

# Register of New Fruit and Nut Varieties

## Brooks and Olmo

### List 35

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#### ADDENDA AND REVISIONS

##### APPLE

**Freedom.** -Described in List 34. Plant pat. 5723, 22 Apr. 1986.  
**Jonalicious** (*Daniel*). -Synonym added; plant pat. 1777, 9 Dec. 1958.

**Nured® Jonathan** (*Improved Red Jonathan*) -Synonym added; plant pat. 2650, 5 July 1966.

**Paulared** (*Summer Mac*). -Synonym added; plant pat. 2800, 12 Mar. 1968.

**Stark® Blushing Golden™** (*Griffith Gold*) -Synonym added; plant pat. 2835, 1 Oct. 1968.

**Starkspur Compact Red Delicious** (*Cascade Compact Red Delicious*). -Described in List 32. Plant pat. 4811, 26 Jan. 1982.

**Starkspur Dixired Delicious** (*Hared*). -Described in List 32. Plant pat. 5547, 3 Sept. 1985.

**Starkspur Law Rome** (*PeaceValley*) -Described in List 32. Plant pat. 4793, 24 Nov. 1981.

**Starkspur UltraStripe Delicious** (*Jenred*) -Described in List 32. Plant pat. 5472, 21 May 1985.

**Starkspur Winter Banana** (*Frecon*). -Described in List 33. Plant pat. 4901, 26 Oct. 1982.

##### APRICOT

**Stark Double Delight** (*Homedale*). -Described in List 34. Plant pat. 5651, 28 Jan. 1986.

##### GRAPE

**Centennial Seedless.** -Described in List 32. Plant pat. 4784, 3 Nov. 1981.

**Christmas Rose.** -Described in List 32. Plant pat. 5056, 31 May 1983.

**Dawn Seedless.** -Described in List 32. Plant pat. 4788, 10 Nov. 1981.

In this List 35, specialist expertise has been enlisted in preparing many commodities; these authors, whose contributions are much appreciated, are identified at section headings. The introducers of many of the varieties were consulted. In addition to section authors and introducers, the contributions of many horticulturists who furnished basic information and critically read the draft descriptions are gratefully acknowledged, especially the following: Frank Alston, R. L. Andersen, James Ballard, James R. Ballington, Phil Baugher, Tom Beckman, Rene Bernhard, G. Bulow, Tom Callahan, Tom Chamberlain, A. D. Crowe, Campbell Davidson, F. Fujii, Steve Doud, Arlen Draper, Charles Embree, R. L. Granger, Richard Hayden, Wally Heuser, M. Ishiyama, D. L. Jennings, Dale Kester, R. C. Lamb, F. J. Lawrence, R. E. C. Layne, Yves Lespinasse, C. S. Logan, R. J. McNicol, Shawn Meblenbacher, W. R. Okie, Ron Perry, Joseph Preczewski, A. G. Reynolds, D. M. Russell, John Sanford, Ralph Scorza, Michael Smith, H. J. Swartz, Stephen Tancred, K. R. Tobutt, S. Tsuchiya, J. J. Verhaegh, Tom Vorbeck, John Warner, T. O. Warren, and C. F. Zaiger. Generous financial support was provided by American Pomological Society, which is much appreciated.

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**Redglobe.**-Described in List 32. Plant pat. 4787, 10 Nov. 1981.  
**Symphony.** -Described in List 32. Plantpat. 5013, 29 Mar. 1983.

##### NECTARINE

**Stark GulfPride** (*Zaipride*). -Described in List 34. Plant pat. 5461, 7 May 1985.

**Stark HoneyGlo** (*Anderhone*). -Described in List 32. Plant pat. 4789, 10 Nov. 1981.

##### PEACH

**Eldorado.** -Described in List 32. Plant pat. 4780, 20 Oct. 1981.

**Stark® Finale.** Described in List 34. Plant pat. 5655, 4 Feb. 1986.

**Stark® Gulf Queen** (*Zaiqueen*). -Described in List 34. Plantpat. 5463, 7 May 1985.

##### RASPBERRY

**Royalty.** Described in List 33. Plant pat. 5405, 12 Feb. 1985.

##### STRAWBERRY

**Douglas.** -Described in List 33. Plant pat. 4487, 20 Nov. 1979.

**Fern.** -Described in List 34. Plant pat. 5267, 7 Aug. 1984.

**Hecker.** -Described in List 33. Plant pat. 4507, 4 Mar. 1980.

**Pajaro.** -Described in List 33. Plant pat. 4538, 27 May 1980.

**Santana.** -Described in List 34. Plant pat. 5268, 7 Aug. 1984.

**Selva.** -Described in List 34. Plant pat. 5266, 31 July 1984.

**Soquel.** -Described in List 34. Plant pat. 5264, 31 July 1984.

**Tustin.** -Described in List 34. Plant pat. 5265, 31 July 1984.

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##### ALMOND

##### ROOTSTOCKS FOR ALMONDS

J. N. Cummins and Tom Beckman

**Ferciana** -See Ishtara®.

**GF 8-1.**- See under Peaches. Almond/GF 8-1 trees are of stature similar to almond/peach.

**GF 677.** -See under Peaches. Compatible with very broad range of almond varieties. Induces very rapid growth; trees within the planting are very uniform. Almond/GF 677 trees are very vigorous, uniform, and productive and tolerant of drought and calcareous soils.

**Hansen 536.** -Orig. in Davis, Calif. by C.J. Hansen, Dept. of Pomology, Univ. of Calif. Selected and introd. in 1986 by D.E. Kester and R.N. Asay. Almond B × Peach Selection 1-8-2; cross made in 1964; pollen parent has *Prunus davidiana*, Chinese peach PI 6582, and Okinawa in pedigree. Very vigorous clonal rootstock for almonds, peaches, and nectarines; also compatible with prunes and Japanese

plums, but not with apricots. In California, propagated by hardwood cuttings taken in late fall and planted directly in the nursery row, where survival is slightly lower than that of Hansen 2168. Root system of mature tree is intermediate between almond seedling and peach; large branch roots, large mass of medium to small fibrous roots; more deeply rooted than Marianna 2624. Anchorage excellent. No suckers. Not coldhardy. Immune to root-knot nematodes; susceptible to root-lesion nematodes; tolerant to lime-induced chlorosis. Selected because of its slightly better tolerance of *Phytophthora syringae* than Hansen 2168, but has shown less field survival than peach. Relatively low chilling, about 400-500 h, similar to Nonpareil almond.

