, Myristica fragrans, Myrsine africana, Myrtillocactus geometrizans, Nannorrhops ritchieana, Nauclea latifolia, N. orientalis, Neocardenasia herzogiana, Nephelium glabrum, N. lappaceum, N. mutabile, Neptunia oleracea, Nicolaia elatior, Nitriaria schoberi, Nopalea cochenillifera, Noronhia emarginata, Nymphaea lotus, Nymphoides indica, Nyssa aquatica, N. ogeche, N. sylvatica, Oenocarpus distichus, O. multicaulis, Oenothera biennis, O. hooker i, Olea africana, O. europaea, Oncoba spinosa, Operculina turpethum, Opuntia basilaris, O. dillenii, O. ficus-indica, O. humifusa, O. leucotricha, O. linguiformis, O. megacantha, O. polyacantha, O. robusta, O. soehrensii, O. streptacantha, O. tomentosa, O. tuna, O. vulgaris, Orbignya cohune, Oroxylum indicum, Osmanthus americana, O. fragrans, Osmaronia cerasiformis, Owenia acidula, Oxalis stricta, Pachycereus pecten-

aboriginum, P. pringlei, Pandanus tectorius, Papaver orientale, Pappaea capensis, Parinari capensis, Parkia biglobosa, P. filicoidea, P. speciosa, Parmentieia aculeata, P. cerifera, Passiflora P. alata, P. ambigua, P. ampullacea, P. antioquiensis; P. caerulea, P. coccinea, P. cumbalensis; P. x decaisneana, P. edulis; P. edulis f. flavicarpa, P. incarnata, P. laurifolia, P. ligularis» P. maliformis, P. manicata, P. mixta, P. mollissima, P. organensis» P. pinnatistipula, P. platyloba, P. popencvii, P. quadrangularis; P. serrato-digitata, P. tripartita, P. vitifolia, Patinoa almirajo, Paullinia pinnata, Peniocereus greggii, Peraphyllum ramosissimum, Pereskia aculeata, Peisea americana, P. schiedeana, Peumus boldus, Phaseolus coccineus; P. lunatus» P. metcalfei, P. vulgaris, Philodendron bipinnatifidum, P. selloum, Phoenix canariensis; P. dactylifera, P. paludosa, P. pusilla, P. reclinata, P. sylvestris, Photinia arbutifolia, Phyllocladus luschnathianus, Physalis angulata, P. heteroptylla, P. irocarpa, P. peruviana, P. philadelphica, P. pubescens, Phytelphas macrocarpa, Phytolacca dioica, Picea glauca, Picrasma quassioides, Pinus edulis; P. sabiniana, P. strobus, Piper aduncum, P. excelsum, Pipturus argenteus, Pistacia atlantica, P. terebinthus; P. vera, Pisum sativum, Pithecellobium dulce, P. flexicaule, P. lobatum, Pleiogynium solandri, Plinia cauliflora, P. jabolicaba, Podocarpus elatus; P. macrophyllum; P. spicatus, Podophyllum emodi, P. peltatum, Pometia pinnata, Poncirus trifoliata, Posoqueria latifolia, Ithomorpha peltata, P. umbellata, Pourouma cecropiaefolia, Pouteria caimito, P. campechiana, P. hypoglauca, P. lucuma, P. sapota, P. viride, Praecitrullus fistulosus, Prinsepia sinensis» P. utilis, Proboscidea louisianica, P. louisianica ssp. fragrans; P. parviflora, Prosopis chilensis, P. glandulosa, P. juliflora, P. pubescens; P. spicigera, Prunus alleghaniensis, P. americana, P. angustifolia, P. angustifolia var. watsonii, P. wium, P. bess'ii, P. bokhariensis; P. cerasifera, Prunus cerasifera ssp. divaricata, P. cerasifera f. purpurascens; P. cerasoides, P. cerasus; P. dawyckensis» P. domestica, P. fruticosa, P. glandulosa, P. x gmdouinii, P. grayma, P. hortulana, P. insititia, P. jamasakuia, P. japonica, P. maritima, P. maximowiczii, P. munsoniana, P. nigia, P. padus, Prunus pennsylvanica, P. pseudocerasus; P. pumila, P. pumila var. susquehanae, P. salicifolia, P. salicina, P. serotina, P. simonii, P. spinosa, P. subcoidata, P. subhirtella, P. tomentosa, P. umbellata, P. virginiana, P. x sp., Pseudanmomis umbellifera, Pseudocycdonia sinensis, Psidium acutaqgulum, P. friedrichsthalianum, P. guajava, P. guineense, P. littorale; P. littorale var. longipes; P. microphyllum, Psophocarpus palustris» P. tetragonolobus, Psychotria nervosa, Punica granatum, Pyracantha coccinea, Pyrus betulifolia, P. calleryana, P. communis; P. x lecontei, P. pashia, P. pyriformis, P. ussuriensis, Quararibea cordata, Randia dumetorum, R. echinocarpa, R. formosa, Raphanus sativus, R. sativus Caudatus Group, R. sativus Longipinnatus Group, Raphia farinifera, R. vinifera, Reynosia septentrionalis, Reynoutria sachalinensis, Rhamnus crocea, R. prinoides, R. purshianus, Rheedia acuminata, R. brasiliensis, R. edulis, R. magnifolia, Rhipsalis cassutha, Rhizophora mangle, Rhodomyrtus tomentosa, Rhoicissus capensis, Rhus aromatica, R. chinensis, R. ovata, R. trilobata, R. typhina, Ribes americanum, R. aureum, R. bracteosum, R. cereum, R. cynosbati, R. divaricatum, R. grossularia, R. hirtellum, R. lacustre, R. missouriensis, R. nigrum, R. odoratum, R. petraeum, R. sativum, R. triste, R. ussuriense, R. x sp., Ricinodendron rautanenii, Robinia pseudacacia, Rollinia deliciosa, R. mucosa, Rosa acicularis, R. arkansana, R. blanda, R. canina, R. carolina, R. gigantea, R. laevigata, R. macrophylla, R. moyesii, R. multiflora, R. nutkana, R. pimpinellifolia, R. rubiginosa, R. rugosa, R. villosa, R. woodsii, Roystonea elata, R. regia, Rubus allegheniensis, R. arcticus, R. argutus, R. caesius, R. calycinoides, R. canadensis, R. chamaemorus, R. crataegifolius, R. deliciosus, R. ellipticus, R. flagellaris, R. fraxinifolius, R. fruticosus, R.

glaucus, R. idaeus, R. illecebrosus, R. laciniatus, R. leucodermis, R. moluccanus, R. x neglectus, R. niveus, R. occidentalis, R. odoratus, R. parviflorus, R. parvifolius, R. phoenicolasius, R. procerus, R. rosaefolius, R. roseus, R. rubrisetus, R. saxatilis, R. shankii, R. spectabilis, R. stellatus, R. strigosus, R. trivialis, R. ursinus, R. vitifolius, Sabal etonia, S. palmetto, S. texana, Sageretia theezans, Salacca conferta, S. edulis, Salvadoria persica, Sambucus canadensis, S. glauca, S. javanica, S. melanocarpa, S. mexicana, S. nigra, S. pubens, S. pubens f. xanthocarpa, S. racemosa, Sandoricum koetjape, Santalum lanceolatum, Sarcocephalus xanthoxylon, Saurauia nepaulensis, Sauropus androgynus, Schisandra chinensis, Schleicheria oleosa, Sclerocarya birrea, S. caffra, Scorodocarpus borneensis, Sechium edule, Selenicereus megalanthus, Serenoa repens, Sesbania grandiflora, S. sesban, Shepherdia argentea, S. canadensis, Shorea robusta, Sicana odorifera, Simarouba glauca, Smilacina racemosa, Smilax china, S. herbacea, Solanum aethiopicum, S. anomalum, S. x burbankii, S. caripense, S. centrale, S. demissum, S. ferox, S. incanum, S. indicum, S. macrocarpon, S. melongena, S. muricatum, S. nigrum, S. nodiflorum, S. pectinatum, S. pseudolulo, S. quitoense, S. scabrum, S. sessiliflorum, S. sessiliflorum var. alibile, S. sessiliflorum var. georgicum, S. torvum, S. uporo, S. vestissimum, S. xanthocarpum, Sonneratia caseolaris, X Sorbaronia sp., X Sorbopyrus auricularis, Sorbus americana, S. aria, S. aucuparia, S. domestica, S. latifolia, S. scopulina, S. sitchensis, S. terminalis, Sphenocentrum jollyanum, Spondias axillaris, S. dulcis, S. mangifera, S. mombin, S. purpurea, S. tuberosa, Stauntonia hexaphylla, Stelechocarpus burakol, Stenocereus stellatus, Sterculia apetala, Stieblus asper, Streptopus amplexifolius, S. roseus, Strychnos cocculoides, S. madagascariensis, S. potatorum, S. spinosa, Styphelia triflora, S. viridis, Syagrus coronata, Symphoricarpos albus, Symplocos chinensis, Syzygium aqueum, S. aromaticum, S. australe, S. coolminianum, S. cordatum, S. cumini, S. guineense, S. jambos, S. luehmannii, S. malaccense, S. moorei, S. paniculatum, S. polycephalum, S. samarangense, Tabernaemontana elegans\* Talisia olivaeformis\* Tamarindus indica, Tapiphyllum parvifolium, Taxus baccata, T. cuspidata, Terminalia bellarica, T. catappa, T. chebula, T. ferdinandiana, Tetracarpidium conophorum, Tetragonolobus purpureus, Tetrupleura tetraptera, Tetrastigma harmandii, Theobroma bicolor, T. cacao, T. grandiflorum, Thespesia populnea, Thladiantha dubia, Tilia americana, Toona sinensis, Trichocereus chiloensis, T. spachianus, Trichosanthes cucumerina, T. cucumeroides, T. dioica, T. kirilowii, T. kirilowii var. japonica, Triphasia trifolia, Uapaca guineensis, U. kirkiana, Ugni molinae, Ulmus pumila, Uvaria microcarpa, Vaccinium alaskaense, V. angustifolium, V. arboreum, V. arctostaphylos\* V. ashei, V. atiococcum, V. Caesariense; V. calycinum, V. ceieum, V. corymbosum, V. corymbosum var. pallidum, V. crassifolium, V. darrcwi, V. deliciosum, V. elliotii, V. erythiocarpum, V. floribundum, V. globulare; V. lamaickii, V. macrocarpon, V. membnaceum, V. myrsinites, V. myrtilloides, V. myrtilloides\* V. ovalifolium, V. ovatum, V. oxycoccus\* V. parvifolium, V. praestans\* V. scoparium, V. sempervirens\* V. stamineum, V. uliginosum, V. vacillans\* V. vitis-idaea, Vangueria infausta, V. madagascariensis\* Vangueriopsis lanciflora, Viburnum alnifolium, V. cassinoides\* V. edule; V. lentago, V. nudum, V. opulus, V. prunifolium, V. trilobum, Vigna aconitifolia, V. angularis, V. radiata, V. umbellata, V. uquiculata, V. unguiculata ssp. cylindrica, V. unguiculata ssp. sesquipedalis, Vitex doniana, Vitis aestivalis\* V. amurensis\* V. berlandieri, V. californica, V. candicans, V. x champini, V. cineiea, V. coignetiae; V. labrusca, V. monticola, V. munsoniana, V. riparia, V. rotundifolia, V. rupestris, V. shuttleworthii, V. simpsonii, V. solonis\* V. vinifera, V. vinifera Monopyrena Group; Voandzeia subterranea, Washingtonia filifera, Weinmannia racemosa, Willughbeia

angustifolia, Ximena americana, X. caffra, Yucca baccata, Y. elata, Y. filamentosa, Y. glauca, Y. schidigera, Zanthoxylum piperitum, Ziziphus joazeiro, Z. jujuba, Z. lotus, Z. mauritiana, Z. mucronata, Z. spina-christii.

GALLS, HYPERTROPHIES - Acacia aneura, Azalea nudiflora, Leucaena esculenta, Psophocarpus tetragonolobus, Salvia pomifera, Zea mays, Zizania latifolia.

GELS, JELLIES - Aloe barbadensis, Amorphophallus rivieri, A. variabilis, Ananas comosa, Cetraria islandica, Chondrus crispus, Cocos nucifera, Daucus carota Sativus Group, Digenea simplex, Ficus pumila, F. pumila var. awkeotsang, F. racemosa, Gelidium amansii, Gigartina exasperata, G. papillata, Gracilaria verrucosa, Grateloupia filicina, Hyptis suaveolens, Mesona chinensis, Nostoc commune, Ocimum basilicum, O. canum, O. sanctum, Poria cocos, Porphyra teneo, P. umbilicalis, Pueraria lobata, Quercus acutissima, Salvia apiana, S. carduacea, S. columbariae, S. hispanica, S. tiliaefolia, Stephania hemandifolia, Sterculia lychnophora, S. scaphigera, Ulva fasciata, Vigna radiata.

GUMS - Acacia aneura, A. dealbata, A. giraffae, A. karroo, A. nilotica, A. pendula, A. Senegal, A. seyal, A. tortilis, Anogeissus latifolia, A. leiocarpus, Araucaria angustifolia, Artocarpus elasticus, Ascophyllum nodosum, Astragalus gummifer, Bauhinia retusa, Boswellia serrata, Ceratonia siliqua, Chondrus crispus, Cistus ladanifer, Citrus x limon, Cochlospermum religiosum, Copemicia prunifera, Cyamopsis tetragonolobus, Cydonia oblonga, Garcinia morella, Gigartina exasperata, G. papillata, Gracilaria lichenoides, G. verrucosa, Laminaria digitata, Lannea grandis, Larix occidentalis, Leucaena latisiliqua, Phragmites australis, Plantago ovata, P. psyllium, Piosopsis glandulosa, P. juliflooo, P. spicigera, Prunus wium, P. cerasoides, Sterculia tragacantha, S. urens, S. villosa, Tamarindus indica, Xanthomonas campestris.

HONEY PLANTS - Abies alba, Acacia berlandieri, Acer macrophyllum, Ailanthus altissima, Amygdalus communis, Arbutus menziesii, A. unedo, Avicennia germinans, Azadirachta indica, Banksia menziesii, B. prionotes, Borago officinalis, Calluna vulgaris, Castanea sativa, Centaurea solstitialis, Chamaenerion angustifolium, Citrus x sinensis, Cliftonia monophylla, Cyrilla racemiflora, Dryandra sessilis, Echium vulgare, Erica cinerea, Eriogonum fasciculatum, Eucalyptus albens, E. caleyi, E. calophylla, E. crebra, E. diversicolor, E. intertexta, E. macrorhyncha, E. marginata, E. melliodora, E. microtheca, E. ochrophloia, E. paniculata, E. sideroxylon, E. viridis, E. wandoo, Eucryphia lucida, Fagopyrum esculentum, Gymnopodium antigonoides, Haematoxylum campechianum, Helianthus annuus, Ilex glabra, Knightia excelsa, Lavandula angustifolia, L. stoechas, Leptospermum scoparium, Limnanthes douglasii, Liriodendron tulipifera, Litchi chinensis, Lophostemon confertus, Lotus corniculatus, Malus pumila, Melilotus alba, Metrosideros excelsa, M. polymorpha, M. umbellata, Nyssa aquatica, N. sylvatica, Onobrychis viciifolia, Origanum majorana, Oxycendrum arboreum, Persea americana, Phacelia tanacetifolia, Pinus sylvestris, Piscidia piscipula, Prosopis glandulosa, P. juliflora, Prunus avium, Psoralea pinnata, Randia dumetorum, Rhododendron ferrugineum, R. hirsutum, Rivea corymbosa, Robinia pseudacacia, Rosmarinus officinalis, Rubus fruticosus, R. idaeus, R. strigosus, Salvia mellifera, Sapium sebiferum, Satureja montana, Solidago graminifolia, Stachys annua, Symphoricarpos albus, Thymus capitatus, T. vulgaris, Tilia americana, T. x europaea, Trifolium hybridum, T. repens\* Vaccinium angustifolium, V. corymbosum, Weinmannia racemosa.

**HOPS SUBSTITUTES** - *Acacia myrtifolia*, *Achillea millefolium*, *Artemisia abrotanum*, *A. absinthium*, *Calluna vulgaris*, *Daviesia latifolia*, *Dodonaea viscosa*, *Fagara rhetsa*, *Glechoma hederacea*, *Gouania lupuloides*, *Menyanthes trifoliata*, *Origanum vulgare*, *Picrasma ercelsa*, *P. quassioides*, *Ptelea trifoliata*, *Pteridium aquilinum*, *Quassia amara*, *Rhamnus prinoides*, *Sarothamnus scoparius*, *Teucrium scorodonia*.

**HYPOCOTYLS** - *Adansonia digitata*, *Borassus aethiopicum*, *B. flabellifer*, *Cocos nucifera*, *Hyphaene natalensis*, *H. thebaica*, *Rhizophora mangle*.