**Hansen 2168.** -Orig. in Davis, Calif. by C.J. Hansen, Dept. of Pomology, Univ. of California. Introd. in 1986 by D.E. Kester and R.N. Asay. Very vigorous rootstock for almonds, peaches, nectarines, and Japanese plums; not compatible with apricots. Almond B × Peach Selection 1-8-2; cross made in 1962; pollen parent has *Prunus davidiana*, Chinese peach PI 6582, and Okinawa in pedigree. Propagated by hardwood cuttings and by micropropagation. Root system of mature tree intermediate between almond seedling and peach; more deeply rooted than Marianna 2624. Anchorage excellent; no suckers. Not cold hardy. Resistant to root-knot nematodes; immune to both *M. javanica* and *M. incognita acrita*; susceptible to root-lesion nematodes; tolerant to lime-induced chlorosis. Slightly less tolerant of *Phytophthora syringae* than Hansen 536 in original tests. Relatively low chilling, about 400-500 h, similar to Nonpareil almond.

**Ishtara®.** -See under Plums. Compatible under Ai, Ferragnes, Ardechoise, and Ne Plus Ultra; no incompatibilities reported. Vigor similar to that of peach and GF 8-1. Excellent anchorage expedites shaking.

**Myran®.** -See under Peach Rootstocks. Compatible under all cultivars of almond tested. Very vigorous, similar to GF 677. Young almond trees on Myran show no symptoms of *Verricillium* wilt when planted in contaminated soil. More tolerant of root asphyxia than are peach × almond stocks.

## APPLE

### R. D. Way, Robert A. Norton, and J. N. Cummins

**Ace® Spur Delicious.** -Orig. at Quincy, Wash., by Carl Perleberg. Limb sport of Oregon Spur Delicious. Discovered in 1970. Plant pat. 4587, 12 Aug. 1980; assigned to Columbia Basin Nursery. Similar to Oregon Spur Delicious, except earlier coloring and longer type.

**Acey Mac (Buhr McIntosh).** -Orig. in Peru, N.Y., by Arthur Burrill. Discovered before 1969. Assigned to Columbia Basin Nursery, Quincy, Wash. Fruit: very similar to McIntosh in appearance, flavor, shape, flesh color, and texture, but larger, firmer, and less inclined to preharvest drop. Ripens 5 days after Rogers McIntosh. Tree: similar to McIntosh.

**Adina™ (Frankad, Stark® Adina™).** -Orig. instant hope, Queensland, Australia, by H. Franklin. Plant pat. 6361, 1 Nov. 1988. Assigned to Stark Bro's Nursery, Louisiana, Mo. Fruit: large; color red to purplish red, occasional stripe; shape round conic; flesh creamy white, firm, very juicy; sweet, with distinctive hint of cinnamon; superior eating quality; harvest season very early, mid-June. Tree: vigorous; precocious; low chilling requirement (350 h); grows in Hardiness Zones 6 to 9; Dorsett Golden is a suitable pollinizer.

**Applethorpe Earlidel.** -See Earlidel.

**Applethorpe Summerdel.** -See Summerdel.

**Arlet.** -See Swiss Gourmet™.

**Belchard®** -See Chantecler.

**Bountiful (Marring Bountiful).** -Orig. in Kent, England, by F.H. Alston, East Malling Research Station. Introd. in 1986. Cox's Orange Pippin open-pollinated. Fruit: large, 75- to 80-mm diam.; skin green with occasional orange/red patches or stripes; acidity lower than Bramley; a culinary apple, cooks to give a deliciously flavored sauce; best-suited for home orchards. Ripens in late September; at 3.5C, stores inmarketable condition until January. Tree: compact, about half the size of Bramley trees; precocious; productive; little pruning required; few pollination problems.

**Braeburn.** -See Hillwell.

**Britegold.** -Orig. in Trenton, Ontario by L.P.S. Spangelo, S.J. Leuty, and H.B. Heaney, Agriculture Canada, Ottawa, and Smithfield Experimental Farm, Trenton, Ont. Introd. in 1980. Sandel (Delicious × Sandow) × Ottawa 522 [Platt Melba × R6T68 (Jonathan × {Rome Beauty × *Malus floribunda* 821 sib.})]. Tested as Ottawa 652. Fruit: medium to large; skin bright yellow; flesh cream-colored to yellow, slightly coarse, tender, juicy; flavor low acid; only medium quality; processed fruit rated good for slices and fair for sauce; harvest date just after McIntosh; storage life short, 1-2 months at 2C. Tree: low to medium vigor; spreading; tendency to droop; yields low; some tendency to become biennial; some of fruits drop before ripe; blooms 1 day after McIntosh; resistant to apple scab, very susceptible to cedar apple rust and quince rust.

**Chantecler (Belchard®).** -Orig. in Angers, France, by Y. Lespinasse, J.M. Oliver, J. Lespinasse, and M. Le Lezec, Station d'Arboriculture Fruitiere, INRA. Assigned to Agri Obtentions, 78283 Guyancourt, France. Introduced to French growers in 1977. Golden Delicious × Reinette Clochard. Fruit: most nearly resembles Reinette Clochard; medium; conical globose; skin golden yellow with slight russetting; flesh cream-colored, medium firm; exceptional flavor. Ripens 3 weeks after Golden Delicious. Tree: vigor medium to strong; precocious; productive.

**Chick-A-Dee McIntosh.** -Orig. in Monmouth, Maine, as a whole-tree spur-type mutation of Rogers McIntosh in the Chick Orchard. Patented in 1984; assigned to Roaring Brook Nurseries, Monmouth, Maine. Spur-type habit persisted after topgrafting onto seedling rootstocks in 1980. Fruit: indistinguishable from McIntosh. Tree: compact, very spurry growth habit; crotch angles wider than Rogers McIntosh; very slow growing; has little or no need for pruning due to horizontal branching; original tree about half the size of adjacent Rogers McIntosh trees of the same age.

**Cooper Granny Smith.** -See Earlee Grannee.

**Coromandel Red.** -Disc. in 1972 in New Zealand as a chance seedling of unknown parentage by R. Knottenbelt on the Coromandel Peninsula. U.S. plant pat. applied for. Assigned to Carlton Plants, Dayton, Ore. Fruit: medium; 60% to 80% solid cherry red; flesh white, nonbrowning, very firm, crisp, juicy, flavor mildly subacid; starchy at harvest time; afterripening, quality very good; harvest 3-4 days before Granny Smith; promising late dessert apple. Tree: vigor moderate; spreading; heavy cropper; annual bearer; little or no preharvest drop; flowers late.

**Daliguy Jonagold.** -Orig. in France; discovered by the Davodeau Ligonniere Nursery. Plant pat. 6148, 12 Apr. 1988. A red-fruited mutation of Jonagold.

**Dayton.** -Orig. in Urbana, Ill., by the Purdue, Rutgers, and Illinois (PRI) cooperative breeding program. Introd. in 1987 by S.S. Korban, J. Janick, E.B. Williams, and F.H. Emerson. Plant pat. 5584, 3 Dec. 1985. Assigned to Newark Nurseries, Hartford, Mich. NJ 123249 × PRI1235-100; cross made in 1967. Pedigree includes Melba, Red Rome, Jonathan, Wealthy, Starr, Rome Beauty, and *Malus floribunda* 821. Selected in 1976; tested as Co-op 21; named in honor of retired breeder, D.F. Dayton. Fruit: medium-large, 75 mm diam.; roundish to slightly oblate; 90% of surface bright medium red; smooth, very glossy and attractive; flesh pale yellow, fine-grained, firm, crisp, juicy; flavor mildly subacid; quality very good; a summer dessert apple ripening 4 weeks before Delicious; in 1C storage retains quality up to 4 weeks. Tree: moderately upright and vigorous; field immune to apple scab; moderately resistant to powdery mildew and fire blight; fruits hang on the tree 2 weeks after ripe without losing firmness or dessert quality.

**Dulcet.** -Disc. by L. James Bailey, Wenatchee, Wash., about 1975; introd. in 1988; plant pat. applied for; assigned to Van Well Nursery. Parentage unknown. Fruit: medium, 70-75 mm; skin deep red with faint stripe and pronounced lenticels; shape round-conic; flesh creamy white, firm, crisp; flavor mildly sweet and aromatic; harvest date early September, 4 weeks before Delicious. Tree: vigorous, precocious, annual bearer; appears to be resistant to powdery mildew.

**Earlee Grannee™ (Early Granny, Cooper Granny Smith).** -Orig. near Brewster, Wash. by C.L. Cooper. Discovered as whole tree sport

of Granny Smith in 1979. Introd. in 1986. Plant pat. 5761, 8 July 1986; assigned to TRECO®, Woodburn, Ore. Fruit: ripens 7-14 days before Granny Smith; requires 165 frost-free days to mature. Tree: more compact than Granny Smith. Similar to Granny Smith in other particulars.

**Earlichief™.** -A whole-tree, red mutation of Redchief® Delicious, discovered in the orchard of Arden Winkel, Hartford, Mich. Introd. in 1989. Plant patent pending; assigned to Newark Nurseries. Fruit: develops full red color 2 weeks before Redchief® Delicious; otherwise identical to Redchief® Delicious.

**Earlidel (Applethorpe Earlidel.)** -Orig. at Applethorpe, Queensland, Australia, by Granite Belt Horticultural Research Station. Released in 1988. Delicious × Early McIntosh. Tested as 35-155 and GB 155. Fruit: medium, 60-70 mm; skin 90% to 100% cherry red with darker red overstripes; round to slightly conical, flesh creamy white, firm, medium texture; subacid, sweet, pleasant flavor. Ripens 2 weeks before Gravenstein, 4-6 weeks before Delicious; shelf life about 10 days. Tree: more vigorous than Delicious; precocious; regular bearing; flowers early, with Granny Smith.

*Early Granny.* -See Earlee Grannee; see Goldsmith.

**Early Spur Rome.** -A bud mutation of Lawspur Rome, discovered by Wilfred Berger, Quincy, Wash. Plant pat. 7328, 18 Sept. 1990; assigned to C&O Nursery, Wenatchee, Wash. Fruit: color deep red by mid-August, just as Lawspur Rome is beginning to color; flavor of Rome Beauty; handles and stores well; does not bruise easily. Tree: spur habit of growth.

**Elan.** -Orig. from breeding program at Inst. for Horticultural Plant Breeding, Wageningen, Netherlands. Introd. in 1984; plant breedersrights granted 20 Nov. 1989. Golden Delicious × James Grieve. Fruit: most resembles Elstar, but larger, redder, smoother-skinned, and less acid; round conical; flesh medium firm, fine-grained. Harvest with to 5 days after Elstar, requiring two or more pickings; short shelf life; can be stored only for a few weeks. Tree: medium vigor; precocious; tip bearing; very productive; regular bearing; upright spreading.

**Elbee (Galagolden).** -Orig. at Untervaz, Switzerland, by Leo Basser. Introd. in 1976. U.S. plantpat. 5947. A partially red mutation of Golden Delicious. Fruit: skin greenish yellow with reddish brown blush. Russets less than Golden Delicious. Resembles Golden Delicious in all other respects.

**Elstar (Lustre Elstar™).** -Orig. in Wageningen, Netherlands, by T. Visser, Inst. for Horticultural Plant Breeding. Introd. in 1972. U.S. plantpat. 6450, 6 Dec. 1988; assigned to Carlton Plants, Dayton, Ore. Golden Delicious × Ingrid Marie; cross made in 1955. Fruit: medium to large, axial diam. 60-70 mm, transverse diam. 70-80 mm; shape round-conic; good color, yellow with very attractive orange-red stripe; more susceptible to sunburn than Gala; performs best in cool districts; flesh firm, white, rather coarse; very good flavor but acid at harvest time; harvest date 3.5 weeks before Golden Delicious; requires 2 weeks storage to develop acceptable flavor. Tree: very vigorous; precocious cropping; less productive than Gala, with some tendency to biennial cropping; no preharvest drop; diploid, produces viable pollen; foliage not shed until January. More susceptible to powdery mildew than Granny Smith and Jonagold; scabsusceptible; fruitvery susceptible to *Phytophthora* rot.

**Empress.** -Orig. in Geneva, N.Y., by R.D. Way, K.G. Livermore, and R.C. Lamb, New York State Agr. Expt. Sta., Cornell Univ., and by L.F. Hough, Rutgers Univ, New Brunswick, N.J. Introd. in 1988. Plant patent applied for. Jonamac × Vista Bella; cross made in 1969; selected in 1977; tested as NY 651. Named for its similarity in size, appearance, and quality to Empire, but ripens 6 weeks earlier. Fruit: medium, mostly about 60-65 mm diam.; shape round and symmetrical; color attractive, nearly totally blushed red and without stripes; skin covered with a heavy waxy bloom; flesh light yellow; texture semi-firm; flavor subacid, with a pleasing aroma: a late summer apple, ripens 6 weeks before Delicious; at -0.5C stores 1 month. Tree: only 70% as large as many vigorous varieties; easy to manage in the orchard; heavily cropping; annual bearing; no known resistances to diseases and insects. Bloom: late midseason, between Delicious and Golden Delicious; diploid, produces viable pollen.