**INFLORESCENCES** - *Acer macrophyllum*, *Allium cepa* *Aggregatum* Group, *A. tuberosum*, *Amaranthus viridis*, *Angelica archangelica*, *Areca catechu*, *Artocarpus altilis*, *A. heterophyllus*, *A. lakoocha*, *Asclepias incarnata*, *A. speciosa*, *A. syriaca*, *A. tuberosa*, *Barbarea vulgaris*, *Betula papyrifera*, *Borassus flabellifer*, *Brassica carinata*, *B. napus*, *B. nigra*, *B. oleracea* *Acephala* Group, *B. oleracea* *Alboglabra* Group, *B. oleracea* *Botrytis* Group, *B. oleracea* *Italica* Group, *B. rapa*, *B. rapa Ruvo* Group, *Bromelia pinguin*, *Cakile edentula*, *C. maritima*, *Calathea allouia*, *Cardamine pratensis*, *Carica papaya*, *Carludovica palmata*, *Celosia argentea*, *Chamaedorea costaricana*, *C. graminifolia*, *C. pacaya*, *C. tepejilote*, *Chenopodium album*, *C. bonus-henricus*, *C. nuttalliae*, *Clerodendrum serratum*, *Cochlearia anglica*, *C. officinalis*, *Cocos nucifera*, *Colocasia esculenta*, *Copernicia prunifera*, *Crambe orientalis*, *Cryptotaenia canadensis*, *Curcuma mangga*, *C. xanthorrhiza*, *Daucus carota*, *Dioscorea bulbifera*, *D. pentaphylla*, *Erythrina americana*, *E. berteriana*, *Foeniculum vulgare*, *Geonoma binervia*, *Gnetum gnemon*, *Imperata cylindrica*, *Karatas plumieri*, *Lathyrus davidii*, *Levisticum officinale*, *Limncharis flava*, *Musa acuminata*, *M. balbisiana*, *M. x paradisiaca*, *Nannorrhops ritchiana*, *Nicolaia elatior*, *Nypa fruticans*, *Ornithogalum pyrenaicum*, *Phoenix dactylifera*, *Piper excelsum*, *Pluchea indica*, *Pythomorpha umbellata*, *Raphanus sativus*, *R. sativus* *Longipinnatus* Group, *Rheum rhabarbarum*, *Rhopalostylis sapida*, *Saccharum edule*, *S. spontaneum*, *Salix babylonica*, *S. daphnoides*, *S. gracilistyla*, *Sambucus glauca*, *S. mexicana*, *Samuela carnerosana*, *Sinapis arvensis*, *Smyrnum olusatrum*, *Spondias mangifera*, *Trachycarpus fortunei*, *Typha angustifolia*, *T. latifolia*, *Vitis vinifera*, *Yucca brevifolia*, *Zea mays*, *Z. mexicana*, *Zingiber officinale*, *Z. zerumbet*, *Zizania latifolia*, *Zizia aurea*.

**LEAVES, LEAFY SHOOTS** - *Abelmoschus esculentus*, *A. manihot*, *A. moschatus*, *Abutilon guineense*, *Acacia concinna*, *A. farnesiana*, *A. nilotica*, *Acanthopanax divaricatus*, *A. sessiliflorus*, *A. sieboldianus*, *Achillea millefolium*, *Achyranthes aspera*, *Acrocomia mexicana*, *A. sclerocarpa*, *Actinidia arguta*, *A. kolomikta*, *A. polygama*, *Adansonia digitata*, *Adenanthera pavonina*, *Adenophora triphylla* var. *japonica*, *Aegie marmelos*, *Aegopodium podagraria*, *Aeschynomene indica*, *Agastache rugosa*, *Agave americana*, *A. deserti*, *A. parryi*, *A. utahensis*, *Aglaia odorata*, *Agrostemma githago*, *Ajuga reptans*, *Albizia julibrissin*, *Alcea rosea*, *Alchemilla xanthochlora*, *Alliaria petiolata*, *Allium akaka*, *A. ampeloprasum*, *A. ampeloprasum* *Porrum* Group, *A. ampeloprasum* var. *babingtonii*, *A. angulosum*, *A. canadense*, *A. cepa*, *A. cernuum*, *A. chinense*, *A. drummondii*, *A. fistulosum*, *A. geyeri*, *A. grayi*, *A. ledebourianum*, *A. longicuspis*, *A. obliquum*, *A. x proliferum*, *A. ramosum*, *A. rubellum*, *A. sativum*, *A. sativum* *Ophioscorodon* Group, *A. schoenoprasum* var. *sibiricum*, *A. senescens*, *A. sphaerocephalum*, *A. splendens*, *A. stellatum*, *A. thunbergii*, *A. tricoccum*, *A. triquetrum*, *A. tuberosum*, *A. unifolium*, *A. ursinum*, *A. vineale*, *Aloe ferox*, *A. littoralis*, *Aloysia triphylla*, *Alpinia officinarum*, *A. speciosa*, *Alternanthera ficoidea*, *A. sessilis*, *A. versicolor*, *Althaea officinalis*, *Amaranthus caudatus*, *A. cruentus*, *A. dubius*, *A. graecizans*, *A. hybridus*, *A.*

*hypochondriacus*, *A. lividus*, *A. paniculatus*, *A. quitensis*, *A. retroflexus*, *A. spinosus*, *A. tricolor*, *A. viridis*, *Amorphophallus campanulatus*, *Ananas comosus*, *Anchusa azurea*, *A. capensis*, *A. officinalis*, *Angelica archangelica*, *A. atropurpurea*, *A. gigas*, *A. sylvestris*, *Annona muricata*, *A. senegalensis*, *Anredera cordifolia*, *Anthriscus nemorosa*, *A. sylvestris*, *Antidesma bunius*, *A. ghaesembilla*, *Antigonon leptopus*, *Aphanes arvensis*, *Apium graveolens*, *A. prostratum*, *Aquilegia buergeriana*, *Arabis alpina*, *Arachis hypogaea*, *Aralia elata*, *A. spinosa*, *Arctium lappa*, *A. minus*, *Areca catechu*, *Arenga ambong*, *A. engleri*, *A. pinnata*, *Armeniaca mume*, *A. vulgaris* 'Ansu', *Armoracia rusticana*, *Artemisia asiatica*, *A. dracunculus*, *A. dracunculus* 'Sativa', *A. japonica*, *A. ludoviciana*, *A. princeps*, *A. vulgaris*, *Artocarpus heterophyllus*, *A. integer*, *Aruncus dioicus*, *Asclepias speciosa*, *A. syriaca*, *A. tuberosa*, *Asplenium nidus*, *Aster scaber*, *Atriplex canescens*, *A. confertifolia*, *A. halimus*, *A. hastata*, *A. hortensis*, *A. patula*, *A. semibaccata*, *Averrhoa carambola*, *Axyris amaranthoides*, *Azadirachta indica*, *Bacopa monniera*, *Balanites aegyptiaca*, *Balsamita major*, *Balsamorhiza deltoidea*, *B. sagittata*, *Barbarea verna*, *B. vulgaris*, *Basella alba*, *Batis maritima*, *Bauhinia malabarica*, *B. purpurea*, *B. racemosa*, *B. tomentosa*, *B. variegata*, *Bellis perennis*, *Benincasa hispida*, *Berberis lycium*, *B. vulgaris*, *Beta vulgaris* *Cicla* Group, *B. vulgaris* *Crassa* Group, *B. vulgaris* ssp. *maritima*, *Betula papyrifera*, *Bidens pilosa*, *Biophytum sensitivum*, *Bischofia javanica*, *Boesenbergia pandurata*, *Bombax buonopozense*, *Bongardia Chrysogonum*, *Borago officinalis*, *Borassus aethiopicum*, *B. flabellifer*, *Borrchia frutescens*, *Bouea macrophylla*, *Brasenia schreberi*, *Brassica carinata*, *B. juncea*, *B. napus*, *B. napus* *Napobrassica* Group, *B. napus* *Pabularia* Group, *B. nigra*, *B. oleracea*, *B. oleracea* *Acephala* Group, *B. oleracea* *Alboglabra* Group, *B. oleracea* *Botrytis* Group, *B. oleracea* *Capitata* Group, *B. oleracea* *Gemmifera* Group, *B. oleracea* *Gongyloides* Group, *B. oleracea* *Italica* Group, *B. oleracea* *Tronchuda* Group, *B. rapa*, *B. rapa* *Chinensis* Group, *B. rapa* *Pekinensis* Group, *B. rapa* *Perviridis* Group, *B. rapa* *Rapifera* Group, *B. rapa* *Ruvo* Group, *B. rapa* *Sarson* Group, *B. tournefortii*, *Bromelia pinguin*, *Bunias erucago*, *B. orientalis*, *Bunium bulbocastanum*, *Bupleurum rotundifolium*, *Butia yatay*, *Cacalia atriplicifolia*, *Cacalia hastata* var. *orientalis*, *Cajanus cajan*, *Cakile edentula*, *C. maritima*, *Calendula arvensis*, *Callirhoe involucrata*, *Calochortus nuttallii*, *Calonyction album*, *Caltha leptosepala*, *C. palustris*, *Camelina sativa*, *Camellia sinensis*, *Campanula glomerata*, *C. punctata*, *C. rapunculus*, *C. versicolor*, *Canarium ovatum*, *Canavalia ensiformis*, *C. gladiata*, *Cannabis sativa*, *Capparis spinosa*, *Capsella bursa-pastoris*, *Capsicum annum*, *C. annum* var. *aviculare*, *C. frutescens*, *Cardamine amara*, *C. hirsuta*, *C. oligosperma*, *C. pratensis*, *C. rotundifolia*, *Cardaminopsis halleri*, *Cardaria draba*, *Carica papaya*, *Carludovica palmata*, *Carpobrotus aequilateralis*, *C. edulis*, *Carthamus tinctorius*, *Carum carvi*, *Caryota cumingii*, *C. mitis*, *C. rumphiana*, *C. urens*, *Cassia auriculata*, *C. fistula*, *C. floribunda*, *C. obtusifolia*, *C. occidentalis*, *C. siamea*, *C. tomentosa*, *C. tora*, *Cecropia palmata*, *C. peltata*, *Ceiba pentandra*, *Celosia argentea*, *C. argentea* f. *crispata*, *C. trigyna*, *Celtis sinensis*, *Centella asiatica*, *Centranthus macrosiphon*, *C. ruber*, *Ceratotheca sesamoides*, *Cercidium floridum*, *Ceropegia bulbosa*, *Cestrum nocturnum*, *Chamaenerion angustifolium*, *C. latifolium*, *Chamaerops humilis*, *Chenopodium album*, *C. ambrosioides*, *C. berlandieri*, *C. bonus-henricus*, *C. botrys*, *C. capitatum*, *C. giganteum*, *C. murale*, *C. nuttalliae*, *C. quinoa*, *Chlorogalum pomeridianum*, *Chrysanthemum coronarium*, *C. indicum*, *C. x morifolium*, *C. segetum*, *C. x superbum*, *Chrysosplenium alternifolium*, *C. oppositifolium*, *Cicca acida*, *Cicer arietinum*, *Cichorium endivia*, *C. intybus*, *Cimicifuga simplex*, *Cinnamomum camphora*, *Cirsium arvense*, *C. eriophorum*, *C. oleraceum*, *C. palustre*, *C. vulgare*, *Cissus*

discolor, *C. quadrangularis*, *Citrullus lanatus*, *Citrus x aurantifolia*, *Claytonia caroliniana*, *C. megarrhiza*, *C. virginica*, *Clematis apiifolia*, *C. maximowicziana*, *Cleome integrifolia*, *C. viscosa*, *Clerodendrum serratum*, *Clintonia borealis*, *Clitoria ternatea*, *Cnidioscolus chayamansa*, *Coccinia grandis*, *C. quinqueloba*, *Cochlearia anglica*, *C. danica*, *C. officinalis*, *Cocos nucifera*, *Coleus blumei*, *Colocasia esculenta*, *Commelina communis*, *Conringia orientalis*, *Conyza canadensis*, *Coptis trifolia*, *Corchorus aestuans*, *C. capsularis*, *C. olitorius*, *C. trilocularis*, *Cordia dichotoma*, *C. myxa*, *Cordyline australis*, *C. fruticosa*, *Coriandrum sativum*, *Cornus kousa*, *Corypha elata*, *Cosmos caudatus*, *Crambe cordifolia*, *C. maritima*, *Crassocephalum crepidioides*, *Crataegus monogyna*, *Crateva religiosa*, *Crepis capillaris*, *C. setosa*, *Crescentia cujete*, *Crithmum maritimum*, *Crotalaria longirostrata*, *Cryptotaenia canadensis*, *C. japonica*, *Cubilia blancoi*, *Cucumis africanus*, *C. anguria*, *C. dipsaceus*, *C. metuliferus*, *C. prophetarum*, *C. sativus*, *Cucurbita maxima*, *C. moschata*, *C. pepo*, *Curcuma parviflora*, *Cyclanthera pedata*, *Cynara cardunculus*, *Cynoglossum officinale*, *Cyperus esculentus*, *Dasyliion texanum*, *D. wheeleri*, *Daucus carota* Sativus Group, *Descurainia pinnata*, *D. sophia*, *Dianthus superbus*, *Dioscorea pentaphylla*, *Diplazium esculentum*, *Diplotaxis erucoides*, *D. muralis*, *Dracaena angustifolia*, *Dracocephalum moldavica*, *Dracontomelon dao*, *Dudleya edulis*, *Durio zibethinus*, *Echinocaulos perfoliatus*, *Echinochloa colonum*, *E. crusgalli*, *Echium vulgare*, *Elephantopus scaber*, *Eleusine coracana*, *Eleutherococcus senticosus*, *Elsholtzia ciliata*, *Embelia ribes*, *Embllica officinalis*, *Emex spinosa*, *Emilia sonchifolia*, *Enchylaena tomentosa*, *Epilobium hirsutum*, *Erechtites valerianifolia*, *Eremurus spectabilis*, *Erodium cicutarium*, *Eruca sativa*, *Eryngium foetidum*, *Erythea edulis*, *Erythrina americana*, *E. berteriana*, *E. fusca*, *E. herbacea*, *E. rubrinervia*, *E. variegata*, *Erythronium albidum*, *E. americanum*, *E. dens-canis*, *Euclea crispa*, *Euonymus japonicus*, *Euterpe edulis*, *E. oleracea*, *E. precatória*, *Eutrema wasabi*, *Faba vulgaris*, *Fagopyrum cymosum*, *F. esculentum*, *F. tataricum*, *Fagus grandifolia*, *F. sylvatica*, *Falcaria vulgaris*, *Fedia cornucopiae*, *Feronia limonia*, *Ferula asafoetida*, *F. communis*, *Fibigia clypeata*, *Heus hirta*, *F. lacor*, *F. palmata*, *F. pseudopalma*, *F. sycomor*, *Filipendula vulgaris*, *Flacourtia cataphiacta*, *F. rukam*, *Flagellaria indica*, *Foeniculum vulgare*, *Fragaria vesca*, *Fritillaria verticillata*, *Galega officinalis*, *Galinsoga parviflora*, *Galium aparine*, *G. mollugo*, *Gaultheria myrsinites*, *G. procumbens*, *Geranium thunbergii*, *Glechoma hederacea*, *Glehnia littoralis*, *Glycine max*, *Gnetum gnemon*, *Gossypium arboreum*, *G. barbadense*, *G. herbaceum*, *Gourliea decorticans*, *Gundelia tournefortii*, *Gymnema sylvestre*, *Gynandropsis gynandra*, *Gynostemma pentaphyllum*, *Gynura bicolor*, *G. sarmentosa*, *Halimione portulacoides*, *Heliotropium curassavicum*, *Hemerocallis dumortieri*, *H. filiva*, *H. fulva* 'Kwanso', *H. lilio-asphodelus*, *H. minor*, *Heraclium lanatum*, *H. sphondylium*, *Hesperis matronalis*, *Heterospatha elata*, *Hibiscus acetosella*, *H. bifurcatus*, *H. cannabinus*, *H. diversifolius*, *H. heterophyllus*, *H. rosa-sinensis*, *H. sabdariffa*, *H. surattensis*, *H. syriacus*, *H. tiliaceus*, *Hirschfeldia incana*, *Honkenya peploides*, *Hoslundia opposita*, *Hosta longipes*, *Houttuynia cordata*, *Hydrangea anomala*, *Hydrocotyle sibthorpioides*, *Hydrophyllum canadense*, *H. virginianum*, *Hyphaene thebaica*, *Hypochoeris radicata*, *Impatiens glandulifera*, *Indigofera pseudo-tinctoria*, *Inula crithmoides*, *I. helenium*, *Ipomoea aquatica*, *I. batatas*, *I. digitata*, *Iriartea ventricosa*, *Ixeris dentata*, *Jaltomata procumbens*, *Juglans ailantifolia*, *Kaempferia galanga*, *K. rotunda*, *Karatas plumieri*, *Lablab purpureus*, *Lactuca indica*, *L. perennis*, *L. sativa*, *L. sativa* Angustana Group, *L. serriola*, *Lagenaria siceraria*, *Lallemantia iberica*, *Lamiastrum galeobdolon*, *Lamium album*, *L. amplexicaule*, *L. purpureum*, *Lannea grandis*, *Lapsana communis*, *Lathyrus davidii*, *L. sativus*, *Lavatera trimestris*, *Ledebouriella divaricata*,