**Fall Red.** -Orig. in Morden, Manitoba, from cross made by CR. Ure. Selected at Univ. of Alberta; introd. by Prairie Fruit Breeding Coop. Committee. Duchess of Oldenburg × Haralson. Fruit: medium-large, 70-80 mm diam.; oblong-round; skin dull red on yellow-green ground color; flesh white, medium-high acidity, good flavor. Harvest mid-September in the southern prairies of Canada; stores well. Fruit quality suitable for juice as well as dessert. Tree: vigor moderate; tendency to biennial bearing. Moderately susceptible to fire blight, but recovers quickly. Hardy to zone 2A.

**Falstaff.** -Orig. in East Malling, Kent, England, by F.H. Alston. Introd. in 1989. James Grieve × Golden Delicious. Owned by Plant Breeding International. Fruit: medium, 65-75 mm; skin red stripes on yellow-green background, smooth; flesh crisp, juicy; good sugar/acid balance, very good flavor. Most resembles Jonagold, but smaller size. Matures 2 weeks after Cox's Grange Pippin. Fruit stores well in refrigerated storage. Tree: medium vigor; drooping habit, with many drooping leaves presenting lower surfaces to the light; very productive. Diploid; spur flowers open 3 days before Cox's Grange Pippin, many flowers on 1-year-old wood.

**Fiesta™ (Mulling Fiesta).** -Orig. in East Malling, Kent, England, by F.H. Alston, J.R. Stow, J.W. Palmer, L.H. Clark, R.F.V. Williams, and H.F. Ermen, East Malling Research Station. Introd. in 1986. Cox's Orange Pippin × Idared, crossed in 1971; selected in 1979. U.S. plant pat. applied for; assigned to TRECO®, Woodburn, Ore. Fruit: attractive but somewhat dull red blush and stripes on a yellow/green background; round and slightly flattened; texture very crisp and juicy; flavor pleasantly aromatic, similar to Cox's Orange Pippin, harvest in mid-September with Cox's Grange Pippin; at 1C common storage, stores until April; at 3.5C in controlled atmosphere storage it kept crisp and juicy until May; resistant to most storage disorders. Tree: moderately vigorous, larger than Cox; wide branch angles, drooping growth habit; productive, yield is double that of Cox; thinning is necessary; fruit hangs well after it ripens. Blooms 2 days later than Cox; styles are very receptive, even at low temperatures; slightly self-fertile; diploid, pollen viable.

*Flanagan Delicious.* -See Starkspur Ultra Red Delicious.

**Florina (Querina®).** -Orig. in Beaucouze, France, by Y. Lespinasse, J.M. Oliver, J. Lespinasse, and M. Le Lezec, Station d'Arboriculture Fruitiere, INRA. Patented in France. Made available to French growers in 1977. 612-1[14-126(Golden Delicious × F226829-2-2) × Simpson's Giant Starking] × Jonathan. Assigned to Agri Obtentions, 78283 Guyancourt, France. Fruit: most nearly resembles Empire; medium to large; color 3/4 purplish red on yellow background, shiny waxy bloom, very attractive; truncate conical; flesh cream colored; medium firm, resistant to bruising; rather sweet, very good eating quality; open calyx; harvest 2 weeks later than Golden Delicious; stores well, market season November to February. Tree: medium to strong vigor; early bearing; productive; harvest is easy; resistant to apple scab (*V* gene), moderately susceptible to powdery mildew, and tolerant to rosy apple aphid and to fire blight.

*Frankard* -See Adina™.

*Fulford Gala™.* -See Regal Gala.

*Gala Must.* -See Regal Gala.

*Galagolden.* -See Elbee.

**Galaxy.** -Orig. in Havelock North, Hawkes Bay, New Zealand, by K.W. Kiddle. Introd. in 1988. U.S. plant pat. 6955; 1 Aug. 1989; assigned to Stark Bro's Nurseries, Louisiana, Mo. Limb mutation of Tenroy Gala™, which is a mutation of Kidd's D-8 Gala™. Disc. in 1985 as a single mutated spur. Fruit: solid cherry red color over the entire surface with frequent, indistinct darker red overstripes. Color develops earlier than Tenroy Gala™. Galaxy is the same as Gala™ in the following characteristics: tree vigor, blossom period, crop yield, disease resistance, and fruit shape, size, and taste.

**Gavin.** -Orig. in Bayfordbury, England, by the breeding program at the John Innes Inst. DA 20-2 × Merton Worcester. Named in honor of A. Gavin Brown. Fruit: medium, 60-65 mm in diam.; color red flush on yellow-green ground; shape oblong; flesh yellow, crisp, juicy; flavor sweet. Tree: less productive than Cox's Grange Pippin; immune to apple scab, *V* resistance genes.

**Ginger Gold™**.— Orig. in Nelson Co., Vs., as a seedling growing in a Winesap orchard planted in 1980 by Clyde H. and Ginger Harvey, Arlington, Va. Introd. in 1989. First crop in 1984. Plant pat. 7063, 5 Dec. 1989. Assigned to Adams County Nursery, Aspers, Pa. Fruit: resembles Golden Delicious; medium-large color green to gold, nonrusseting; shape round to oblate; flesh white, slow oxidizing, firm, very juicy, good flavor, pressure test 18-19 lb, soluble solids, 11.5%. Harvest 5 weeks before Golden Delicious; fruit hangs well. Keeps 3–6 months in storage. Tree medium vigorous; spreading; productive; precocious; hardy; blooms late with Golden Delicious. Moderately susceptible to fire blight.

**Gloster (Gloster 69)**.— Orig. in the breeding program, Jerk Fruit Res. Sta., Jerk, Germany. Introd. in 1969. Glockenapfel × Richared Delicious. Fruit: similar to Delicious; large, 70-75 mm in diam.; color and shape similar to Richared Delicious; flesh greenish-yellow, no bitter pit; sweet-tart flavor, more acid than Delicious, fair quality; harvest late with Golden Delicious and Jonagold; calyx open, subject to moldy core; long storage life. Tree: vigorous, upright; precocious; very heavy, annual cropping, more productive than Delicious; moderate preharvest drop.

*Gloster 69*.— See Gloster.

*Gold-N-Rose*.— See Marigold.

**Golden Supreme™**.— Discovered in the orchards of Walter Krause, Reedley, Calif. Tested as WK-181. Assigned to Hilltop Trees, Hartford, Mich., and to Willow Drive Nursery, Ephrata, Wash. Fruit: medium to large; similar to Golden Delicious; yellow with pink blush on exposed fruits; typey shape; russet resistant; firm, juicy, mild flavored; harvest 10–12 days earlier than Golden Delicious; ripens unevenly, two pickings required, storage life up to 4 months without shrivel. Tree: vigorous, nonspur.

**Goldenir (Lysgolden ®)**.—Orig. at Angers, France, by Natl. Inst. Agr. Res. A radiation mutant of Golden Delicious; selected by L. Decourtye. Introd. in 1977; assigned to Agri Obtentions, Guyancourt, France. Trademarked in the United States by Hilltop Trees, Hartford, Mich. Fruit: most resembles Golden Delicious; medium, strong yellow color, sometimes with red blush; conical, typier than Golden Delicious; little or no russet; skin tougher, smoother, waxier than Golden Delicious; flesh and flavor same as Golden Delicious. Better resistance to bruising than Golden Delicious. Harvest 10-15 days after Golden Delicious; longer storage life. Tree: more vigorous than Golden Delicious; growth habit more leggy, with some bare wood; less productive less tendency to overcrop susceptible to powdery mildew.

**Goldsmith (Early Granny, Summer Granny)**.—Orig. in Elgin, South Africa. Introd. in 1975. Thought to be chance seedling of Granny Smith × Golden Delicious. Fruit: similar to Granny Smith, except ripens 2 weeks earlier; large; conical; skin color green to buff yellow; texture fine, firm; flesh color cream; quality fair; storage life 6-8 months, somewhat shorter than Granny Smith. Tree very vigorous, very precocious; bloom late.

**Greensleeves (Malling Greensleeves)**.— Orig. in East Malling, Kent, England, by F.H. Alston, R. Watkins, and J.W. Bates, East Malling Research Station. Introd. in 1977. Protected by Plant Breeders' Rights. James Grieve × Golden Delicious; seed germinated in 1966; tested as A 120/6. Fruit: medium, 65 mm+, skin green-yellow with a trace of russet in the stem cavity; juicy; flavor is pleasantly subacid; ripens in early midseason. Tree semi-dwarf, ideal for high-density orchards; very precocious; productive (yielded 100% more fruit than Cox's Orange Pippin in the first four fruiting years); when stored at 3.3C, fruit is marketable until early December; flowers profusely 1 week before Cox's Orange Pippin, long flowering period, flowers showed some resistance to severe frosts.

**Haralred™ (Lantz Haralson, Red Haralson)**.— Orig. in La Crescent, Minn., by Louis Lantz. A red-fruited mutation of Haralson. Plant pat. 4824, 16 Feb. 1982; assigned to TRECO®, Woodburn, Ore. Fruit: redder, earlier, sweeter than Haralson; early coloring without russet; sweet juicy; good storage. Tree same as Haralson.

**Hatsuaki**.— Orig. at Morioka, Iwate, Japan, by Y. Yoshida, S. Tsuchiya, T. Haniuda, T. Sanada, and S. Sadamor, Morioka Branch, Fruit Tree Research Station. Introd. in 1976. Jonathan × Golden Deli-

icious; cross made in 1939; selected in 1967. Tested as Tohoku #8. Fruit: medium to large, 250-300 g; short round-conical to oblong conical, slightly uneven in shape, skin light rose-red on yellow ground, rather thick, dull finish, numerous small russet dots; some rough russet in and around basin; flesh yellowish white, crisp, rather coarse, very juicy, slightly acid similar to Jonagold. Dessert quality excellent. Harvest with Gala, 17 days before Delicious. Tree: vigorous; spreading; regularly productive. Diploid; blossoms with Delicious.

*Hidala*.— See Hillwell.

**Hillwell (RedBraeburn, Hidala)**.— Orig. at Hastings, New Zealand, by Mr. and Mrs. John Hill. Discovered as a limb mutation of Braeburn in 1981. Introd. in 1990. Plant pat. applied for; assigned to TRECO®, Woodburn, Ore. Identical with Braeburn, except the apples of Hillwell are much redder.

**Himekami**.— Orig. at Morioka, Iwate, Japan, by Y. Yoshida, T. Haniuda, S. Tsuchiya, T. Sanada, T. Masuda, H. Bessho, and S. Sadamori, Morioka Branch, Fruit Tree Research Station. Introd. in 1984. Fuji × Jonathan; cross made in 1963; selected in 1976; tested as Morioka #37. Japanese Reg. No. P931, 18 July 1985. Fruit medium to large, 250-300 g; shape oblong to oblong-conic; skin bright red over yellow-green ground, smooth, some russet in cavity; flesh cream-colored, juicy, sweet, water core; good sugar/acid balance; good dessert flavor. Harvest early September in Washington cold storage 2 months; shelf life 4-5 weeks. Tree vigorous; upright; precocious; regularly productive. Diploid; blooms with Delicious.

**Hokuto (Northern Star)**.— Orig. in 1983 from the breeding program at the Aomori Apple Expt. Sta., Kuroishi, Aomori Prefecture, Japan. Fuji × Mutsu. Japanese Reg. No. P 368. Fruit: medium, 200-250 g; shape round; color purplish-red stripe over yellow ground flesh cream-colored, dense; sweet with moderate acidity, excellent quality; harvest late, with Mutsu; long storage, but susceptible to moldy core.

**Honeycrisp**.— Orig. near Excelsior, Minn., by breeders of Univ. of Minn. Hort. Research Center. Introd. in 1991. Macoun × Honeygold; selected in 1974; tested as Minn. 1711. Plant pat. applied for; assigned to TRECO®, Woodburn, Ore. Fruit: medium, 60-70 mm diameter without thinning; oblate to roundly oblate; skin 50% to 90% blotched scarlet over lemon yellow, dull finish, dimpled; numerous small, conspicuous lenticels; flesh cream-colored, coarse, very crisp, juicy; flavor mildly aromatic, subacid excellent dessert quality. Optimum harvest 5 days after McIntosh, but can be picked 10 days earlier or later; fruit tends not to drop; 5 months storage at 1C. Tree: moderately vigorous; upright-spreading; regular bearing; hardy in northern Minnesota.

**Iwakami**.— Orig. at Morioka, Japan by Y. Yoshida T. Haniuda, S. Tsuchiya, T. Sanada, T. Masuda, H. Bessho, and S. Sadamori, Morioka Branch, Fruit Tree Research Station. Fuji × Jonathan. Introd. in 1984. Japanese Reg. no. 932, 18 July 1985. Tested as Morioka #39. Fruit: medium, 250 g; shape round skin bright red stripes on yellow-green ground, smooth, medium thick russet in cavity, lenticels small; flesh whitish-yellow, crisp, juicy; flavor sprightly, aromatic. Ripens with Gala. Tree vigorous; spreading; precocious; regularly productive. Diploid; blossoms with Jonathan, before Delicious.

**Jester (Malling Jester)**.— Orig. in East Malling, Kent, England, by F.H. Alston, East Malling Research Station. Introd. in 1981. Worcester Pearmain × Starkspur Golden Delicious. Fruit medium, 65–70 mm; color distinctive bright red, predominantly red on a yellow/green background; skin finish good skin texture good flesh crisp and juicy; quality good; best suited for home orchards; ripe in early October; storage life short. Tree: regular, heavy cropping; precocious; compact growth habit; requires little pruning; flowers 2 days after Cox's Orange Pippin; styles and pollen resistant to low temperatures (5C).