*Leichhardtia australis*, *Lemna minor*, *Leontodon autumnalis*, *L. hispidus*, *Leonurus sibiricus*, *Lepidium campestre*, *L. fremontii*, *L. latifolium*, *L. meyenii*, *L. sativum*, *L. virginicum*, *Lespedeza bicolor*, *Leucaena esculenta*, *L. latisiliqua*, *Leucanthemum vulgare*, *Levisticum officinale*, *Licuala spinosa*, *Ligusticum hultenii*, *L. scoticum*, *Lilium longiflorum*, *Limncharis flava*, *Limnophila aromatica*, *Lindera glauca*, *L. obtusiloba*, *Linum usitatissimum*, *Lippia alba*, *Litsea thunbergii*, *Livistona saribus*, *Lodoicea maldivica*, *Lomatium californicum*, *L. nudicaule*, *L. utriculatum*, *Lonicera japonica*, *Luffa acutangula*, *L. cylindrica*, *Lycium chinense*, *Lysimachia clethroides*, *Madhuca longifolia*, *Magnolia hypoleuca*, *M. kobus*, *Mahonia nervosa*, *Malva neglecta*, *M. parviflora*, *M. sylvestris*, *M. verticillata*, *M. verticillata* 'Crispa', *Mangifera caesia*, *M. indica*, *Manihot esculenta*, *Manilkara zapota*, *Marrubium vulgare*, *Matteuccia pennsylvanica*, *Medicago lupulina*, *M. polymorpha*, *M. sativa*, *Melilotus alba*, *M. altissima*, *Mentha arvensis* f. *piperascens*, *M. arvensis* var. *villosa*, *M. longifolia*, *M. x piperita*, *Mertensia maritima*, *Mesembryanthemum crystallinum*, *Mesua ferrea*, *Metroxylon sagu*, *Mimulus guttatus*, *Mirabilis expansa*, *M. jalapa*, *Mollugo verticillata*, *Momordica balsamina*, *M. charantia*, *M. cochinchinensis*, *M. dioica*, *Monarda didyma*, *M. fistulosa*, *Montia perfoliata*, *M. sibirica*, *Morinda citrifolia*, *Moringa oleifera*, *M. ovalifolia*, *M. stenopetala*, *Morus alba* var. *indica*, *M. rubra*, *Mucuna pruriens*, *Myrsotis arvensis*, *Myrianthus arboreus*, *Myriophyllum brasiliense*, *Myrrhis odorata*, *Nannorrhops ritehieana*, *Nasturtium officinale*, *Nauclea orientalis*, *Nelumbo lutea*, *N. nucifera*, *Nepeta cataria*, *Neptunia oleracea*, *Nicotiana tabacum*, *Nymphaea odorata*, *Nymphoides indica*, *N. peltata*, *Ocimum canum*, *O. gratissimum*, *O. gratissimum* var. *viride*, *O. sanctum*, *Oenanthe javanica*, *Oenocarpus multicaulis*, *Oenothera biennis*, *O. hookeri*, *Oncosperma filamentosum*, *Onoclea sensibilis*, *Operculina turpethum*, *Orbignya martiana*, *Origanum vulgare*, *Oroxylum indicum*, *Orychophragmus violaceus*, *Oryza sativa*, *Osmorhiza aristata*, *Osmunda cinnamomea*, *O. claytoniana*, *Oxalis acetosella*, *O. corniculata*, *O. deppei*, *O. oregana*, *O. stricta*, *O. tuberosa*, *O. violacea*, *Oxyria digyna*, *Pachira aquatica*, *P. insignis*, *Paederia foetida*, *Pandanus amaryllifolius*, *P. tectorius*, *Papaver rhoeas*, *P. somniferum*, *Parajubaea torallyi*, *Parietaria officinalis*, *Parkia biglandulosa*, *P. speciosa*, *Passiflora incarnata*, *Pastinaca sativa*, *Patrinia scabiosaefolia*, *P. villosa*, *Paullinia pinnata*, *Paulownia tomentosa*, *Pectis angustifolia*, *Petalium murex*, *Pelargonium acetosum*, *Peltaria alliacea*, *Peperomia pellucida*, *Pereskia aculeata*, *Pergularia daemia*, *Perilla frutescens*, *Persicaria hydropiper*, *P. vulgaris*, *Petasites frigidus*, *Petroselinum crispum*, *P. crispum* Hortense Groups *P. crispum* Radicosum Group, *Peucedanum ostruthium*, *Phaseolus coccineus*\* *P. lunatus*\* *P. vulgaris*, *Phoenix dactylifera*, *P. reclinata*, *Phragmites australis*, *Phyla scaberrima*, *Phy salis angulata*, *Phyteuma orbiculare*, *Phytolacca acinosa*, *P. acinosa* var. *esculenta*, *P. americana*, *P. dioica*, *P. rivinoides*, *Picea pungens* 'Glauca', *Picris echioides*, *Pimpinella anisum*, *P. brachyzarpa*, *P. saxifraga*, *Piper aduncum*, *P. auritum*, *P. guineense*; *P. sarmentosum*, *Pipturus argenteus*, *Pistacia terebinthus*, *Pistia stratiotes*, *Pisum sativum*, *Pithecellobium lobatum*, *Plantago coronopus*, *P. lanceolata*, *P. major*, *P. maritima*, *Platycodon grandiflorus*, *Plectranthus amboinicus*, *Plectritis congesta*, *Pluchea indica*, *Plukenetia volubilis*, *Podophyllum emodi*, *Poliomintha incana*, *Polygonum aviculare*, *P. bistorta*, *P. bistortoides*, *P. punctatum*, *P. viviparum*, *Polymnia sonchifolia*, *Polyscias fruticosa*, *Poncirus trifoliata*, *Pontederia cordata*, *Portulaca oleracea*, *Portulacaria afra*, *Pothomorphe peltata*, *P. umbellata*, *Primula veris*\* *P. vulgaris*, *Proboscidea louisianica* ssp. *fragrans*, *Prosopis spicigera*, *Prunella vulgaris*, *Prunus padus*, *P. tomentosa*, *Psophocarpus palustris*\* *P. tetragonolobus*, *Pteridium aquilinum*, *Pteris ensiformis*, *Pterocarpus indicus*, *Ptychosperma elegans*, *Pueraria lobata*, *Pulmonaria*

officinalis, *Punica granatum*, *Pyrus betulifolia*, *Ranunculus ficaria*, *R. polyanthemos*, *R. sceleratus*, *Raphanus raphanistrum*, *R. raphanistrum* ssp. *maritimus*, *R. sativus*, *R. sativus Longipinnatus* Group, *Raphia hookeri*, *Rehmannia glutinosa*, *Reichardia picroides*, *Rheum rhabarbarum*, *R. tataricum*, *Rhexia virginica*, *Rhodiola rosea*, *Rhododendron arboreum*, *Rhoicissus capensis*, *Rhopalostylis sapida*, *Ribes cereum*, *R. divaricatum*, *R. nigrum*, *R. odoratum*, *Rorippa islandica*, *Rosa multiflora*, *Roystonea elata*, *R. oleracea*, *R. regia*, *Rubus rosaefolius*, *Rumex acetosa*, *R. acetosella*, *R. alpinus*, *R. arifolius*, *R. crispus*, *R. hymenosepalus*, *R. obtusifolius*, *R. patientia*, *R. sagittatus*, *R. sanguineus*, *R. scutatus*, *R. vesicarius*, *Rungia klossii*, *Ruta graveolens*, *Sabal etonia*, *S. palmetto*, *Sagittaria sagittifolia*, *S. sinensis*, *Salicornia europaea*, *Salix babylonica*, *S. daphnoides*, *S. gracilistyla*, *Salmea* sp., *Salsola kali*, *S. komarovi*, *S. soda*, *Salvadora persica*, *Salvia officinalis*, *S. sclarea*, *S. verbenaca*, *S. viridis*, *Sambucus javanica*, *S. sieboldiana*, *Sanguisorba canadensis*, *S. minor*, *S. officinalis*, *Saraca bijuga*, *Sassafras albidum*, *Sauropus androgynus*, *Saxifraga pensylvanica*, *S. stolonifera*, *Scandix pecten-veneris*, *Scheelea butyracea*, *S. preussii*, *Schisandra chinensis*, *Schleichera oleosa*, *Scolymus maculatus*, *Scorzonera hispanica*, *Scutellaria baicalensis*, *Sechium edule*, *Sedum reflexum*, *S. rhodanthum*, *S. sarmentosum*, *Serenoa repens*, *Sesamum alatum*, *S. indicum*, *S. radiatum*, *Sesbania grandiflora*, *S. sesban*, *Sesuvium portulacastrum*, *Setaria palmifolia*, *Sida rhombifolia*, *Silaum silaus*, *Silene acaulis*, *S. alba*, *S. dioica*, *S. vulgaris*, *Silybum marianum*, *Sinapis alba*, *S. arvensis*, *Sisymbrium altissimum*, *S. irio*, *S. officinale*, *Sium cicutaeifolium*, *Smilax china*, *Smyrnium olusatrum*, *Solanum aethiopicum*, *S. incanum*, *S. indicum*, *S. macrocarpon*, *S. melongena*, *S. nigrum*, *S. nodiflorum*, *S. scabrum*, *S. sessiliflorum*, *S. sp.*, *S. torvum*, *S. uporo*, *S. xanthocarpum*, *Solenostemon rotundifolius*, *Solidago missouriensis*, *Sonchus arvensis*, *S. asper*, *S. oleraceus*, *Sophora japonica*, *Sphenoclea zeylanica*, *Sphenostylis stenocarpa*, *Spilanthes acmella*, *Spinacia oleracea*, *Spondias axillaris*, *S. dulcis*, *S. mombin*, *S. purpurea*, *Stanleya pinnatifida*, *Staphylea colchica*, *Stellaria media*, *Stenochlaena palustris*, *Sterculia foetida*, *S. tragacantha*, *Strychnos spinosa*, *Suaeda maritima*, *Symphytum officinale*, *S. x uplandicum*, *Syzygium malaccense*, *S. polycephalum*, *Talinum paniculatum*, *T. portulacifolium*, *T. triangulare*, *Tamarindus indica*, *Tanacetum vulgare*, *Taraxacum officinale*, *Telfairia occidentalis*, *Telosma cordata*, *Tetracarpidium conophorum*, *Tetragonia decumbens*, *T. tetragonoides*, *Thalia geniculata*, *Thespesia populnea*, *Thlaspi arvense*, *Thymus vulgaris*, *Tilia americana*, *T. x europaea*, *Tiliacora triandria*, *Toona sinensis*, *Tordylium apulum*, *Trachycarpus fortunei*, *Tradescantia virginiana*, *Tragopogon dubius*, *T. porrifolius*, *T. pratensis*, *Trianthema portulacastrum*, *Tribulus terrestris*, *Trichodesma zeylanicum*, *Trichosanthes cucumerina*, *T. dioica*, *T. kirilowii*, *Trifolium hybridum*, *T. pratense*, *T. repens*, *Trigonella caerulea*, *T. corniculata*, *T. foenum-graecum*, *Trillium eiectum*, *T. grandiflorum*, *T. sessile*, *T. undulatum*, *Tropaeolum majus*, *T. minus*, *T. tuberosum*, *Tulbaghia alliacea*, *Tussilago farfara*, *Typha elephantina*, *Ullucus tuberosus*, *Ulmus pumila*, *Urena lobata*, *Urospermum picroides*, *Urtica dioica*, *U. urens*; *Valerianella eriocarpa*, *V. locusta*, *Verbena officinalis*, *Vernonia amygdalina*, *V. cineiea*, *Veronica americana*, *V. beccabun*<sup>^</sup>, *Veronicastrum sibiricum*, *Vicia cracca*, *V. grandiflora van kitaibeliana*, *V. sativa*, *V. tetrasperma*, *Vigna mungo*, *V. radiata*, *V. umbel lata*, *V. unguiculata*, *V. unguiculata* ssp. *sesquipedalis*, *Viola canadensis*, *V. odorata*, *V. papilionacea*, *V. pedata*, *V. sororia*, *V. x wittrockiana*, *Vitex doniana*, *Vitis amurensis*, *V. californica*, *V. coignetiae*; *V. labrusca*, *V. munsoniana*, *V. shuttleworthii*, *V. vinifera*, *Voandzeia subterranea*, *Washingtonia filifera*, *Wedelia biflora*, *Wisteria floribunda*, *Wolffia globosa*, *Xanthoceras sorbifolium*, *Xanthosoma atrovirens*, *X. brasiliense*, *X. sagittifolium*, *X. violaceum*, *Ximenia*

*americana*, *Zanthoxylum piperitum*, *Zingiber zerumbet*, *Ziziphus mauritiana*.

MANNAS - *Acacia aneura*, *Atraphaxis spinosa*, *Atriplex halimus*, *Cistus ladanifer*, *Cotoneaster racemiflora*, *Dendrocalamus strictus*, *Eucalyptus citriodora*, *E. dumosa*, *E. eximia*, *E. gunnii*, *E. maculata*, *E. mannifera*, *E. microtheca*, *E. papuana*, *E. pulverulenta*, *E. radiata*, *E. resinifera*, *E. rubida*, *E. tereticornis*, *E. terminalis*, *E. viminalis*, *Euonymus europeus*, *Fraxinus excelsior*, *F. ornus*, *Imperata cylindrica*, *Larix occidentalis*, *Leptospermum scoparium*, *Morus alba*, *Olea europaea*, *Phoenix dactylifera*, *Pinus roxburghii*, *P. wallichiana*, *Pseudotsuga menziesii*, *Quercus cerris*, *Q. macrolepis*, *Q. robur*, *Salix babylonica*, *S. caprea*, *S. fragilis*, *Tamarix aphylla*, *T. canariensis*, *Tilia x europaea*.

MASTICATORIES - *Abelmoschus moschatus*, *Abies balsamea*, *Acacia catechu*, *Acer pseudoplatanus*, *Aegie marmelos*, *Aframomum melegueta*, *Agave salmiana*, *Aloe zebrina*, *Ammi visnaga*, *Amomum compactum*, *Anacyclus pyrethrum*, *Anogeissus leiocarpus*, *Areca catechu*, *Artocarpus lakoocha*, *Asclepias speciosa*, *Azanza garckeana*, *Batis maritima*, *Boswellia sacra*, *Brosimum alicastrum*, *Camellia sinensis*, *Carum carvi*, *Catha edulis*, *Chamaenerion angustifolium*, *Chenopodium quinoa*, *Chimaphila maculata*, *C. umbellata*, *Cichorium intybus*, *Cinnamomum tamala*, *Coffea arabica*, *C. canephora*, *Cola acuminata*, *C. nitida*, *Coriandrum sativum*, *Cuminum cyminum*, *Dacrycarpus dacrydioides*, *Dodonaea viscosa*, *Dudleya edulis*, *Elettaria cardamomum*, *Embelia ribes*, *Eriodictyon californicum*, *Erythroxylum coca*, *Ficus capensis*, *Flagellaria indica*, *Foeniculum vulgare*, *Garcinia kola*, *Glyceria fluitans*, *Glycine tabacina*, *Glycyrrhiza glabra*, *G. lepidota*, *Grindelia squarrosa*, *Halesia Carolina*, *Heterospathe elata*, *Hordeum bulbosum*, *Illicium verum*, *Imperata cylindrica*, *Iris x germanica*, *I. x germanica 'Florentina'*, *Laminaria japonica*, *Larix occidentalis*, *Larrea tridentata*, *Ledum glandulosum*, *Ligusticum scoticum*, *Lindera benzoin*, *Liquidamber styraciflua*, *Manilkara zapota*, *Menyanthes trifoliata*, *Myrrhis odorata*, *Nicotiana tabacum*, *Nyssa sylvatica*, *Ononis spinosa*, *Operculina turpethum*, *Osmorhiza longistylis*, *O. occidentalis*, *Oxalis acetosella*, *O. corniculata*, *O. stricta*, *Oxydendrum arboreum*, *Panax ginseng*, *P. quinquefolium*, *Paullinia pinnata*, *Pentadesma butyracea*, *Ifetalostemon candidum*, *P. purpureum*, *Phoenix dactylifera*, *Ptyla scaberrima*, *Picea glauca*, *P. mariana*, *Piper betle*; *P. methysticum*, *Pistacia lentiscus*; *P. mutica*, *P. terebinthus*, *Pouteria viride*, *Prosopis juliflora*, *Protea angolensis*, *Prunus padus*, *P. pensylvanica*, *Rhodymenia palmata*, *Rumex acetosella*, *Sabal palmetto*, *Saccharum officinarum*, *S. sinense*, *S. spontaneum*, *Salvadora persica*, *Santalum album*, *Saraca bijuga*, *Silphium laciniatum*, *Sonchus oleraceus*, *Sorghum bicolor* *Saccharatum* Group, *Spondias axillaris*, *Sterculia chicha*, *Stevia rebaudiana*, *Symplocos tinctoria*, *Syzygium aromaticum*, *Tamarindus indica*, *Tarconanthus camphoratus*, *Terminalia tomentosa*, *Tilia americana*, *Tragopogon porrifolius*, *Trifolium pratense*, *Ulmus rubra*, *Vernonia amygdalina*, *Zea mays*, *Z. mexicana*.

MEAT TENDERIZERS - *Ananas comosus*, *Carica papaya*, *Ficus insipida*, *Mangifera indica*.

MILK SUBSTITUTES, NUT MILKS - *Amygdalus communis*, *Anacardium occidentale*, *Avena sativa*, *Brosimum alicastrum*, *Canarium ovatum*, *Cannabis sativa*, *Carya illinoensis*, *Chrysophyllum cainito*, *Cocos nucifera*, *Corylus avellana*, *C. maxima*, *Cucurbita pepo*, *Cyperus esculentus*, *Faba vulgaris*, *Glycine max*, *Helianthus annuus*, *Hyphaene natalensis*, *Jessenia bataua*, *J. polycarpa*, *Juglans regia*, *Mammillaria simplex*,

Oenocarpus distichus, Orbignya martiana, Oryza sativa, Pinus pinea, Sesamum indicum, Solanum tuberosum, Treculia africana.

NECTARS, HONEYDEWS - Agave deserti, A. parryi, A. shawii, Aloe arborescens, A. ferox, A. marlothii, A. zebrina, Aquilegia buergeriana, Banksia marginata, Bauhinia carionii, B. hooker i, Beloperone californica, Burchellia bubalina, Capparis decidua, Dianthus superbus, Eucalyptus gummifera, E. intermedia, E. pachyphylla, Gladiolus dalenii, Grevillea excelsior, G. juncifolia, G. robusta, Hakea eyreana, H. suberea, Halleria lucida, Lambertia formosa, Leptactina benguelensis, Leptospermum coriaceum, Lonicera japonica, Melianthus major, M. minor, Musa x paradisiaca, Phormium tenax, Protea angolensis, P. cynaroides\* P. repens, Salvia hians, Spathodea campanulata, Telopea speciosissima.

OILS - Abelmoschus esculentus, Abutilon guineense, Acanthosicyos horridus, Acrocomia aculeata, A. mexicana, A. sclerocarpa, A. totai, Adansonia digitata, Aleurites moluccana, Allium sativum, A. tuberosum, Ambrosia artemisiifolia, Amygdalus communis, Arachis hypogaea, Argania spinosa, Armeniaca brigantina, A. vulgaris, A. vulgaris 'Ansu', Astrocaryum murumura, A. tucuma, Balanites aegyptiaca, B. wilsoniana, Barbarea verna, Bertholletia excelsa, Borago officinalis, Brassica carinata, B. juncea, B. napus, B. rapa Chinensis Group, B. rapa Sarson Group, B. toumefortii, Buchanania lanzan, Butyrospermum paradoxum ssp. parkii, Camellina sativa, Camellia japonica, C. kissi, C. sasanqua, C. sinensis, Canarium commune, C. ovatum, C. schweinfurthii, Cannabis sativa, Camedia gigantea, C. tinctorius, Carya illinoensis, C. ovata, Caryocar nuciferum, C. villosum, Ceiba pentandra, Celosia argentea, Ceratotheca sesamoides, Cinnamomum japonicum, Citrullus colocynthis, C. lanatus, C. lanatus ssp. colocynthoides, Citrus x paradisi, Cocos nucifera, Conringia orientalis, Corozo oleifera, Corylus avellana, Crambe orientalis, Crescentia alata, Cucumis melo, C. sativus, Cucurbita foetidissima, C. pepo, Cyperus esculentus, Elaeis guineensis, Eruca sativa, Euodia daniellii, Euterpe oleracea, E. precatória, Fagopyrum tataricum, Fagus grandifolia, F. sylvatica, Fevillea cordifolia, Ginkgo biloba, Glaucium flavum, Glycine max, Gossypium arboreum, G. barbadense, G. herbaceum, G. hirsutum, Guizotia abyssinica, Gynandropsis gynandra, Helianthus annuus, H. annuus ssp. lenticularis, Hesperis matronalis, Hibiscus cannabinus, Hildegardia barter i, Hodgsonia macrocarpa, Impatiens glandulifera, Jessenia bataua, J. polycarpa, Juglans ailantifolia var. cordiformis, J. cathayensis, J. cinerea, J. mandshurica, J. nigra, J. regia, Kosteletzkya virginica, Lactuca serriola, Lagenaria siceraria, Lallelantia iberica, Lepidium sativum, Linum usitatissimum, Luffa cylindrica, Lupinus mutabilis, Lycopersicon lycopersicum, Macadamia integrifolia, Macrotyloma uniflorum, Madhuca indica, Madia sativa, Manilkara hexandra, Mauritia flexuosa, Maytenus boaria, Meconopsis nepalensis, Mimosa elengi, Moringa oleifera, Nephelium lappaceum, N. mutabile, Oenocarpus bacaba, O. distichus, O. multicaulis, Oenothera biennis, Olea europaea, Oncoba spinosa, Onopordum acanthium, Orbignya cohune, O. martiana, Oryza sativa, Panda oleosa, Pangium edule, Papaver rhoeas, P. somniferum, Pappia capensis, Parajubaea cocoides, P. torallyi, Passiflora edulis, Perilla frutescens, Persea americana, Phoenix dactylifera, Pinus cembra, P. pinea, P. sibirica, Pistacia atlantica, P. lentiscus; P. mutica, P. terebinthus; P. vera, Pithecellobium dulce, Plantago psyllium, Prinsepia utilis, Proboscidea louisianica, P. parviflora, Prunus cerasus, Psidium guajava, Psophocarpus tetragonolobus, Quercus ilex, Rapphanus sativus, Ribes nigrum, Ricinodendron heudelotii, R. rautanenii, Ricinus communis, Salicornia europaea, Salmalia malabarica, Salvia hispanica, Scheelea butyracea, S. macrocarpa, S. preussii, Schleicheria oleosa, Sclerocarya caffra, Sesamum alatum, S.

capense, S. indicum, S. radiatum, Simaiouba glauca, Staphylea trifolia, Syagrus coronata, Tamarindus indica, Telfairia occidentalis, Terminalia catappa, T. chebula, Tetracarpidium conophorum, Torreya californica, T. nucifera, Treculia africana, Trichodesma zeylanicum, Trichosanthes kirilowii var. japonica, Triticum x aestivum, Tyiosema esculentum, Vitis vinifera, Ximenia americana, X. caffra, Zea mays.

PEDUNCLES - Heracleum sphondylium, Hovenia dulcis, Juglans ailantifolia, Lupinus albus, Pistacia terebinthus, Solanum melongena.

PETIOLES - Angelica archangelica, A. atropurpurea, A. sylvestris, Apium graveolens, Arctium lappa, A. minus, Begonia x tuberhybrida, Beta vulgaris Cicla Group, Borago officinalis, Brassica rapa Chinensis Group, B. rapa Rapifera Group, Carludovica palmata, Colocasia esculenta, Crambe maritima, C. tatarica, Cryptotaenia japonica, Cynara cardunculus, C. scolymus, Emex spinosa, Eutrema wasabi, Foeniculum vulgare Azoricum Group, Gunnera tinctoria, Helianthus annuus, Heracleum lanatum, H. persicum, Ipomoea batatas, Levisticum officinale, Ligularia kaempferi, Ligusticum scoticum, Nuphar luteum, Osmorhiza aristata, Oxalis oregana, Peltiphyllum peltatum, Petasites japonicus, P. palmatus, Rheum australe, R. palmatum, R. ribes, Rumex hymenosepalus, Scolymus hispanicus, Snymium olusatrum, S. perfoliatum, Spinacia oleracea, Taraxacum officinale.

PITHS - Carica papaya, Chamaenerion angustifolium, Cocos nucifera, Cycas revoluta, Metroxylon rumphii, M. sagu, Osmunda claytoniana, Phoenix paludosa, Sabal minor, S. palmetto, S. texana, Syagrus coronata, Thuja occidentalis, Typha angustifolia.

POLLENS - Arctotheca calendulaceum, Eucalyptus calophylla, E. marginata, E. wandoo, Eugeissona utilis, Pandanus tectorius, Phoenix dactylifera, Pinus densiflora, P. koraiensis, Scirpus lacustris, S. paludosus, S. validus, Typha angustifolia, T. domingensis, T. elephantina, T. latifolia, Zea mays.

POPPING SEEDS» PARCHING SEEDS - Amaranthus caudatus, A. cruentus, A. hypochondriacus, Chenopodium murale, Cicer arietinum, Digitaria exilis, Echinochloa crusgalli, Eleusine coracana, Euryale ferox, Faba vulgaris, Hordeum vulgare, Nelumbo nucifera, Nuphar luteum, Nymphaea tuberosa, Oryza sativa, Panicum miliaceum, Paspalum scrobiculatum, Pennisetum americanum, Phaseolus vulgaris, Salvia azurea var. grandiflora, Setaria italica, Sorghum bicolor, Tripsacum dactyloides, Triticum x aestivum, Vigna angularis; Voandzeia subterranea, Zea mays, Z. mexicana, Zizania aquatica.

RECEPTACLES - Carlina acanthifolia, C. acaulis, C. vulgaris, Cirsium eriophorum, C. vulgare, Cynara cardunculus, C. humilis, C. scolymus, Gundelia toumefortii, Helianthus annuus, Onopordum acanthium, Parkia speciosa, Silybum marianum.

RENNETS - Acanthosicyos horridus, A. naudinianus, Adansonia digitata, Carduus nutans, Carlina acaulis, Carnegiea gigantea, Carthamus tinctorius, Cirsium arvense, C. vulgare, Citrus x aurantifolia, C. limon, Cynara cardunculus, C. humilis, C. scolymus, Drosera rotundifolia, Heus carica, F. insipida, F. palmata, F. sycomorus, Galega officinalis, Galium verum, Kluyveromyces marxianus, Mucor miehei, Nitraria schoberi, Nypa fruticans, Oxalis acetosella, Pinguicula vulgaris, Prunus spinosa, Rhus chinensis, R. javanica, Rumex acetosa, R. acetosella, R. vesicarius, Solanum incanum, S. torvum, Streblus asper, Tabernaemontana elegans, Urtica dioica, Withania somnifera.

ROOTS, UNDERGROUND PARTS - *Abelmoschus ficulneus*, *A. moschatus*, *Abronia latifolia*, *Acorus calamus*, *A. gramineus*, *Adansonia digitata*, *Agave utahensis*, *Alisma plantago-aquatica*, *Alpinia caerulea*, *Althaea officinalis*, *Amorphophallus campanulatus*, *A. variabilis*, *Angelica atropurpurea*, *Anredera cordifolia*, *Anthriscus cerefolium*, *A. sylvestris*, *Antigonon leptopus*, *Apios americana*, *Apium graveolens* Rapaceum Group, *Aplectrum hyemale*, *Aponogeton distachyus*, *Aralia racemosa*, *Araucaria bidwillii*, *Arctium lappa*, *A. minus*, *Arisaema triphyllum*, *Armoracia rusticana*, *Arracacia xanthorhiza*, *Arthropodium milleflorum*, *Asarum canadense*, *Asclepias speciosa*, *A. tuberosa*, *Asparagus cochinchinensis*, *A. sarmentosus*, *Asphodeline lutea*, *Asplenium bulbiferum*, *Balsamorhiza deltoidea*, *B. hooferi*, *B. sagittata*, *Beta vulgaris* Cicla Group, *B. vulgaris* Crassa Group, *Boesenbergia pandurata*, *Bongardia Chrysogonum*, *Borago officinalis*, *Boscia albitrunca*, *Brachychiton diversifolium*, *Brasenia schreberi*, *Brassica juncea*, *B. napus* Napobrassica Group, *B. rapa* Perviridis Group, *B. rapa* Rapifera Group, *Brodiaea douglasii*, *B. pulchella*, *Bunium bulbocastanum*, *Cakile edentula*, *C. maritima*, *Calathea allouia*, *Calla palustris*, *Callirhoe involucrata*, *Calochortus gunnisonii*, *C. nuttallii*, *Caltha palustris*, *Camassia leichtlinii*, *C. quamash*, *Campanula rapunculoides*, *C. rapunculus*, *Canarina canariensis*, *Canna edulis*, *Capsella bursa-pastoris*, *Carludovica palmata*, *Carum carvi*, *Ceropegia bulbosa*, *Chaerophyllum bulbosum*, *C. bulbosum* ssp. *prescottii*, *Chlorogalum pomeridianum*, *Cichorium intybus*, *Cirsium arvense*, *C. oleraceum*, *C. vulgare*, *Claytonia caroliniana*, *C. megarrhiza*, *C. virginica*, *Codonopsis lanceolata*, *C. pilosula*, *Coleus blumei*, *C. dazo*, *C. parviflorus*, *Colocasia esculenta*, *Conopodium majus*, *Cordylone australis*, *C. fruticosus*, *Costus speciosus*, *Crambe cordifolia*, *C. orientalis*, *C. tatarica*, *Crassocephalum crepidioides*, *Crocus cancellatus*, *C. sativus*, *C. sieberi*, *Cryptotaenia canadensis*, *C. japonica*, *Curcuma longa*, *C. mangga*, *C. xanthorrhiza*, *C. zedoaria*, *Cynara cardunculus*, *Cyperus esculentus*, *C. rotundus*, *Cyrtosperma chamissonis*, *Dahlia pinnata*, *Daucus carota*, *D. carota* Sativus Group, *D. pusillus*, *Dentaria diphylla*, *D. laciniata*, *Dioscorea alata*, *D. bulbifera*, *D. cayenensis*, *D. esculenta*, *D. japonica*, *D. opposita*, *D. pentaphylla*, *D. trifida*, *Dioscoreophyllum cumminsii*, *Eleocharis dulcis*, *Emex spinosa*, *Eryngium campestre*, *E. maritimum*, *Erythronium albidum*, *E. americanum*, *E. dens-canis*, *Eucalyptus dumosa*, *Euryale ferox*, *Eutrema wasabi*, *Ferula assa-foetida*, *Fockea angustifolia*, *F. edulis*, *Foeniculum vulgare*, *Fritillaria camtschaticensis*\* *F. verticillata*, *Glycyrrhiza lepidota*, *Gundelia tournefortii*, *Hedysarum boreale*, *H. mackenzii*, *H. occidentale*, *Helianthus x laetiflorus*, *H. maximiliani*, *H. tuberosus*, *Hemerocallis filifera*, *H. lilio-asphodelus*, *H. minor*, *Heracleum lanatum*, *Hordeum bulbosum*, *Houttuynia cordata*, *Humulus lupulus*, *Imperata cylindrica*, *Inula helenium*, *Ipomoea aquatica*, *I. batatas*, *I. digitata*, *I. sp.*, *Iris setosa*, *Ixeris dentata*, *Jaltomata procumbens*, *Kaempferia galanga*, *K. rotunda*, *Lablab purpureus*, *Lathyrus tuberosus*, *Leichhardtia australis*, *Leonurus sibiricus*, *Leopoldia comosa*, *Lepidium latifolium*, *L. meyenii*, *Levisticum officinale*, *Lewisia rediviva*, *Ligusticum hulthenii*, *L. scoticum*, *Lilium auratum*, *L. brownii*, *L. lancifolium*, *L. longiflorum*, *L. maculatum*, *L. superbum*, *Litsea cubeba*, *Lomatium californicum*, *L. dissectum*, *L. macrocarpum*, *L. nudicaule*, *L. triternatum*, *Lunaria annua*, *Lycopus uniflorus*, *Macrotyloma uniflorum*, *Manihot esculenta*, *M. glaziovii*, *Maranta arundinacea*, *Matteuccia pensylvanica*, *Medeola virginiana*, *Melilotus officinalis*, *Menyanthes trifoliata*, *Mertensia maritima*, *Meum athamanticum*, *Mirabilis expansa*, *Momordica dioica*, *Moraea fugax*, *Muscari neglectum*, *Myrrhis odorata*, *Nelumbo lutea*, *N. nucifera*, *Nuphar advena*, *N. luteum*, *Nymphaea lotus*, *N. odorata*, *N. stellata*, *N. tuberosa*, *Oenanthe javanica*, *O. pimpinelloides*, *O. sarmentosa*, *Oenothera biennis*, *O. hookeri*, *Onoclea sensibilis*, *Ophiopogon*

*japonicus*, *Orchis mascula*, *O. militaris*, *O. morio*, *Ornithogalum umbellatum*, *Osmorhiza aristata*, *O. claytonii*, *O. occidentalis*, *Oxalis deppei*, *O. stricta*, *O. tuberosa*, *O. violacea*, *Pachyrhizus erosus*, *Paeonia lactiflora*, *Panax ginseng*, *P. trifolius*, *Pancretrium maritimum*, *Passiflora quadrangularis*, *Pastinaca sativa*, *Peniocereus greggii*, *Perideridia gaidneri*, *P. kelloggii*, *Petalostemon candidum*, *Petasites frigidus*, *Petroselinum crispum* Radicosum Group, *Phaseolus coccineus*, *Phlomis tuberosa*, *Phragmites australis*, *Phyteuma orbiculare*, *P. spicatum*, *Phytolacca acinosa* var. *esculenta*, *Plantago major*, *Platycodon grandiflorus*, *Polygonatum biflorum*, *P. odoratum*, *Polygonum bistorta*, *P. bistortoides*, *P. viviparum*, *Polymnia sonchifolia*, *Potentilla anserina*, *Psidium guajava*, *Psophocarpus palustris*\* *P. tetragonolobus*, *Psoralea esculenta*, *Pueiaria lobata*, *P. phaseoloides*, *Ranunculus bulbosus*, *R. ficaria*, *Raphanus raphanistrum* ssp. *maritimus*, *R. sativus*, *R. sativus* Longipinnatus Group, *Rehmannia glutinosa*, *Reichardia picroides*, *Reynoutria japonica*, *Rhamnus prinoides*, *Rhexia virginica*, *Rhizophora mangle*, *Rhodiola rosea*, *Rhus glabra*, *Rumex acetosella*, *Sagittaria latifolia*, *S. rigida*, *S. sagittifolia*, *S. sinensis*, *Salix daphnoides*, *Sambucus javanica*, *Scirpus californicus*, *S. lacustris*, *S. paludosus*, *S. validus*, *Scolymus hispanicus*, *S. maculatus*, *Scorzonera hispanica*, *S. undulata* ssp. *deliciosa*, *Sechium edule*, *Silybum marianum*, *Sison amomum*, *Sium cicutae-folium*, *S. sisarum*, *Smilacina racemosa*, *Smilax china*, *Smymium olusatrum*, *Solanum demissum*, *S. curtilobum*, *S. fendleri*, *S. jamesii*, *S. x juzepczukii*, *S. tuberosum*, *S. verrucosum*, *Solenostemon rotundifolius*, *Sonchus oleraceus*, *Sphenostylis stenocarpa*, *Spinacia oleracea*, *Stachys palustris*, *S. sieboldii*, *Sterculia foetida*, *S. villosa*, *Streptopus amplexifolius*, *Symphytum officinale*; *Tacca leontopetaloides*, *Taraxacum officinale*, *Telosma cordata*, *Thalia geniculata*, *Thladiantha dubia*, *Tigridia pavonia*, *Trachymene glaucifolia*, *Tragopogon dubius*, *T. porrifolius*, *T. pratensis*, *Tropaeolum tuberosum*, *Tussilago farfara*, *lyiosema esculentum*, *Typha angustifolia*, *T. domingensis*, *T. laxmannii*, *Ullucus tuberosus*, *Uvularia sessilifolia*, *Valeriana ciliata*, *Vigna vexillata*, *Xanthosoma atrovirens*, *X. maffafa*, *X. sagittifolium*, *X. violaceum*, *Yucca brevifolia*, *Zingiber amaricans*, *Z. officinale*, *Z. zerumbet*, *Zizaniopsis miliacea*.

SAFFRON SUBSTITUTES - *Caesalpinia gilliesii*, *Calendula officinalis*, *Carthamus tinctorius*, *Crocasmia aurea*, *Crocus longiflorus*, *Nyctanthes arbor-tristis*, *Onopordum acanthium*, *Scolymus hispanicus*, *Tagetes erecta*, *T. patula*, *Tritonia crocata*.

SAPS - *Acer saccharum*, *Actinidia arguta*, *Adansonia gregorii*, *Agave americana*, *Arenga pinnata*, *Bambusa arundinacea*, *Beccariophoenix madagascariensis*, *Betula alleghaniensis*, *B. lenta*, *B. nigra*, *B. papyrifera*, *B. populifolia*, *Borassus aethiopicum*, *B. flabellifer*, *Brachychiton diversifolium*, *Brosimum alicastrum*, *Cylindropuntia fulgida*, *Eucalyptus gunnii*, *E. microtheca*, *E. resinifera*, *Ferocactus acanthodes*, *F. wislizenii*, *Gnetum gnemon*, *Hydrangea anomala*, *Mammillaria simplex*, *Mauritia flexuosa*, *Melocactus communis*, *Owenia reticulata*, *Oxytenanthera abyssinica*, *Phoenix sylvestris*, *Podocarpus spicatus*, *Populus tremuloides*, *Vitis aestivalis*\* *V. cineia*, *V. munsoniana*, *V. riparia*, *V. shuttleworthii*.