**Jonafree**.— Orig. in Urbana, Ill., by a cooperative breeding program consisting of the Agr. Expt. Sta. of Illinois. (D.F. Dayton and J.B. Mowry), Purdue Univ. (E.B. Williams, J. Janick, F.H. Emerson) and Rutgers Univ. (L.F. Hough and C. Bailey). Introd. in 1979. Plant pat. 4633, 27 Jan. 1981; assigned to Newark Nurseries, Hartford, Mich.; TRECO®, Woodburn, Ore.; and Stark Bro's Nursery, Louisiana, Mo. 855-102 × NJ31; original seedling planted in 1965; a fifth-generation derivative of C.S. Crandall's Rome × *M. floribunda* 821 cross. An-

cestry includes Jonathan, Gallia Beauty, Red Spy, Golden Delicious, Rome Beauty, and *M. floribunda* 821. Selected in 1972; tested as Co-op 22. Fruit: medium, axial diam. 55-70 mm, transverse diam. 63-76 mm; roundish to slightly oblate; color 95% medium red without stripes; undercolor yellow-green; smooth with dry wax, generally no russet, glossy, attractive; appearance resembles Jonathan; flesh light yellow, fine-grained, crisp; flavor subacid, moderately rich, pleasant aroma, very good dessert apple. Season: with Jonathan. Storage: at 1 C retains flavor 10 weeks, no Jonathan spot, no shrivel in storage. Tree: semi-spreading, vigorous, nonspur type; field immunity to apple scab; slightly susceptible to powdery mildew and fire blight.

**Jonagored.** -Orig. at Halen, Belgium, by J. Morren. Introd. in 1985. U.S. plant pat. 5937. Limb sport of Jonagold. Color tends to be brownish during 3-week period before harvest, but the brown coloring changes to an attractive solid red at harvest. Characteristics otherwise identical with Jonagold.

**Jored** (*King Jonagold*). -Orig. in St. Truiden, Belgium, by Johann Nicholai. Discovered in 1985 as a whole-tree red-fruited mutation of Jonagold with 80% to 90% red blush color. Plant pat. applied for; assigned to TRECO®, Woodburn, Ore.

**Jupiter** (*Malling Jupiter*). -Orig. in East Malling, Kent, England, by F.H. Alston in the breeding program at the East Malling Res. Sta. Introd. in 1981. Protected by Plant Breeders' Rights; owned by Plant Breeding International, Cambridge. Cox's Grange Pippin × Starking Delicious. Seed germinated in 1966. Tested as A 133/8. Fruit: large, 75 mm; attractive, well-colored orange-red blush and stripes on a greenish-yellow ground (similar to Cox's Grange Pippin) with a smooth skin finish; some cracking around calyx; round to conic; flesh white, fine texture, juicy; flavor somewhat similar to Cox's Grange Pippin, but only fair quality; in 1.5C storage, susceptible to low-temperature breakdown, scald, and bitter pit, but remains firm until April in controlled atmosphere storage. Tree: vigorous with wide branch angles, trees 50% larger than Cox's Grange Pippin; high yielding; no preharvest drop; triploid, pollenot viable. Cox's Grange Pippin will not pollinize Jupiter; suitable pollenizers are Discovery, Spartan, Golden Delicious, Gala, Greensleeves, and Jester.

*Karmine.* -see Karmijn.

**Karmijn** (*Karmijn de Sonnaville, Karmine*). -Orig. in Wageningen, Netherlands, by P. de Sonnaville. Introd. in 1971. Cox's Grange Pippin × Jonathan, crossed in 1949. U.S. plant pat. pending; assigned to Carlton Plants, Dayton, Ore. Fruit: large; oblong-conical; color yellow-green with carmine red blush; russet can cause skin cracking; flesh color yellow; flesh texture firm, fine grained; flavor, one of the best with high sugar and acid; harvest with Delicious; storagelife good through March, must be stored 4 weeks before good quality develops. Tree: moderately vigorous; horizontal branching; moderately precocious; low yields; bloom season mid to late; triploid, does not produce viable pollen.

*Karmijn de Sonnaville.* -See Karmijn.

**Keepsake.** -Orig. in St. Paul, Minn., by C. Stushnoff, S. Munson, L.B. Hertz, W. Gray, and D.K. Wildung, Univ. of Minn. Introd. in 1979. MN447 (open-pollinated Malinda) × Northern Spy; cross made in 1936; selected in 1947; tested as MN 1593. Fruit: small to medium, 56-69 mm diam.; red, some scarfskin; conical with angular sides; attractive; flesh light yellow, fine-grained, hard, very crisp, juicy; flavor very sweet, aromatic; quality good; harvest late October; storage life very long; shelf life very long. Tree: moderately vigorous, spreading; very winter hardy; productive; moderately resistant to apple scab, cedar apple rust, and fire blight.

*Kemp Delicious.* -See Topspur Delicious.

**Kent** (*Mulling Kent*). -Orig. in East Malling, Kent, England, by H.M. Tydeman, East Malling Research Station. Introd. in 1974. Protected by Plant Breeders' Rights; owned by Plant Breeding International, Cambridge. Cox's Grange Pippin × Jonathan. Tested from 1964 to 1974 as A 1379. Fruit: medium, most fruits 60 mm diam. or larger; 75% skin surface dark coppery red on a green ground, occasionally extensive russet; shape slightly conic; texture firm; flavor very acid; late ripening; in 1.7C storage keeps well until mid-April. Tree: medium size; upright; precocious cropping; little preharvest

drop; blooms with Cox's Grange Pippin and Golden Delicious. This is not the same variety as the Kent described in the Register of New Fruit & Nut Varieties 2nd ed., 1972.

**Kestrel.** -Orig. by breeding program at Res. Sta., Agriculture Canada, Kentville, Nova Scotia; cross made by C.J. Bishop in 1950, selected by R.P. Langley in 1961, introd. in 1975 by A.D. Crowe. New York Red Spy × Macoun. Tested as C13-30-88. Fruit: medium, 55-75 mm; shape round-conic, oblate; color almost completely washed or lightly striped with carmine to deep currant red on a pale greenish-yellow background; attractive; flesh creamy white, crisp, fine, juicy, exceptionally good texture; flavor subacid, mildly aromatic; eating quality very good to best; harvest time midseason, a few days after McIntosh; retains quality in storage; good shelf life. Tree: moderately vigorous, well-spurred, upright-spreading; annually productive. Has not had insect or disease problems in Nova Scotia, but not tested for actual resistances.

*King Jonagold.* -See Jored.

**Kitakami.** -Orig. at Morioka, Japan by Y. Yoshida, T. Haniuda, S. Tsuchiya, T. Sanada, and S. Sadamori, Morioka Branch, Fruit Tree Research Station. Introd. in 1982. Tohoku #2 (McIntosh × Worcester Pearmain) × Redgold. Japanese Reg. no. 366, 24 Feb. 1983. Tested as Morioka #15. Fruit: small, 150-200 g; oblate; skin solid bright red on yellow-green ground color, smooth, thick; flesh whitish-yellow, coarse, crisp, very juicy; flavor mild subacid, little aroma; good dessert quality. Ripens about 3 weeks before Gala. Tree: vigorous; upright; precocious; regularly productive. Diploid; blossoms after Jonathan and Fuji.

**Kogetsu.** -Orig. in Nanbu-machi, Aomori, Japan by S. Taniuchi. Introd. in 1981. Golden Delicious × Jonathan. Japanese Reg. No. P.130. Fruit: medium-large, 300-350 g; round; skin 95% red; flesh creamy white, with good sugar/acid balance, excellent flavor, some drop. Harvest with Gala; stores well.

**Korona.** -Orig. at Kentville, Nova Scotia. Introd. in 1987. 34-91-13 (Mother × Red Rome Beauty) × Scotia (McIntosh o.p.) Fruit: medium to large; round-oblate, fairly regular; skin 80% to 95% attractive bright red over light greenish-yellow ground color; lenticels somewhat conspicuous; flesh light greenish cream, fine, tender, moderately juicy; aromatic subacid, very good. Matures a few days before McIntosh; not suitable for processing. Tree: small; spreading; precocious; annually productive.

*Lantz Haralson.* -See Haralred™.

*Lustre Elstar™.* -See Elstar.

*Lysgolden®.* -See Goldenir.

**Maigold** (*Gold-N-Rose*). -Orig. in Wadenswil, Switzerland, by breeding program of the Swiss Federal Agr. Res. Sta. Franc-Roseau × Golden Delicious; cross made in 1944, introd. in 1964. Fruit: medium, 60-80 mm; skin bright red on exposed side on pale green ground color; no russet; does not shrivel in storage; flesh yellow at maturity, crisp, juicy, very firm; flavor mildly subacid, sweet, pleasant. Harvest late, with Winesap; exceptionally long storage life in air. Tree: vigorous; precocious; productive; annual cropping; blossom season late.

*Malling Bountiful.* -See Bountiful.

*Malling Fiesta.* -See Fiesta.

*Malling Greensleeves.* -See Greensleeves.

*Malling Jester.* -See Jester.

*Malling Jupiter.* -See Jupiter.

*Malling Kent.* -See Kent.

*Malling Redsleeves.* -See Redsleeves.

*Malling Suntan.* -See Suntan.

**McShay.** -Orig. in West Lafayette, Ind., by cooperative breeding program consisting of Agr. Expt. Stations of Oregon (S.A. Mehlenbacher and M.M. Thompson), Purdue Univ. (E.B. Williams, J. Janick, and F.H. Emerson), Univ. of Illinois (S.S. Korban and D.F. Dayton) and Rutgers Univ. (L.F. Hough and C. Bailey). Plant pat. 4724, 26 May 1981; assigned to Carlton Plants, Dayton, Ore. McIntosh × PRI 612-4. Ancestry includes Starking (giant limb) and Golden Delicious; this is a fifth-generation derivative of C.S. Crandall's Rome Beauty × *M. floribunda* 821 cross. Selected in 1970; tested as PRI

1773-8. Named in honor of late J.R. Shay, cofounder of the PRI program. Fruit: medium, 65-mm in diam.; round-conic; skin currant red on uranium green ground color, smooth, thin, no russet; flesh chartreuse green, fine-grained, juicy; flavor mildly subacid, quality very good. Ripens 2 weeks before Jonathan; stores 2-3 months at 1C in air. Tree: vigorous; upright; annual cropping; field immune to apple scab (*V<sub>5</sub>* gene); leaves, but not fruit, susceptible to powdery mildew. Flowers after McIntosh, before Rome Beauty; pollen viable.

**Michinoku.** -Orig. in 1981 in Hirosaki, Aomori, Japan by K. Maeda. Kitakami × Tsugaru. Fruit: large, 270-300 g; skim solid red with prominent lenticels, often much-russeted in cavity, very attractive; flesh coarse, firm, crisp, juicy; good flavor, sweet. Harvest early, with Gravenstein, 5 weeks before Delicious; fruits tend to drop before harvest. Susceptible to water core.

**Moira.** -Orig. by L.P.S. Spangelo, S.J. Leuty, and H.B. Heaney at Agriculture Canada Res. Sta., Ottawa, and Smithfield Experimental Farm, Trenton, Ont. Introduced in 1978. McIntosh × Dg 22-81 [Jonathan × (Rome Beauty × *Malus floribunda* 821 sib.)]. Tested as Ottawa 548. Fruit: smaller than McIntosh, up to 76 mm in diam.; round conic; skin color medium lively red on light green to yellow ground color; prominent white lenticels; flesh creamy white, slightly tinged with green; crisp; moderately acid, processed fruit was rated fair for juice and poor for sauce and slices; harvest with Delicious; storage life 2-3 months at 2C, shorter than McIntosh. Tree: moderately vigorous, spreading; high yield efficiency; blooms 2-3 days after McIntosh; resistant to apple scab and cedar apple rust; susceptible to fire blight; fruit very susceptible to quince rust.

**Murray.** -Orig. by L.P.S. Spangelo, S.J. Leuty, and H.B. Heaney at Agriculture Canada, Res. Sta., Ottawa, and Smithfield Experimental Farm, Trenton, Ont. Introduced in 1980. McIntosh × 52-05-26 [Platt Melba × R16T19 (Wolf River × *Malus atrosanguinea* 804)]. Tested as Ottawa 628. Fruit: medium; color red blush-stripe on green to yellow ground color; flesh white, fine texture, juicy, moderately acid; quality medium good; processed fruit was rated poor for juice, sauce, and slices; harvest 7-10 days before McIntosh, storagelife short, <1 month at 2C. Tree: moderately vigorous, spreading; medium yields; blooms early with McIntosh; moderately resistant to apple scab, but occasional scab spots have been observed, resistant to cedar apple rust; very susceptible to quince rust.

**Nebuta.** -Orig. in 1981 in Hirosaki, Aomori, Japan, by K. Maeda. Kitakami × Tsugaru. Fruit: medium-large, 250-300 g; round to round conic; skin solid dark red; flesh pale yellow, medium firm, somewhat acid. Harvest early, with Gravenstein, 5 weeks before Delicious; tends to drop before harvest. Susceptible to water core.