SEEDS - *Abelmoschus esculentus*, *A. ficulneus*, *Abutilon guineense*, *Acacia aneura*, *A. coriacea*, *A. greggii*, *A. leucophloea*, *A. nilotica*, *A. retinodes*, *A. sophorae*, *A. suaveolens*, *A. victoriae*, *Acanthosicyos horridus*, *A. naudinianus*, *Acer saccharum*, *Achyranthes aspera*, *Acrocomia mexicana*, *A. sclerocarpa*, *Adansonia digitata*, *A. gregorii*, *Adenantha pavonina*, *Agastache urticifolia*, *X Agrotriticum* sp., *Aiphanes caryotifolia*, *Aleurites moluccana*, *Allium sativum*, *Aloe barbadensis*, *Amaranthus*



caudatus, *A. cruentus*, *A. dubius*, *A. graecizans*, *A. hybridus*, *A. hypochondriacus*, *A. lividus*, *A. mantegazzianus*, *A. paniculatus*, *A. quitensis*, *A. retroflexus*, *A. x sp.*, *Amomum compactum*, *Amphicarpaea monoica*, *Amygdalus bucharica*, *A. communis*, *A. communis 'Amara'*, *A. davidiana*, *Anacardium giganteum*, *A. occidentale*, *Anacolosia luzoniensis*, *Apios americana*, *Arachis hypogaea*, *Araucaria angustifolia*, *A. araucana*, *A. bidwillii*, *Arenga pinnata*, *Armeniaca vulgaris*, *Artemisia dracunculus*, *A. ludoviciana*, *Artocarpus altilis 'Seminifera'*, *A. elasticus*, *A. heterophyllus*, *A. integer*, *A. lakoocha*, *A. odoratissimus*, *A. sericicarpus*, *Arundinaria gigantea*, *Atriplex canescens*, *A. confertifolia*, *A. hastata*, *A. hortensis*, *A. patula*, *Avena abyssinica*, *A. nuda*, *A. sativa*, *Balanites aegyptiaca*, *Balsamorhiza deltoidea*, *B. hookeri*, *B. sagittata*, *Bambusa arundinacea*, *Bauhinia racemosa*, *B. tomentosa*, *B. variegata*, *Benincasa hispida*, *Bertholletia excelsa*, *Bischofia javanica*, *Bombax ellipticum*, *Borassus aethiopus*, *B. flabellifer*, *Boscia albitrunca*, *Boswellia serrata*, *Brachychiton diversifolium*, *Brassica napus*, *Bromus breviaristatus*, *B. carinatus*, *B. mango*, *Brosimum alicastrum*, *Buchanania lanzan*, *Butia yat^*, *Caesalpinia pulcherrima*, *Cajanus cajan*, *Calochortus gunnisonii*, *C. nuttallii*, *Calonyction album*, *Calophyllum inophyllum*, *Canarium album*, *C. commune*, *C. odontophyllum*, *C. ovatum*, *C. schweinfurthii*, *Canavalia ensiformis*, *C. gladiata*, *C. maritima*, *Canna edulis*, *Cannabis sativa*, *Capsella bursa-pastoris*, *Caragana arborescens*, *Carnegiea gigantea*, *Carthamus tinctorius*, *Carya x brownii*, *C. carolinae-septentrionalis*, *C. cordiformis*, *C. glabra*, *C. illinoensis*, *C. x laneyi*, *C. myristiciformis*, *C. x nussbaumeri*, *C. ovata*, *C. tomentosa*, *C. x sp.*, *Caryocar nuciferum*, *C. villosum*, *Caryota mitis*, *Casimiroa edulis*, *Cassia floribunda*, *C. tora*, *Castanea alnifolia*, *C. crenata*, *C. dentata*, *C. mollissima*, *C. pumila*, *Castanopsis cuspidata*, *Ceiba aesculifolia*, *C. pentandra*, *Celosia argentea f. cristata*, *Ceratotheca sesamoides*, *Cercidium floridum*, *C. microphyllum*, *Cereis occidentalis*, *Chenopodium album*, *C. ambrosioides*, *C. berlandieri*, *C. murale*, *C. nuttaliae*, *C. pallidicaule*, *C. quinoa*, *Chrysanthemum indicum*, *Chrysobalanus icaco*, *Chrysolepis chrysophylla*, *C. sempervirens*, *Chrysophyllum cainito*, *Cicer arietinum*, *Cirsium vulgare*, *Cistus ladanifer*, *Citrullus colocynthis*, *C. ecirrhosus*, *C. lanatus*, *C. lanatus ssp. colocynthoides*, *Cleome integrifolia*, *Cochlospermum religiosum*, *Cocos nucifera*, *Coffea arabica*, *Coix lacryma-jobi*, *C lacryma-jobi 'Ma-Yuen'*, *Cordeauxia edulis*, *Cordia dichotoma*, *C. myxa*, *Corylus americana*, *C. avellana*, *C. chinensis*, *C. colurna*, *C. x columnoides*, *C. cornuta*, *C. cornuta var. californica*, *C. ferox*, *C. heterophylla*, *C. maxima*, *C. tibetica*, *C. x vilmorinii*, *C. x sp.*, *C. x sp.*, *Corypha elata*, *Crateva religiosa*, *Crescentia alata*, *C. cujete*, *Cubilia blancoi*, *Cucumis dipsaceus*, *C. melo*, *C. melo Flexuosus Group*, *C. melo ssp. agrestis*, *C. sativus*, *Cucurbita ficifolia*, *C. foetidissima*, *C. maxima*, *C. mixta*, *C. moschata*, *C. pepo*, *Cuminum cyminum*, *Cyamopsis tetragonolobus*, *Cycas revoluta*, *Dendrocalamus strictus*, *Descurainia pinnata*, *Desmanthus brachylobus*, *Digitaria exilis*, *D. iburua*, *Dioon edule*, *Distichlis palmeri*, *Dodonaea viscosa*, *Dolichos lignosus*, *Durio dulcis*, *D. zibethinus*, *Echinochloa colonum*, *E. crusgalli*, *E. frumentacea*, *E. turneriana*, *Elaeis guineensis*, *Elaeocarpus bancroftii*, *Eleusine coracana*, *E. indica*, *Elymus canadensis*, *E. triticoides*, *Embllica officinalis*, *Ensete ventricosum*, *Ephedra nevadensis*, *E. viridis*, *Eragrostis tef*, *Erythrina edulis*, *Eucalyptus intertexta*, *E. microtheca*, *Eucarya acuminata*, *E. spicata*, *Euryale ferox*, *Euterpe oleracea*, *Faba vulgaris*, *Fagopyrum cymosum*, *E esculentum*, *F. tataricum*, *Fagus grandifolia*, *F. sylvatica*, *Ferocactus acanthodes*, *F. wislizenii*, *Garcinia mangostana*, *Gevuina avellana*, *Ginkgo biloba*, *Gleditsia triacanthos*, *Glyceria fluitans*, *Glycine max*, *Gnetum gnemon*, *Gossypium barbadense*, *G. herbaceum*, *G. hirsutum*, *G. hirsutum Nonglanduliferous Group*, *Guizotia abyssinica*, *Helianthus annuus*, *H. annuus ssp. lenticularis*, *H. giganteus*, *Heliconia caribaea*, *Heritiera littoralis*, *Hesperoyucca whipplei*, *Hibiscus cannabinus*, *H. sabdariffa*, *Hicksbeachia pinnatifida*, *Hildegardia barteri*, *Hirschfeldia incana*, *Hodgsonia macrocarpa*, *Hordeum bulbosum*, *H. jubatum*, *H. vulgare*, *Hyphaene natalensis*, *H. thebaica*, *Hyptis suaveolens*, *Impatiens glandulifera*, *Inga laurina*, *I. paterno*, *Incarpus edulis*, *Irvingia gabonensis*, *I. smithii*, *Jubaea chilensis*, *Juglans ailantifolia*, *J. ailantifolia var. cordiformis*, *J. x bixbyi*, *J. californica*, *J. cathayensis*, *J. cinerea*, *J. hindsii*, *J. major*, *J. mandschurica*, *J. microcarpa*, *J. neotiopica*, *J. nigra*, *J. regia*, *Kigelia africana*, *Klainedoxa gabonensis*, *Kosteletzkya virginica*, *Lablab purpureus*, *Lagenaria siceraria*, *Lathyrus japonicus ssp. maritimus*, *L. sativus*, *Laurocerasus ilicifolia*, *Leucaena sp.*, *Lecythis pisonis*, *Leichhardtia australis*, *Lens culinaris*, *Lepidium fremontii*, *Lespedeza bicolor*, *Leucaena esculenta*, *L. lati siliqua*, *Ley mus arenarius*, *L. racemosus*, *Linum lewisii*, *L. perenne*, *L. usitatissimum*, *Lithocarpus dens i flora*, *Lodoicea maldivica*, *Lomatium macrocarpum*, *Luffa acutangula*, *L. cylindrica*, *Lupinus albus*, *L. albus Saccharatus Group*, *L. angustifolius*, *L. luteus*, *L. mutabilis*, *L. perennis*, *Macadamia integrifolia*, *M. tetraphylla*, *Macrotyloma uniflorum*, *Macrozamia communis*, *M. denisonii*, *Madia sativa*, *Mammea africana*, *Mangifera caesia*, *M. indica*, *Manihot glaziovii*, *Marshallocereus thurberi*, *Medicago lupulina*, *M. sativa*, *Melicoccus bijugatus*, *Melilotus alba*, *Mesua ferrea*, *Milium effusum*, *Momordica balsamina*, *Morinda citrifolia*, *Moringa oleifera*, *Mucuna pruriens*, *Myrica rubra*, *Nelumbo lutea*, *N. nucifera*, *Nephelium lappaceum*, *Nicolaia elatior*, *Nuphar advena*, *N. luteum*, *Nymphaea lotus*, *N. stellata*, *N. tuberosa*, *Nypa fruticans*, *Ocimum basilicum*, *O. gratissimum*, *Oenanthe javanica*, *Oenocarpus multicaulis*, *Olneya tesota*, *Opuntia phaeacantha*, *Orbignya martiana*, *Oroxylum indicum*, *Oryza barthii*, *O. glaberrima*, *O. sativa*, *O. sativa Glutinosa Group*, *Oryzopsis hymenoides*, *Owenia reticulata*, *Oxytenanthera abyssinica*, *Pachira aquatica*, *P. insignis*, *Pachycereus pecten-aborjginum*, *P. pringlei*, *Paeonia officinalis*, *Pancratium maritimum*, *Panda oleosa*, *Pandanus tectorius*, *Pangium edule*, *Ihnicum miliaceum*, *P. obtusum*, *P. sonorum*, *Papaver orientale*; *P. rhoeas*; *P. somniferum*, *Parajubaea cocoides*, *P. torallyi*, *Parinari capensis*, *Parkia bglandulosa*, *P. biglobosa*, *P. filicoidea*, *P. javanica*, *P. speciosa*, *Paspalum scrobiculatum*, *Peltandra virginica*, *Pennisetum americanum*, *Pentadesma butyracea*, *Perideridia gairdneri*, *Perilla frutescens*, *Phaseolus acutifolius*, *P. acutifolius var. tenuifolius*, *P. adenanthus*, *P. coccineus\**, *P. lunatus*; *P. metalfei*, *P. vulgaris*, *Phoenix dactylifera*, *Phragmites australis*, *Phyllostachys aurea*, *Pimpinella saxifraga*, *Pinus armandii*, *P. ayacahuite*; *P. cembra*, *P. cembroides*, *P. coulteri*, *P. densifloia*, *P. edulis*; *P. geraidiana*, *P. halepensis*, *P. koraiensis*; *P. lambertiana*, *P. maximartinezii*, *P. monophylla*, *P. pinea*, *P. x quadrifolia*, *P. roxbuighii*, *P. sabiniana*, *P. sibirica*, *P. torrejana*, *P. wallichiana*, *Pistacia atlantica*, *P. mutica*, *P. terebinthus*; *P. vera*, *Pisum sativum*, *Pithecellobium dulce*, *P. flexicaule*; *P. lobatum*, *Planta g) lanceolata*, *P. major*, *Pleioygnium solandri*, *Plukenetia volubilis*, *Polygonum aviculare*, *Pometia pinnata*, *Pontederia cordata*, *Portulaca oleracea*, *Pouteria sapota*, *Praecitrullus fistulosus*, *Pioboscidea louisianica*, *P. louisianica ssp. fragrans*; *P. parviflora*, *Prosopis chilensis*; *P. juliflora*, *Prunus americana*, *P. virginiana*, *Psophocarpus tetragonolobus*, *Pterocarpus marsupium*, *Quercus agrifolia*, *Q. alba*, *Q. bicolor*, *Q. cerris*, *Q. garryana*, *Q. ilex*, *Q. lobata*, *Q. macrocarpa*, *Q. macrolepis*, *Q. muehlenbergii*, *Q. palustris*, *Q. petraea*, *Q. robur*, *Q. x schuettei*, *Q. stellata*, *Q. suber*, *Raphanus sativus Longipinnatus Group*, *Raphia farinifera*, *Ricinodendron heudelotii*, *R. rautanenii*, *Robinia pseudacacia*, *Rumex acetosa*, *R. crispus*, *R. hymenosepalus*, *Salacca edulis*, *Salicornia europaea*, *Salmalia malabarica*, *Salvia apiana*, *S. azurea var. grandiflora*, *S. carduacea*, *S. columbariae*, *S. hispanica*, *S. viridis*, *Sanguisorba*

officinale, *Sarcandra glabra*, *S. glabra*, *Sarcobatus vermiculatus*, *Sasa kurilensis*, *Scheelea butyracea*, *S. macrocarpa*, *Scirpus lacustris*, *S. validus*, *Sclerocarya birrea*, *S. caffra*, *Scorodocarpus bomeensis*, *Secale cereale*, *S. montanum*, *Sechium edule*, *Serenoa repens*, *Sesamum alatum*, *S. capense*, *S. indicum*, *S. radiatum*, *Sesbania grandiflora*, *S. sesban*, *Setaria italica*, *S. palmifolia*, *S. viridis*, *Simmondsia chinensis*, *Sisymbrium altissimum*, *S. irio*, *S. officinale*, *Solidago canadensis*, *Sorghum bicolor*, *S. bicolor Saccharatum Group*, *Spathodea campanulata*, *Sphenostylis stenocarpa*, *Sporobolus airoides*, *S. cryptandrus*, *Stanleya pinnatifida*, *Staphylea pinnata*, *S. trifolia*, *Stellaria media*, *Stenocereus stellatus*, *Sterculia apetala*, *S. chicha*, *S. foetida*, *S. quadrifida*, *S. urens*, *S. villosa*, *Tamarindus indica*, *Tecticomia verrucosa*, *Telfairia occidentalis*, *Terminalia bellarica*, *T. catappa*, *T. chebula*, *T. glabra*, *T. kaernbachii*, *Tetracarpidium conophorum*, *Tetragonolobus purpureus*, *Thinopyron intermedium*, *T. intermedium var. trichophorum*, *Torreya californica*, *T. nucifera*, *Trapa natans*, *Treculia africana*, *Tribulus terrestris*, *Trifolium hybridum*, *T. incarnatum*, *T. repens*, *Tripsacum dactyloides*, *X Triticosecale sp.*, *Triticum x aestivum*, *T. boeoticum*, *T. carthlicum*, *T. compactum*, *T. dicocoides*, *T. dicoccon*, *T. durum*, *T. macha*, *T. monococcum*, *T. polonicum*, *T. spelta*, *T. sphaerococcum*, *T. timopheevi*, *T. tuigidum*, *T. vavilovii*, *T. zhukovskiyi*, *Tropaeolum majus*, *Tylosema esculentum*, *Typha angustifolia*, *Umbellularia californica*, *Uniola paniculata*, *Urena lobata*, *Vangueria iniausta*, *Verbena hastata*, *Vicia ciacca*, *V. monantha*, *V. sativa*, *Vigna aconitifolia*, *V. angularis\** *V. mungo*, *V. radiata*, *V. umbellata*, *V. unguiculata*, *V. unguiculata ssp. cylindrica*, *V. unguiculata ssp. sesquipedalis*, *Vitex negundo var. cannabifolia*, *Vitis vinifera*, *Voandzeia subterranea*, *Washingtonia filifera*, *Xanthoceras sorbifolium*, *Ximenea americana*, *X. caffra*, *Yucca brevifolia*, *Zea diploperennis*, *Z. mays*, *Z. mexicana*, *Zizania aquatica*, *Z. latifolia*.

**SMOKE FLAVORINGS, STEAM FLAVORINGS** - *Acacia nilotica*, *Acer saccharum*, *Agave angustifolia*, *Allium cepa*, *Alnus crispa*, *A. rubra*, *A. tenuifolia*, *Amygdalus communis*, *A. persica*, *A. persica Nucipersica Group*, *Araucaria bidwillii*, *Armeniaca vulgaris*, *Betula lenta*, *B. papyrifera*, *Camellia sinensis*, *Carya glabra*, *C. illinoensis*, *C. ovata*, *Cercocarpus ledifolius*, *Cinnamomum camphora*, *Citrus x sinensis*, *Coriandrum sativum*, *Durio zibethinus*, *Fagus sylvatica*, *Ficus carica*, *Foeniculum vulgare*, *Fraxinus excelsior*, *Fucus vesiculosus*, *Gleditsia triacanthos*, *Juglans cinerea*, *J. nigra*, *Juniperus communis*, *Laminaria japonica*, *Laurus nobilis*, *Magnolia hypoleuca*, *Malus pumila*, *Mangifera indica*, *Myrtus communis*, *Ocimum basilicum*, *Origanum majorana*, *Persea americana*, *Pimenta dioica*, *Pinus densiflora*, *Pistacia lentiscus*, *Populus balsamifera*, *P. tremuloides*, *Prosopis glandulosa*, *P. juliflora*, *Prunus avium*, *P. domestica*, *P. serotina*, *Psidium guajava*, *Pyrus communis*, *Quercus agrifolia*, *Q. alba*, *Q. ilex ssp. ballota*, *Q. palustris*, *Q. robur*, *Q. stellata*, *Rhamnus prinoides*, *Rosmarinus officinalis*, *Salvia officinalis*, *Sassafras albidum*, *Thymus vulgaris*, *Vitis vinifera*, *Zea mays*, *Zingiber zerumbet*.

**SPROUTED SEEDS, SEEDLINGS** - *Acacia farnesiana*, *Allium ampeloprasum Porrum Group*, *A. cepa*, *A. sativum*, *A. tuberosum*, *Amaranthus cruentus*, *A. hypochondriacus*, *A. retroflexus*, *Amygdalus communis*, *Anethum graveolens*, *Arachis hypogaea*, *Arctium lappa*, *Armoracia rusticana*, *Asclepias syriaca*, *Avena nuda*, *A. sativa*, *Barbarea verna*, *Brassica juncea*, *B. napus*, *B. nigra*, *B. oleracea Botrytis Group*, *B. oleracea Capitata Group*, *B. oleracea Italica Group*, *B. rapa Pekinensis Group*, *B. rapa Rapifera Group*, *Cajanus cajan*, *Cannabis sativa*, *Ceiba pentandra*, *Chenopodium album*, *C. quinoa*, *Chrysanthemum coronarium*, *Cicer arietinum*, *Cryptotaenia japonica*, *Cucurbita pepo*, *Cyamopsis*

*tetragonolobus*, *Descurainia sophia*, *Eruca sativa*, *Faba vulgaris*, *Fagopyrum esculentum*, *Fagus grandifolia*, *Foeniculum vulgare*, *Glycine max*, *Helianthus annuus*, *Hesperis matronalis*, *Hordeum vulgare*, *Lablab purpureus*, *Lactuca sativa*, *Lathyrus japonicus ssp. maritimus*, *Lens culinaris*, *Lepidium sativum*, *Linum usitatissimum*, *Medicago sativa*, *Nasturtium officinale*, *Onobrychis viciifolia*, *Oryza sativa*, *Panicum miliaceum*, *Perilla frutescens*, *Persicaria hydropiper*, *P. hydropiper 'Fastigiatum'*, *Phaseolus lunatus*, *P. vulgaris*, *Pisum sativum*, *Plantago ovata*, *P. psyllium*, *Portulaca oleracea*, *Raphanus raphanistrum*, *R. sativus*, *R. sativus Longipinnatus Group*, *Salvia columbariae*, *S. hispanica*, *Secale cereale*, *Sesamum indicum*, *Sinapis alba*, *S. arvensis*, *Sisymbrium irio*, *Soighum bicolor*, *Spinacia oleracea*, *Taraxacum officinale*, *Thlaspi arvense*, *Tragopogon porrifolius*, *Trifolium incarnatum*, *T. pratense*, *Trigonella foenum-graecum*, *X Triticosecale sp.*, *Triticum x aestivum*, *Vigna angularis\** *V. radiata*, *V. umbellata*, *V. unguiculata*, *V. unguiculata ssp. sesquipedalis*, *Zea mays*.

**STARCHES** - *Acrocomia aculeata*, *Alcea rosea*, *Arenga ambong*, *A. engleri*, *A. pinnata*, *Arracacia xanthorrhiza*, *Borassus flabellifer*, *Canna coccinea*, *C. edulis*, *Caryota cumingii*, *C. mitis*, *C. rumphiana*, *C. urens*, *Colocasia esculenta*, *Copemicia prunifera*, *Corypha elata*, *Cucurbita foetidissima*, *C. maxima*, *Curcuma angustifolia*, *C. xanthorrhiza*, *C. zedoaria*, *Cycas circinalis*, *C. revoluta*, *Dactylorhiza maculata*, *Dioon edule*, *Dioscorea opposita*, *Eleocharis dulcis*, *Encephalartos caffer*, *E. hildebrandtii*, *Ensete ventricosum*, *Erythronium dens-canis*, *E. japonicum*, *Eugeissona utilis*, *Euryale ferox*, *Fritillaria camtschatscensis*, *Heliconia caribaea*, *Hemerocallis fulva 'Kwanso'*, *Ipomoea batatas*, *Iris setosa*, *Lilium brownii*, *L. lancifolium*, *L. longiflorum*, *Macrozamia denisonii*, *Mangifera indica*, *Manihot esculenta*, *M. glaziovii*, *Maranta arundinacea*, *Mauritia flexuosa*, *Metroxylon rumphii*, *M. sagu*, *Musa x paradisiaca*, *Nelumbo nucifera*, *Nuphar luteum*, *Orchis mascula*, *O. militaris*, *O. morio*, *Oryza sativa*, *Pachyrhizus erosus*, *Pithecellobium lobatum*, *Polygonatum biflorum*, *Pteridium aquilinum*, *Pueraria lobata*, *Quercus dentata*, *Raphia farinifera*, *R. hookeri*, *Roystonea oleracea*, *Sechium edule*, *Smilax rotundifolia*, *Solanum tuberosum*, *Sophora japonica*, *Tacca leontopetaloides*, *Tamarindus indica*, *Thalia geniculata*, *Trichosanthes cucumeroides*, *T. kirilowii*, *T. kirilowii var. japonica*, *Typha angustifolia*, *T. domingensis*, *T. latifolia*, *T. laxmannii*, *Vigna radiata*, *Zamia floridana*, *Zea mays*.

**STEMS, FLOWER STALKS** - *Abelmoschus ficulneus*, *Acanthocereus tetragonus*, *Acorus calamus*, *Aeginetia indica*, *Agave americana*, *A. atrovirens*, *A. deserti*, *A. parryi*, *A. sisalana*, *A. utahensis*, *Akebia quinata*, *Allium cepa Aggregatum Group*, *A. sativum*, *A. sativum Ophioscorodon Group*, *A. tuberosum*, *Alpinia galanga*, *A. speciosa*, *Amaranthus tricolor*, *Amomum compactum*, *Amorphophallus variabilis*, *Ananas comosus*, *Angelica archangelica*, *A. atropurpurea*, *A. sylvestris*, *Aponogeton distachyus*, *Aralia cordata*, *Arctium lappa*, *A. minus*, *Arracacia xanthorrhiza*, *Aruncus dioicus*, *Arundinaria gigantea*, *Asclepias speciosa*, *A. syriaca*, *A. tuberosa*, *Asparagus acutifolius*, *A. aphyllus*, *A. officinalis*, *Asplenium bulbiferum*, *Balsamorhiza deltoidea*, *B. sagittata*, *Bambusa arundinacea*, *Basella alba*, *Bauhinia malabarica*, *Boesenbergia pandurata*, *Brassica carinata*, *B. oleracea Alboglabra Group*, *B. oleracea Botrytis Group*, *B. oleracea Capitata Group*, *B. oleracea Gongyloides Group*, *B. oleracea Italica Group*, *B. rapa Chinensis Group*, *B. rapa Sarson Group*, *B. toumefortii*, *Campanula rapunculoides*, *Canarina canariensis*, *Canna edulis*, *Capparis spinosa*, *Carduus nutans*, *Carica papaya*, *Cephalostachyum pergracile*, *Cereus hexagonus*, *C. jamacaru*, *C. peruvianus*, *Ceropegia bulbosa*, *Chamaenerion angustifolium*, *C. latifolium*, *Chamaerops humilis*, *Chenopodium bonus-henricus*, *Chlorogalum pomeridianum*, *Cicerbita alpina*,

*Cichorium intybus*, *Cirsium arvense*, *C. eriophorum*, *C. palustre*, *C. vulgare*, *Cissus quadrangularis*, *Clematis vitalba*, *Cleome integrifolia*, *C. viscosa*, *Collinia elegans*, *Colocasia esculenta*, *Cordyline australis*, *Costus speciosus*, *Crambe orientalis*, *Crotalaria longirostrata*, *Cryptotaenia canadensis*, *Cucumis sativus*, *Cucurbita maxima*, *C. moschata*, *C. pepo*, *Curcuma longa*, *C. mangga*, *C. xanthorrhiza*, *C. zedoaria*, *Cyclanthera pedata*, *Cymbopogon citratus*, *Cynara cardunculus*, *C. scolymus*, *Dendrocalamus asper*, *D. strictus*, *Dioscorea japonica*, *Echinocactus grandis*, *E. horizontalis*, *E. ingens*, *E. platyacanthus*, *Echinochloa colonum*, *E. crusgalli*, *Elettaria cardamomum*, *Equisetum arvense*, *Eremurus spectabilis*, *Eryngium campestre*, *E. maritimum*, *Erythronium albidum*, *E. americanum*, *Euphorbia helioscopia*, *Euryale ferox*, *Ferocactus acanthodes*, *F. histrix*, *F. wislizenii*, *Ferula assa-foetida*, *Ficus capensis*, *F. racemosa*, *Foeniculum vulgare*, *Gigantochloa hasskarliana*, *Glycyrrhiza lepidota*, *Gundelia tournefortii*, *Gynostemma pentaphyllum*, *Heliconia caribaea*, *Heracleum lanatum*, *H. pubescens*, *H. sphondylium*, *Hesperoyucca whipplei*, *Honkenya peploides*, *Humulus lupulus*, *Impatiens capensis*, *I. pallida*, *Lactuca sativa* Angustana Group, *Lagenaria siceraria*, *Lathy rus davidii*, *Leleba multiplex*, *L. oldhamii*, *L. vulgaris*, *Lespedeza bicolor*, *Levisticum officinale*, *Leymus racemosus*, *Ligusticum scoticum*, *Lilium longiflorum*, *Limnocbaris flavata*, *Lomatium nudicaule*, *L. utriculatum*, *Luffa cylindrica*, *Melilotus officinalis*, *Momordica balsamina*, *M. charantia*, *Morus alba*, *M. rubra*, *Musa acuminata*, *M. balbisiana*, *M. x paradisiaca*, *Nelumbo nucifera*, *Nicolaia elatior*, *Nopalea cochenillifera*, *Nymphaea lotus*, *Ononis spinosa*, *Onopordum acanthium*, *Opuntia basilaris*, *O. dillenii*, *O. ficus-indica*, *O. humifusa*, *O. megacantha*, *O. phaeacantha*, *O. polyacantha*, *O. robusta*, *O. streptacantha*, *O. tuna*, *O. vulgaris*, *Osmorhiza claytonii*, *Oxalis violacea*, *Oxytenanthera abyssinica*, *Pastinaca sativa*, *Pergularia daemia*, *Petasites frigidus*^ *P. palmatus*, *Phragmites australis*, *Phyllostachys angusta*, *P. auiea*, *P. auieosulcata*, *P. bambusoides*, *P. dulcis*^ *P. flexuosa*, *P. nidularia*, *P. niga*, *P. nuda*, *P. pubescens*^ *P. purpurata*, *P. rubromarginata*, *P. viridis*; *P. viridi-glaucens*, *P. vivax*, *Phytelephas macrocarpa*, *Phytolacca acinosa*, *P. americana*, *P. dioica*, *P. rivinoides*, *Pimpinella saxifraga*, *Pinus strobus*, *Polygonatum biflorum*, *P. odoratum*, *Portulaca oleracea*, *Pueraria lobata*, *Ranunculus ficaria*, *Reynoutria japonica*, *R. sachalinensis*, *Rhodiola rosea*, *Rhoicissus capensis*, *Rhus glabra*, *Rosa arkansana*, *R. chinensis*, *R. x damascena*, *R. moschata*, *R. nutkana*, *R. rugosa*, *Rubus allegheniensis*, *R. flagellaris*, *R. fruticosus*, *R. leucodermis*, *R. occidentalis*, *R. parviflorus*, *R. spectabilis*, *R. strigosus*, *R. ursinus*, *Ruscus aculeatus*, *Saccharum spontaneum*, *Salicomia europaea*, *Salvia hians*, *S. moorcroftiana*, *Sambucus javanica*, *Sarcobatus vermiculatus*, *Sasa kurilensis*, *S. palmata*, *Saxifraga stolonifera*, *Scirpus californicus*, *S. lacustris*, *S. validus*, *Sechium edule*, *Sedum reflexum*, *S. rhodanthum*, *Semiarundinaria fastuosa*, *Setaria palmifolia*, *Silene vulgaris*, *Silybum marianum*, *Sinocalamus beecheyanus*, *S. latiflorus*, *Smilacina racemosa*, *Smilax aspera*, *S. china*, *S. herbacea*, *S. rotundifolia*, *Smyrniololus satrum*, *Sonchus oleraceus*, *Sorghum bicolor* Saccharatum Group, *Stachys palustris*, *Stenocereus stellatus*, *Streptopus amplexifolius*, *S. roseus*, *Suaeda maritima*, *Symphytum officinale*, *Talinum paniculatum*, *T. triangulare*, *Tamarindus indica*, *Tamus communis*, *Telfairia occidentalis*, *Thladiantha dubia*, *Tigridia pavonia*, *Tragopogon dubius*, *T. porrifolius*, *T. pratensis*, *Trichocereus spachianus*, *Trichosanthes cucumerina*, *Typha angustifolia*, *T. domingensis*, *T. latifolia*, *Uvularia sessilifolia*, *Veronicastrum sibiricum*, *Vicia cracca*, *V. sativa*, *Vitis californica*, *V. coignetiae*, *V. munsoniana*, *V. shuttleworthii*, *Yucca aloifolia*, *Y. baccata*, *Y. elephantipes*, *Y. glauca*, *Y. schidigera*, *Zea mexicana*, *Zingiber amaricans*, *Z. officinale*, *Z. zerumbet*.

SUGARS, SUGAR SUBSTITUTES - *Acer circinatum*, *A. grandidentatum*, *A. macrophyllum*, *A. nigrum*, *A. pensylvanicum*, *A. pseudoplatanus*, *A. rubrum*, *A. saccharinum*, *A. saccharum*, *Agave parryi*, *Arenga engleri*, *A. pinnata*, *Asclepias tuberosa*, *Balanites aegyptiaca*, *Batis maritima*, *Beta vulgaris* Crassa Group, *Betula alleghaniensis*, *B. lenta*, *B. nigra*, *B. papyrifera*, *Borassus aethiopicum*, *B. flabellifer*, *Boscia albi trunca*, *Camassia leichtlinii*, *C. quamash*, *Carya laciniata*, *C. ovata*, *Caryota urens*, *Castanea sativa*, *Ceratonia siliqua*, *Citrullus lanatus*, *Cocos nucifera*, *Cordyline fruticosa*, *Corypha elata*, *Cucumis melo*, *Cucurbita foetidissima*, *Dahlia pinnata*, *Daucus carota* Sativus Group, *Dioscoreophyllum cumminsii*, *Diospyros kaki*, *D. virginiana*, *Echinochloa stagnina*, *Filipendula ulmaria*, *Flagellaria indica*, *Gleditsia triacanthos*, *Glycyrrhiza glabra*, *G. lepidota*, *G. uralensis*, *Helianthus tuberosus*, *Heracleum sphondylium*, *Hordeum vulgare*, *Hovenia dulcis*, *Hydrangea anomala*, *H. macrophylla*, *Jubaea chilensis*, *Juglans cinerea*, *J. nigra*, *Larix occidentalis*, *Madhuca indica*, *M. longifolia*, *Manihot esculenta*, *Mauritia flexuosa*, *Myrrhis odorata*, *Negundo aceroides*, *Nypa fruticans*, *Oryza sativa*, *Pastinaca sativa*, *Phoenix canadensis*, *P. dactylifera*, *P. pusilla*, *P. sylvestris*, *Phylla scaberrima*, *Pinus lambertiana*, *Platanus occidentalis*, *Polymnia sonchifolia*, *Prosopis pubescens*, *Protea angolensis*, *P. repens*, *Quercus cerris*, *Raphia vinifera*, *Rhus ovata*, *Saccharum officinarum*, *S. sinense*, *Scirpus lacustris*, *S. validus*, *Setaria italica*, *Sorghum bicolor* Saccharatum Group, *Stevia rebaudiana*, *S. serrata*, *Synsepalum dulcificum*, *Tamarix aphylla*, *Thaumatococcus daniellii*, *Thladiantha grosvenorii*, *Tilia americana*, *T. x europaea*, *Typha angustifolia*, *Vitis vinifera*, *Zea mays*.

TASTE MODIFIERS - *Bridelia cathartica*, *Cola acuminata*, *C. nitida*, *Dioscoreophyllum cumminsii*, *Gymnema sylvestre*, *Sphenocentrum jollyanum*, *Synsepalum dulcificum*, *Thaumatococcus daniellii*.

TEA SCENTS - *Aglaia odorata*, *Armeniaca mume*, *Artabotrys uncinatus*, *Chimonanthus praecox*, *Chrysanthemum indicum*, *C. x morifolium*, *Citrus x aurantium*, *C. grandis*, *Gardenia jasminoides*, *Jasminum odoratissimum*, *J. officinale*, *J. officinale* 'Grandiflorum', *J. paniculatum*, *J. sambac*, *Magnolia denudata*, *Mentha arvensis* f. *piperascens*, *M. arvensis* ssp. *haplocalyx*, *Michelia alba*, *M. figo*, *Murraya paniculata*, *Nelumbo nucifera*, *Osmanthus americana*, *O. fragrans*, *Paeonia officinalis*, *Pogostemon cablin*, *Rosa centifolia*.

TEA SUBSTITUTES - *Abies amabilis*, *A. balsamea*, *A. excelsior*, *Acacia suaveolens*, *Acaena sanguisorbae*, *Acanthopanax divaricatum*, *A. sessiliflorum*, *A. sieboldianus*, *Acer ginnala*, *Achillea decolorans*, *A. millefolium*, *Acinos alpinus*, *Actinidia polygama*, *Adiantum capillus-veneris*, *Adinandra bockiana*, *Aeschynomene indica*, *Agastache foeniculum*, *A. mexicana*, *A. neomexicana*, *A. rugosa*, *A. urticae* folia, *Agrimonia eupatoria*, *Akebia quinata*, *A. trifoliata*, *Albizia julibrissin*, *Alcea rosea*, *Aloysia triphylla*, *Althaea officinalis*, *Amorpha canescens*, *Amygdalus persica*, *Andromeda glaucophylla*, *Anethum graveolens*, *Angelica archangelica*, *Annona muricata*, *Anogeissus leiocarpus*, *Anthemis cotula*, *A. tinctoria*, *Anthoxanthum odoratum*, *Aralia nudicaulis*, *Arctostaphylos uva-ursi*, *Artemisia abrotanum*, *A. ludoviciana*, *A. umbelliforme*, *A. vulgaris*, *Asarum caudatum*, *Aspalathus linearis*, *Astartea fascicularis*, *Asteropterus gnaphalodes*, *Atherosperma moschatum*, *Atractylodes macrocephala*, *Backhousia citriodora*, *Baeckea virgata*, *Balsamita major*, *Basella alba*, *Berberis lycium*, *B. vulgaris*, *Bergenia crassifolia*, *Betula alleghaniensis*, *B. lenta*, *B. papyrifera*, *Bidens pilosa*, *Blephilia ciliata*, *B. hirsuta*, *Borago officinalis*, *Bourreria ovata*, *Buddleia salviifolia*, *Bursera simaruba*, *Calamintha*

grandiflora, *Calendula officinalis*, *Calluna vulgaris*, *Camellia japonica*, *C. kissi*, *C. sasanqua*, *Capraria biflora*, *Carum carvi*, *Carya illinoensis*, *Cassia auriculata*, *C. obtusifolia*, *Ceanothus americanus*, *C. cuneatus*, *C. ovatus*, *C. velutinus*, *Cedronella canariensis*, *Celtis sinensis*, *Centella asiatica*, *Cercocarpus ledifolius*, *Chamaedaphne calyculata*, *Chamaemelum nobile*, *Chamaenerion angustifolium*, *C. latifolium*, *Chamomilla aurea*, *Chenopodium ambrosioides*, *C. botrys*, *Chimaphila umbellata*, *Chiochene hispidula*, *Chrysanthemum indicum*, *C. x morifolium*, *Chrysothamnus nauseosus* var. *graveolens*, *Cistus albidus*, *C. villosus*, *Citronella mucronata*, *Citrus x sinensis*, *Cleistocalyx operculatus*, *Clematis apiifolia*, *Clinopodium vulgare*, *Codonopsis pilosula*, *Coffea arabica*, *Coix lacryma-jobi*, *Combretum hereroense*, *Comptonia peregrina*, *Corchorus capsularis*, *C. olitorius*, *Cordeauxia edulis*, *Coreopsis cardaminifolia*, *Correa alba*, *Cowania mexicana*, *Crataegus monogyna*, *C. oxyacantha*, *Crocus sativus*, *Cunila origanoides*, *Cyclopia genistoides*, *Cymbopogon citratus*, *C. flexuosus*, *C. nardus*, *Dalea* sp., *Dictamnus albus*, *Digenea simplex*, *Dioscorea cayenensis*, *Diospyros virginiana*, *Dracocephalum moldavica*, *Drimys lanceolata*, *Dryas octopetala*, *Ehretia microphylla*, *Eleutherococcus senticosus*, *Empetrum nigrum*, *Ephedra nevadensis*, *E. viridis*, *Epilobium hirsutum*, *Eriodictyon californicum*, *Eriogonum fasciculatum*, *Eucalyptus dives*, *Eugenia uniflora*, *Euphorbia helioscopia*, *Filipendula ulmaria*, *F. vulgaris*, *Foeniculum vulgare*, *Fragaria californica*, *F. chiloensis*, *F. ovalis*\* *F. vesca*, *F. vesca* var. *americana*, *F. virginiana*, *Fraxinus excelsior*, *Fucus vesiculosus*, *Galium aparine*, *G. odoratum*, *Gaultheria myrsinites*, *G. procumbens*, *Geum triflorum*, *Glechoma hederacea*, *Glycyrrhiza glabra*, *G. lepidota*, *Grindelia squarrosa*, *Gynostemma pentaphyllum*, *Hardenbergia violacea*, *Hedeoma pulegioides*, *Hedyosmum mexicanum*, *Helichrysum italicum*, *Heliotropium curassavicum*, *Hemerocallis dumortieri*, *Heritiera littoralis*, *Hibiscus sabdariffa*, *H. syriacus*, *H. tiliaceus*, *Hizikia fusiformis*, *Hordeum vulgare*, *Humulus lupulus*, *Hydrangea macrophylla*, *Hypericum perforatum*, *Hyptis suaveolens*, *Hyssopus officinalis*, *Ilex aquifolium*, *I. cassine*, *I. glabra*, *I. latifolia*, *I. opaca*, *I. paraguariensis*, *I. verticillata*, *I. vomitoria*, *Jasminum humile*, *J. officinale*, *Juglans regia*, *Juniperus communis*, *J. horizontalis*, *J. scopulorum*, *Kennedy prostrata*, *Laminaria japonica*, *Lamium amplexicaule*, *Larrea tridentata*, *Laurus nobilis*, *Lavandula angustifolia*, *Ledum glandulosum*, *L. groenlandicum*, *L. palustre*, *Leonurus cardiaca*, *Leptospermum flavescens*, *L. liversidgei*, *L. petersonii*, *L. scoparium*, *Lespedeza bicolor*, *Levisticum officinale*, *Lindera benzoin*, *L. obtusiloba*, *Linum usitatissimum*, *Lippia alba*, *L. graveolens*, *Lithospermum officinale*, *Litsea glaucescens*, *Lomatium macrocarpum*, *L. nudicaule*, *Lonicera japonica*, *Lycium barbarum*, *L. chinense*, *Lysimachia nummularia*, *Magnolia kobus*, *M. virginiana*, *Malus hupehensis*, *M. pumila*, *Malva neglecta*, *M. sylvestris*, *Marrubium vulgare*, *Matricaria matricarioides*, *Medicago sativa*, *Melaleuca leucadendron*, *M. quinquenervia*, *Melissa officinalis*, *Mentha aquatica*, *M. aquatica* var. *crispa*, *M. arvensis*, *M. arvensis* var. *villosa*, *M. cervina*, *M. longifolia*, *M. x piperita*, *M. pulegium*, *M. spicata*, *M. x villosa* 'Alopecuroides', *Menyanthes trifoliata*, *Micromeria brownei*, *Monarda austromontana*, *M. citriodora*, *M. clinopodia*, *M. didyma*, *M. fistulosa*, *M. punctata*, *Monardella lanceolata*, *M. odoratissima*, *M. villosa*, *Morus alba*, *Muntingia calabura*, *Myrica cerifera*, *M. gale*, *Myrrhis odorata*, *Nashia inaguensis*, *Nepeta cataria*, *Ocimum gratissimum* var. *viride*, *O. kilimandscharicum*, *O. sanctum*, *Olea africana*, *Origanum dictamnus*, *O. majorana*, *O. onites*, *O. vulgare*, *O. vulgare* ssp. *hirtum*, *Oryza sativa*, *Osmorhiza longistylis*, *Paeonia lactiflora*, *P. officinalis*, *Panax ginseng*, *P. japonica*, *P. quinquefolium*, *Paronychia argentea*, *Pelargonium citioneum*, *P. graveolens*\* *P. tomentosum*, *Pellaea mucronata*, *Penstemon confertus*, *P. procerus*,

*Peperomia pellucida*, *Persea americana*, *P. borbonia*, *Petalostemon candidum*, *P. purpureum*, *Petroselinum crispum* Hortense Group, *Phlomis armeniaca*, *Phytolacca rivinoides*, *Picrasma quassoides*, *Pimenta dioica*, *Pimpinella anisum*, *Pinus edulis*\* *P. sabiniana*, *P. sibirica*, *P. strobus*, *Plantago major*, *Plectranthus amboinicus*, *Plumeria rubra* f. *acutifolia*, *Polygonum aviculare*, *Poria cocos*, *Potentilla anserina*, *P. eiecta*, *P. fruticosa*, *P. rupestris*, *Primula veris*, *P. vulgaris*, *Prosopis juliflora*, *Prostanthera rotundifolia*, *Prunus cerasus*\* *P. domestica*, *P. padus*\* *P. pseudocerasus*\* *P. spinosa*, *P. subhirtella*, *P. virginiana*, *Pseudotsuga menziesii*, *Psilotum triquetrum*, *Psoralea glandulosa*, *Pueraria lobata*, *Pycnanthemum incanum*, *P. muticum*, *P. pilosum*, *P. virginianum*, *Pyracantha crenulata*, *Ratibida columnifera*, *Rehmannia glutinosa*, *Rhizophora mangle*, *Rhus aromatica*, *R. ovata*, *Ribes nigrum*, *R. odoratum*, *Rosa acicularis*, *R. arkansana*, *R. blanda*, *R. canina*, *R. nutkana*, *R. rugosa*, *R. villosa*, *R. woodsii*, *Rosmarinus officinalis*, *Rubus arcticus*, *R. caesius*, *R. flagellaris*, *R. fruticosus*, *R. idaeus*, *R. leucodermis*, *R. occidentalis*, *R. spectabilis*, *R. strigosus*, *R. ursinus*, *Ruta graveolens*, *Sageretia theezans*, *Salix babylonica*, *S. gracilistyla*, *Salvia ballotaeflora*, *S. columbariae*, *S. dorisiana*, *S. fruticosa*, *S. mellifera*, *S. officinalis*, *S. pomifera*, *S. rutilans*, *Sambucus canadensis*, *S. glauca*, *S. nigra*, *S. pubens*, *S. sieboldiana*, *Saquisorba minor*, *S. officinalis*, *Sargassum fusiforme*, *Sassafras albidum*, *Satureja biflora*, *S. douglasii*, *S. hortensis*, *S. montana*, *S. thymbra*, *S. viminea*, *Scoparia dulcis*, *Scorzonera undulata* ssp. *deliciosa*, *Scutellaria baicalensis*, *Sida rhombifolia*, *Sideritis syriaca*, *Smilax china*, *Solanum nodiflorum*, *Solidago canadensis*, *S. graminifolia*, *S. missouriensis*, *S. odora*, *Sophora japonica*, *Sorbus aucuparia*, *Spiraea chinensis*, *S. x pyramidata*, *Stachys lavandulifolia*, *S. officinalis*, *Stachytarpheta jamaicensis*, *Symphoricarpos albus*, *Symphytum officinale*, *S. x uplandicum*, *Syringa microphylla*, *Tabebuia impetiginosa*, *Tagetes anisatum*, *T. filifolia*, *T. lemmonii*, *T. lucida*, *Tanacetum parthenium*, *T. vulgare*, *Taraxacum officinale*, *Tarhonanthus camphoratus*, *Taxus baccata*, *Thelesperma filifolia*, *T. gracile*, *T. longipes*, *Thuja occidentalis*, *Thymus capitatus*, *T. x citriodorus*, *T. praecox* ssp. *arcticus*, *T. vulgaris*, *Tilia americana*, *T. x europaea*, *Toona sinensis*, *Tribulus terrestris*, *Trifolium hybridum*, *T. incarnatum*, *T. pratense*, *T. repens*, *Trigonella caerulea*, *T. foenum-graecum*, *Tsuga canadensis*, *T. mertensiana*, *Turnera diffusa*, *T. ulmifolia*, *Tussilago farfara*, *Ugni molinae*, *Ulex europaeus*, *Ulmus rubra*, *Ulva lactuca*, *Urtica dioica*, *Vaccinium arctostaphylos*, *V. maciocarpon*, *V. myrtilloides*\* *V. myrtillosus*\* *V. scoparium*, *V. vitis-idaea*, *Valeriana officinalis*\* *Verbascum thapsus*, *Verbena hastata*, *V. officinalis*\* *Veronica americana*, *V. chamaedrys*, *V. officinalis*, *Viburnum cassinoides*\* *V. setigerum*, *Vicia cmcca*, *V. sativa*, *Viola canadensis*\* *V. odoriata*, *V. pedata*, *V. x wittrockiana*, *Vitex doniana*, *V. negundo*, *Wedelia biflora*, *Ziziphora seravschanica*.

**VANILLA SUBSTITUTES** - *Achlys triptylla*, *Avena sativa*, *Cymbopogon nardus*, *Dipteryx odorata*, *Galium odoratum*, *Hierochloa odorata*, *Lagarostrobos franklinii*, *Leptotes bicolor*, *Melilotus alba*, *M. officinalis*, *Melittis meiisophyllum*, *Trigonella foenum-graecum*, *Vanilla pompona*, *V. tahitensis*.

**VEGETABLE CURDS** - *Abelmoschus esculentus*, *Faba vulgaris*, *Glycine max*, *Gossypium hirsutum* Nonglanduliferous Group, *Lablab purpureus*, *Lagenaria siceraria*, *Luffa cylindrica*.

**VEGETABLE SALTS** - *Achyranthes aspera*, *Allium cepa*, *A. sativum*, *Amaranthus spinosus*, *Asplenium nidus*, *Avicennia germinans*, *Borassus flabellifer*, *Capparis decidua*, *Ceiba pentandra*, *Cyperus haspan*, *Eleocharis dulcis*, *Euterpe oleracea*, *Heliotropium curassavicum*, *Heracleum lanatum*, *Iriartea ventricosa*, *Musa x paradisiaca*, *Orbignyia martiana*, *Oxytenanthera abyssinica*, *Petasites*

palmatum, Piper guineense, Pistia stratiotes, Portulaca oleracea, Raphanus sativus, Rhus chinensis, R. javanica, Sabal palmetto, Saccharum spontaneum, Salvadora persica, Tussilago farfara.

VINEGARS - Acer saccharum, Acetobacter aceti, Acetobacter aceti ssp. xylinum, Agave salmiana, Anacardium occidentale, Ananas comosus, Arenga pinnata, Armeniaca mume, Baccaurea macrocarpa, B. motleyana, Betula lenta, B. papyrifera, B. populifolia, Borassus flabellifer, Bromelia pinguin, Carissa edulis, Chamaenerion angustifolium, Cicca acida, Cicer arietinum, Citrus x junos, C. x paradisi, Cocos nucifera, Corypha elata, Dillenia indica, Diospyros virginiana, Hordeum vulgare, Malus baccata, M. sylvestris, Mangifera indica, Manihot esculenta, Manilkara zapota, Musa balbisiana, M. x paradisiaca, Nypa fruticans, Oenocarpus distichus, Oryza sativa, Papea capensis, Primula veris, Pyrus communis, Rubus chamaemorus, R. fruticosus, R. idaeus, Saccharum officinarum, Schinus molle, Sonneratia caseolaris, Sorbus aria, S. torminalis, Soighum bicolor, Syzygium cumini, S. guineense, Theobroma cacao, Vitis labrusca, V. vinifera.

WOOD FLAVORINGS - Acer rubrum, Alnus rubra, Carya ovata, Castanea sativa, Cryptomeria japonica, Fagus sylvatica, Fraxinus excelsior, Morus alba, Prunus avium, P. serotina, Quercus alba, Q. garryana, Q. petraea, Q. robur, Tectona grandis, Thuja plicata, Zanthoxylum piperitum.

YEAST HOSTS, FERMENTATIVE ORGANISM HOSTS - Amygdalus persica, Artemisia annua, Cosmos caudatus, Elephantopus scaber, Evemia prunastri, Glycine max, Glycosmis trifoliata, Hibiscus tiliaceus, Humulus lupulus, Mestoklema tuberosum, Physalis peruviana, Ptelea trifoliata, Raphionacme hirsuta, Severinia buxifolia, Solanum jamesii, S. tuberosum, Tectona grandis, Trichodiadema stellatum, Uvaria microcarpa, Vernonia cinerea.

#### APPENDIX B: SPECIES NATIVE TO OR NATURALIZED IN NORTH AMERICA

Abies amabilis, A. balsamea, A. excelsior, Abronia latifolia, Acacia greggii, Acanthocereus tetragonus, Acer circinatum, A. grandidentatum, A. macrophyllum, A. nigrum, A. pensylvanicum, A. rubrum, A. saccharinum, A. saccharum, Achlys triphylla, Adiantum capillus-veneris, Aegopodium podagraria, Agastache cana, A. foeniculum, A. neomexicana, A. urticifolia, Agave atrovirens, A. deserti, A. parryi, A. salmiana, A. utahensis, Alisma plantago-aquatica, Allium canadense, A. cernuum, A. drummondii, A. geyeri, A. schoenoprasum var. sibiricum, A. stellatum, A. tricoccum, A. triquetrum, A. unifolium, A. validum, A. vineale, Alnus crispa, A. rubra, A. tenuifolia, Amaranthus graecizans, A. hybridus, A. retroflexus, Ambrosia artemisiifolia, Amelanchier alnifolia, A. arborea, A. bartramiana, A. canadensis, A. denticulata, A. x grandiflora, A. laevis, A. obovalis, A. x spicata, A. stolonifera, A. utahensis, Amorpha canescens, A. fruticosa, Amphicarpaea monoica, Andromeda glaucophylla, Angelica atropurpurea, Annona glabra, Anthoxanthum odoratum, Apios americana, Aplectrum hyemale, Arabis alpina, Aralia nudicaulis, A. racemosa, A. spinosa, Arbutus menziesii, Arctium lappa, A. minus, Arctostaphylos Columbiana, A. glauca, A. patula, A. uva-ursi, Ariocarpus fissus, Arisaema triphyllum, Armoracia rusticana, Aronia arbutifolia, A. melanocarpa, Artemisia dracunculoides, A. frigida, A. ludoviciana, A. vulgaris, Aruncus dioicus, Arundinaria gigantea, Asarum canadense, A. caudatum, Asclepias incarnata, A. speciosa, A. syriaca, A. tuberosa, Asimina obovata, A. parviflora, A. triloba, Astragalus crassicaulis, Atriplex canescens, A. confertifolia, A. semibaccata, Azalea nudiflora, Balsamorhiza hookeri, B. sagittata, Barbarea vulgaris, Batis maritima, Beloperone californica, Berlandiera lyrata, Betula alleghaniensis, B. lenta, B. nigra, B. papyrifera, B. populifolia, Blephilia ciliata, B. hirsuta, Bourreria ovata, Brassica nigra, Brodiaea douglasii, B. pulchella, Bromus breviaristatus, B. carinatus, Cacalia atriplicifolia, Cakile edentula, Calla palustris, Callirhoe involucrata, Calochortus gunnisonii, C. nuttallii, Calonyction album, Caltha leptosepala, C. palustris, Calycanthus floridus, C. occidentalis, Camassia leichtlinii, C. quamash, Campanula rapunculoides, Canella winterana, Capsicum annuum var. aviculare, Cardamine oligosperma, C. rotundifolia, Camedegia gigantea, Carpobrotus aequilaterus, Carya carolinae-septentrionalis, C. cordiformis, C. glabra, C. illinoensis, C. laciniata, C. myristiciformis, C. ovata, C. tomentosa, Casasia clusiifolia, Cassia

occidentalis, Castanea alnifolia, C. dentata, C. pumila, Castilleja linariaefolia, Ceanothus americanus, C. cuneatus, C. ovatus, C. velutinus, Celtis laevigata, C. occidentalis, C. reticulata, Centaurea nigra, C. solstitialis, Centaurium erythraea, Cercidium floridum, C. microphyllum, Cereis canadensis, C. occidentalis, Cercocarpus ledifolius, Chamaedaphne calyculata, Chamaenerion angustifolium, C. latifolium, Chenopodium album, C. ambrosioides, C. berlandieri, C. botrys, C. capitatum, C. nuttalliae, Chimaphila maculata, C. umbellata, Chionogen hispidula, Chionanthus virginicus, Chlorogalum pomeridianum, Chrysolepis chrysophylla, C. sempervirens, Cirsium arvense, C. vulgare, Claytonia caroliniana, C. megarrhiza, C. virginica, Cleome integrifolia, Clinopodium vulgare, Clintonia borealis, Coccoloba diversifolia, C. uvifera, Colubrina elliptica, C. texensis, Commelina communis, Comptonia peregrina, Conradina verticillata, Conyza canadensis, Coptis trifolia, Coreopsis cardaminifolia, Cornus canadensis, Corylus americana, C. cornuta, C. cornuta var. californica, Coryphantha vivipera var. arizonica, Cowania mexicana, Crataegus aestivalis, C. douglasii, C. flava, C. marshallii, C. succulenta, Crepis capillaris, C. setosa, Cryptotaenia canadensis, Cucumis melo ssp. agrestis, Cucurbita foetidissima, Cunila origanoides, Cylindropuntia fulgida, C. imbricata, Cyperus rotundus, Dasylyrion texanum, D. wheeleri, Daucus carota, D. pusillus, Dentaria diphylla, D. laciniata, Descurainia pinnata, D. sophia, Desmanthus brachylobus, Diospyros texana, D. virginiana, Distichlis palmeri, Dudleya edulis, Echinocactus horzonthalonius, Echinocereus dasyacanthus, E. engelmannii, E. enneacanthus, E. stramineus, E. triglochidiatus, Echinochloa crusgalli, Echium vulgare, Elaeagnus commutata, Eleusine indica, Elymus canadensis, E. triticoides, Empetrum atropurpureum, Ephedra nevadensis, E. viridis, Epigaea repens, Eriodictyon californicum, Erodium cicutarium, Erythrina herbacea, Erythronium albidum, E. americanum, Fagus grandifolia, Ferocactus acanthodes, F. viridescens\* F. wislizenii, Forestiera neo-mexicana, Fouquieria splendens, Fragaria californica, F. chiloensis, F. ovalis\* F. vesca, F. vesca var. americana, F. virginiana, Fritillaria camtschatcensis, Galinsoga parviflora, Galium aparine, G. verum, Gaultheria myrsinites, G. ovatifolia, G. procumbens, G. shallon, Gaylussacia baccata, G. dumosa, G. frondosa, Geranium viscosissimum, Geum canadense, G. rivale, G. triflorum, Glechoma hederacea, Gleditsia triacanthos, Glyceria fluitans, Glycyrrhiza lepidota, Gossypium hirsutum, Grindelia

squarrosa, *Gymnocladus dioicus*, *Halesia Carolina*, *Hamatocactus hamatacanthus*, *Hedeoma pulegioides*, *Hedysarum boreale*, *H. mackenzii*, *H. occidentale*, *Helianthus annuus*, *H. annuus* ssp. *lenticularis*, *H. giganteus*, *H. x laetiflorus*, *H. maximiliani*, *H. tuberosus*, *Hemerocallis fulva*, *Heracleum lanatum*, *Hesperoyucca whipplei*, *Hierochloa odorata*, *Hirschfeldia incana*, *Holodiscus discolor*, *Honkenya peploides*, *Hordeum jubatum*, *Humulus lupulus*, *Hydrocotyle sibthorpioides*, *Hydrophyllum canadense*, *H. virginianum*, *Ilex cassine*, *I. glabra*, *I. opaca*, *I. verticillata*, *I. vomitoria*, *Impatiens capensis*, *I. pallida*, *Iris missouriensis*, *Isomeris arborea*, *Juglans californica*, *J. cinerea*, *J. hindsii*, *J. major*, *J. microcarpa*, *J. nigra*, *Juniperus horizontalis*, *J. pachyphloea*, *J. scopulorum*, *J. utahensis*, *Kosteletzkya virginica*, *Krugiodendron ferreum*, *Lactuca serriola*, *Lamium amplexicaule*, *Larix occidentalis*, *Larrea tridentata*, *Lathyrus japonicus* ssp. *maritimus*, *Laurocerasus ilicifolia*, *L. Lyonii*, *Ledum glandulosum*, *L. groenlandicum*, *Lepidium campestre*, *L. fremontii*, *L. virginicum*, *Leucanthemum vulgare*, *Lewisia rediviva*, *Leymus arenarius*, *Ligusticum hulthenii*, *L. scoticum*, *Lilium superbum*, *Lindera benzoin*, *Linum lewisii*, *L. perenne*, *Liquidambar styraciflua*, *Liriodendron tulipifera*, *Lithocarpus densiflora*, *Lomatium californicum*, *L. dissectum*, *L. macrocarpum*, *L. nudicaule*, *L. utriculatum*, *Lonicera japonica*, *Lophocereus schottii*, *Lotus corniculatus*, *Lupinus perennis*, *Lycium carolinianum*, *L. pallidum*, *Lycopus uniflorus*, *Madia sativa*, *Magnolia grandiflora*, *M. virginiana*, *Mahonia aquifolium*, *M. haematocarpa*, *M. nervosa*, *M. repens*, *M. swaseyi*, *M. trifoliolata*, *Malus angustifolia*, *M. coronaria*, *M. fusca*, *M. ioensis*, *Malva neglecta*, *M. parviflora*, *M. sylvestris*, *M. verticillata*, *Mammillaria meiacantha*, *Marrubium vulgare*, *Marshallocereus thurberi*, *Matricaria matricarioides*, *Matteuccia pensylvanica*, *Medeola virginiana*, *Medicago lupulina*, *Mentha aquatica* var. *crispa*, *M. arvensis*, *M. arvensis* var. *villosa*, *M. x gentilis*, *Menyanthes trifoliata*, *Micromeria brownei*, *Mimulus guttatus*, *Mitchella repens*, *Modiola caroliniana*, *Mollugo verticillata*, *Monarda citriodora*, *M. clinopodia*, *M. didyma*, *M. fistulosa*, *M. fistulosa* var. *menthaefolia*, *M. punctata*, *Monardella odoratissima*, *M. villosa*, *Montia perfoliata*, *M. sibirica*, *Morus rubra*, *Muscari botryoides*, *Myrica cerifera*, *M. gale*, *M. heterophylla*, *M. pensylvanica*, *Negundo aceroides*, *Nelumbo lutea*, *Nuphar advena*, *N. luteum*, *Nymphaea odorata*, *N. tuberosa*, *Nyssa aquatica*, *N. ogeche*, *N. sylvatica*, *Oenanthe sarmentosa*, *Oenothera biennis*, *O. hookeri*, *Olneya tesota*, *Onoclea sensibilis*, *Opuntia basilaris*, *O. dillenii*, *O. humifusa*, *O. linguiformis*, *O. phaecantha*, *O. polyacantha*, *O. pottsii*, *O. tenuispina*, *O. vulgaris*, *Ornithogalum umbel latum*, *Oryzopsis hymenoides*, *Osmanthus americana*, *Osmaronia cerasiformis*, *Osmorhiza claytonii*, *O. longistylis*, *O. occidentalis*, *Osmunda cinnamomea*, *O. claytoniana*, *Oxalis acetosella*, *O. oregana*, *O. stricta*, *O. violacea*, *Oxydendrum arboreum*, *Oxyria digyna*, *Panax quinquefolius*\* *P. trifolius*, *Panicum obtusum*, *P. sonorum*, *Passiflora incarnata*, *Pellaea mucronata*, *Peltandra virginica*, *Peltiphyllum peltatum*, *Peniocereus greggii*, *Penstemon confertus*\* *P. procerus*, *Peraphyllum ramosissimum*, *Perideridia gairdneri*, *P. kelloggii*, *Persea borbonia*, *Persicaria vulgaris*, *Ibtalostemon candidum*, *P. purpureum*, *Petasites frigidus*\* *P. palmatus*, *Phacelia tanacetifolia*, *Phaseolus acutifolius*, *P. acutifolius* var. *tenuifolius*\* *P. metcalfei*, *Photinia arbutifolia*, *Physalis heterophylla*, *P. philadelphica*, *P. pubescens*, *Phytolacca americana*, *Picea glauca*, *P. mariana*, *Pinus cembroides*, *P. coulteri*, *P. edulis*\* *P. lambertiana*, *P. monopphylla*, *P. x quadrifolia*, *P. sabiniana*, *P. strobus*\* *P. torreyana*, *Pithecellobium flexicaule*, *Plantago lanceolata*, *P. major*, *P. maritima*, *Platanus occidentalis*, *Podophyllum peltatum*, *Poliomintha incana*, *Polygonatum biflorum*, *Polygonum aviculare*, *P. bistorta*, *P. bistortoides*, *P. punctatum*, *Pontederia cordata*, *Populus tremuloides*, *Ibtentilla anserina*, *P. fruticosa*, *Proboscidea louisianica*, *P. louisianica* ssp. *fragrans*\* *P. parviflora*, *Prosopis chilensis*, *P. glandulosa*, *P. pubescens*, *Prunella vulgaris*, *Prunus americana*, *P. angustifolia*, *P. angustifolia* var. *watsonii*, *P. besseyi*, *P. hortulana*, *P. maritima*, *P. munsoniana*, *P. nigra*, *P. pensylvanica*, *P. pumila*, *P. pumila* var. *susquehanae*; *P. serotina*, *P. subcoidata*, *P. umbellata*, *P. virginiana*, *P. virginiana* var. *demissa*, *P. virginiana* var. *melanocarpa*, *Pseudotsuga menziesii*, *Psoralea esculenta*, *Ptelea trifoliata*, *Pycnanthemum incanum*, *P. muticum*, *P. pilosum*, *P. virginianum*, *Quercus agrifolia*, *Q. alba*, *Q. bicolor*, *Q. garryana*, *Q. lobata*, *Q. macrocarpa*, *Q. muehlenbergii*, *Q. palustris*, *Q. x schuettei*, *Ranunculus bulbosus*, *R. sceleratus*, *Raphanus raphanistrum*, *Ratibida columnifera*, *Reynosia septentrionalis*, *Reynoutria japonica*, *R. sachalinensis*, *Rhamnus crocea*, *R. purshianus*, *Rhexia virginica*, *Rhodiola rosea*, *Rhus aromatica*, *R. copallina*, *R. glabra*, *R. integrifolia*, *R. ovata*, *R. trilobata*, *R. typhina*, *Ribes americanum*, *R. aureum*, *R. bracteosum*, *R. cereum*, *R. cynosbati*, *R. divaricatum*, *R. hirtellum*, *R. lacustre*, *R. missouriensis*, *R. odoratum*, *R. triste*, *Robinia neomexicana*, *R. pseudacacia*, *Rorippa islandica*, *Rosa acicularis*, *R. arkansana*, *R. blanda*, *R. Carolina*, *R. laevigata*, *R. multiflora*, *R. nutkana*, *R. rubiginosa*, *R. virginiana*, *R. woodsii*, *Roystonea elata*, *Rubus allegheniensis*, *R. argutus*, *R. canadensis*, *R. chamaemorus*, *R. deliciosus*, *R. flagellaris*, *R. ideaus*, *R. laciniatus*, *R. leucodermis*, *R. occidentalis*, *R. odoratus*, *R. parviflorus*, *R. phoenicolasius*, *R. procerus*, *R. rubrisetus*, *R. spectabilis*, *R. stellatus*, *R. strigosus*, *R. trivialis*, *R. ursinus*, *R. vitifolius*, *Rumex acetosella*, *R. crispus*, *R. hymenosepalus*, *R. obtusifolius*, *R. patientia*, *R. sanguineus*, *Sabal etonia*, *S. minor*, *S. palmetto*, *S. texana*, *Sagittaria latifolia*, *S. rigida*, *Salicornia europaea*, *Salsola kali*, *Salvia apiana*, *S. azurea* var. *grandiflora*, *S. ballotaeflora*, *S. carduacea*, *S. clevelandii*, *S. columbariae*, *S. mellifera*, *Sambucus canadensis*, *S. glauca*, *S. melanocarpa*, *S. mexicana*, *S. pubens*, *S. pubens* f. *xanthocarpa*, *Sanguisorba canadensis*, *S. minor*, *Saponaria officinalis*, *Sarcobatus vermiculatus*, *Sassafras albidum*, *Satureja douglasii*, *Saxifraga pensylvanica*, *Scandix pecten-veneris*, *Scirpus californicus*, *S. paludosus*, *S. validus*, *Sedum acre*, *S. rhodanthum*, *Serenoa repens*, *Sesuvium portulacastrum*, *Shepherdia argentea*, *S. canadensis*, *Silene acaulis*, *S. alba*, *S. vulgaris*, *Silphium laciniatum*, *Simarouba glauca*, *Simmondsia chinensis*, *Sinapis arvensis*, *Sisymbrium altissimum*, *S. officinale*, *Sium cicutaefolium*, *Smilacina racemosa*, *Smilax herbacea*, *S. rotundifolia*, *Solanum fendleri*, *S. jamesii*, *Solidago canadensis*, *S. graminifolia*, *S. missouriensis*, *S. odora*, *Sorbus americana*, *S. scopulina*, *S. sitchensis*, *Spiraea x pyramidata*, *Sporobolus airoides*, *S. cryptandrus*, *Stachys palustris*, *Stanleya pinnatifida*, *Staphylea trifolia*, *Stellaria media*, *Stevia serrata*, *Streptopus amplexifolius*, *S. roseus*, *Symphytum tuberosum*, *Symplocos tinctoria*, *Talinum triangulare*, *Taraxacum officinale*, *Thelesperma filifolia*, *T. gracile*, *T. longipes*, *Thinopyron intermedium*, *T. intermedium* var. *trichophorum*, *Thlaspi arvense*, *Thuja occidentalis*, *Tilia americana*, *Tillandsia erubescens*, *Torreya californica*, *Tradescantia virginiana*, *Tragopogon dubius*, *T. pratensis*, *Trapa natans*, *Trillium erectum*, *T. grandiflorum*, *T. sessile*, *T. undulatum*, *Trioletum aurantiacum*, *T. perfoliatum*, *Tripsacum dactyloides*, *Tsuga canadensis*, *T. heterophylla*, *T. mertensiana*, *Tussilago farfara*, *Ulmus rubra*, *Umbellularia californica*, *Uniola paniculata*, *Urtica dioica*, *Uvularia sessilifolia*, *Vaccinium angustifolium*, *V. arboreum*, *V. ashei*, *V. atrococcum*, *V. Caesariense*; *V. corymbosum*, *V. corymbosum* var. *pallidum*, *V. crassifolium*, *V. darixwi*, *V. deliciosum*, *V. elliottii*, *V. erythiocarpum*, *V. globulare*; *V. lamaickii*, *V. maciocarpon*, *V. membranaceum*, *V. myrsinites*\* *V. myrtilloides*; *V. ovalifolium*, *V. ovatum*, *V. oxycoccus*; *V. parvifolium*, *V. scoparium*, *V. sempervirens*, *V. stamineum*, *V. ulginosum*, *V. vacillans*\* *V. vitis-idaea*, *Valeriana ciliata*, *Verbascum thapsus*\* *Verbena hastata*,

*Veronica americana*, *V. chamaedrys*, *Viburnum alnifolium*, *V. cassinoides*, *V. edule*; *V. lentago*; *V. nudum*, *V. prunifolium*, *V. trilobum*, *Viola canadensis*, *V. papilionacea*, *V. pedata*, *V. sororia*, *Vitis aestivalis*; *V. berlandieri*, *V. californica*, *V. candicans*; *V. x champini*, *V. cineia*, *V. labrusca*, *V. monticola*, *V. munsoniana*, *V. riparia*, *V. rotundifolia*, *V. rupestris*, *V. shuttleworthii*, *V.*

*simpsonii*, *V. solonis*; *Washingtonia filifera*, *Wisteria frutescens*, *Yucca aloifolia*, *Y. baccata*, *Y. brevifolia*, *Y. elata*, *Y. filamentosa*, *Y. glauca*, *Y. schidigera*, *Zamia floridana*, *Zizania aquatica*, *Zizaniopsis miliacea*, *Zizia aurea*.

## APPENDIX C: SPECIES NOT LISTED IN KUNKEL

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#### APPENDIX D: ABBREVIATIONS AND CODES USED

##### FOR TYPE OF PRODUCT OFFERED

BO - Bonsai Nursery Stock  
 CU - Pure Cultures (Fungi, Algae, Bacteria)  
 DF - Dried food, Botanical  
 DR - Starter Cultures (Dry)  
 DS - Starter Cultures (Direct Set)  
 DW - Dwarf Nursery Stock  
 ES - Espalier Nursery Stock, Topiary  
 FR - Starter Cultures (Fresh)  
 GR - Grafted, Clonal Nursery Stock  
 IN - Interstems  
 KT - Mushroom Kits  
 LI - Starter Cultures (Liquid)  
 OR - Available On Request, Special Order, Custom Grafting, etc.  
 PD - Food Product  
 PL - Plants, Seedlings, Bulbs, Divisions, Corms, etc.  
 PO - Pollen  
 PR - Produce  
 S - Seeds, Spores  
 SC - Scionwood, Cuttings, Benchgrafts  
 SN - Mushroom Spawn  
 SP - Sprouting Seeds  
 SR - Mushroom Spores  
 ST - Onion Sets

##### FOR ANNOTATED BIBLIOGRAPHIC CITATIONS

CU - Culture  
 CUL - Culinary  
 NU - Nutrition  
 PRE - Preparation  
 PRO - Propagation  
 RE - Recipes

##### IN SUPPLIERS LISTINGS

CAT - Catalog  
 CC - Credit Cards  
 ENGL - English Language Catalog  
 IMO - International Money Order  
 IRC - International Reply Coupon  
 M.O. - Minimum Order  
 OC - Other Currencies  
 OVER - Overseas  
 PC - Personal Checks  
 R & W - Retail and Wholesale  
 RET - Retail  
 SASE - Self-Addressed Stamped Envelope  
 WHLS - Wholesale



## INDEX

Principal vernacular names occurring after the Latin names in the text are listed in normal text. Product and other names occurring elsewhere in the text are listed in *italicized* text. Names of Families and Genera are listed in CAPITALS. Synonyms of Families and Genera are listed in CAPITALIZED and *italicized* text.

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