**New Gold.** -Orig. in New Brunswick, N.J., by L.F. Hough, Rutgers Univ. Introduced in 1987. Golden Delicious × Malling 2439 (Prince Rudolf × James Grieve); cross made in 1974. Tested as NJ89. Rights sold to Star Fruits, France. Fruit: medium to large; shape oblong conic; skin light green, similar to Golden Delicious; flesh texture fine and crisp; flesh color light straw; flavor excellent, Harvest after Golden Delicious; storage life good. Tree: very high vigor; precocity very good, very productive; very hardy; bloom mid to late.

**New Jonagold.** -A red-fruited mutation of Jonagold discovered by M. Saito, Aomori Prefecture, Japan. Japanese Reg. No. P 63. Deep red stripe, but only slightly redder overall than Jonagold; harvest slightly earlier than Jonagold.

**Nicobel™ Jonagold.** -Mutation of Jonagold; slightly better red color than Jonagold, with 50% red blush over yellow ground color, but less red than Jored (*King Jonagold*). Assigned to TRECO®, Woodburn, Ore.

**Nittany.** -Orig. in Biglerville, Pa., by Fruit Res. Lab., Pennsylvania State Univ. Introduced in 1977. Open-pollinated seedling of York Imperial or one of its red sports. Fruit: similar to York Imperial; processing type; medium, 175-250 g; color dark pink or orange-red blush, narrow striping on a light clear yellow ground color; shape oblique; flesh texture firm; flesh color deep yellow; soluble solids slightly less than York Imperial; exposed flesh turns brown much more slowly than York Imperial; flesh retains shape during cooking; harvest first 3 weeks of October; longer storage life, 6 months without loss of quality;

essentially free of corking. Tree: vigorous; productive; biennial tendency; susceptible to fire blight; bloom date late, similar to York Imperial.

**Noran.** -Orig. from the breeding program at Agriculture Canada Res. Sta., Beaverlodge, Alberta. Introduced in 1976. Columbia (*Malus baccata* × Broad Green) × Redant (Antonovka open-pollinated). Selected in 1961. Fruit: 60 × 55 mm, uniform sizes; background color green with a brick-red blush on exposed side; flesh cream-colored, crisp, slightly tart; good cooking; harvest late September; stores well in air at 4C until mid-February. Tree: vigorous, upright-spreading; very hardy, precocious; moderate to good annual cropping.

**Norcue.** -Orig. from the breeding program at Agriculture Canada Res. Sta., Beaverlodge, Alberta. Introduced in 1976. Heyer 12 × Rescue. Selected in 1958. Fruit: medium-small, 55mm diam.; ground color greenishyellow, almost completely overlaid with dull red stripes; flesh cream-colored with tinges of pink under the skin; moderately crisp and juicy with full, very sweet flavor; harvest before Heyer 12. Tree: vigorous, upright-spreading; very hardy; precocious; annual cropping.

**Norda.** -Orig. from the breeding program at Agriculture Canada Res. Sta., Beaverlodge, Alberta. Introduced in 1976. Rosilda (Prince × McIntosh) × Trail (Northern Queen × Rideau). Selected in 1960. Fruit: large, variable sizes, up to 68 mm; background color green to yellow, overlaid by red streaks; flesh cream-colored, crisp, moderately juicy, very good flavor. Harvest late September; stores at 4C until mid-January. Tree: vigorous, upright-spreading, moderately hardy; relatively precocious; moderately productive.

**Noret.** -Orig. from the breeding program at Agriculture Canada Res. Sta., Beaverlodge, Alberta. Introduced in 1976. Rescue × Mantel. Selected in 1960. Fruit: medium, 55 × 50 mm; ground color green to yellow, overlaid almost completely with shiny dark red; flesh cream-colored, moderately firm, slightly tart, good flavor. Harvest early, 5 days after Dawn. Tree: small, upright-spreading; very winter hardy, hardier than Osman and Heyer 12; precocious; annual cropping.

**Norhey.** -Orig. from the breeding program at Agriculture Canada Res. Sta., Beaverlodge, Alberta. Introduced in 1976. Heyer 12 × Dr. Bill. Selected in 1960. Fruit: similar to Heyer 12; large, 65 × 60mm; ground color green changing to yellow; flesh deep cream color, crisp, juicy, slightly tart; harvest early September; long storage. Tree: vigorous, upright, good branching habit; very winter hardy, hardier than Heyer 12; precocious; heavy annual cropping.

**Norson.** -Orig. from the breeding program at Agriculture Canada Res. Sta., Beaverlodge, Alberta. Introduced in 1976. Haralson × Rescue. Selected in 1958. Fruit: medium-small, 50-mm diameter; green to yellow ground color, almost completely overlaid by a very attractive dark red; flesh cream-colored, crisp, juicy; pleasant flavor, good quality, best dessert; harvest late September; excellent keeping ability. Tree: moderately vigorous, upright-spreading; very hardy; relatively precocious; annual, heavy crops.

*Northern Star.* -See Hokuto.

**Novamac.** -Orig. in Kentville, Nova Scotia, by A.D. Crowe in the breeding program of Agriculture Canada Res. Sta. Introduced in 1978. McIntosh × PRI 1018-3. Cross made by D.F. Dayton and E.B. Williams at Sturgeon Bay, Wis., in 1963. Fruit: medium-large, 70mm in diameter; shape round to round conic, regular; 80% red stripe on greenish yellow ground; very attractive; flesh white, crisp, fine, tender, juicy; flavor subacid, similar to McIntosh; very good. Harvest early fall, with McIntosh. Tree: moderately vigorous, upright spreading; moderately productive; annual cropping; highly resistant to apple scab; resistant to cedar apple rust and fire blight; susceptible to mildew.

**Novaspy.** -Orig. by A.D. Crowe at Agriculture Canada Research Station, Kentville, Nova Scotia. Introduced in 1986. Nova Easy gro × NY 44411-1 (Red Spy × Golden Delicious); tested as S34-38-122. Fruit: medium; globose-conical, slightly ribbed, skin 30% to 85% striped to blushed dark red; flesh creamy yellow, fine-textured, very firm, crisp, moderately tender, juicy, moderately acid; flavor very good. Matures between Delicious and Northern Spy; long storage in air. Excellent processor; released as dual-purpose variety. Tree: vigor medium; upright-spreading; precocious; production moderate, annual; hardy in Nova Scotia. Resistant to apple scab.

**Nured® Spur Delicious** -Orig. by Harry Kemp, Othello, Wash. A spur mutation of Bisbee Delicious. Assigned to Columbia and Okanagan Nursery, Wenatchee, Wash.

**Nured® Winesap**. -A red-fruited mutation of SeeandO Winseap. Fruit: earlier coloring and darker red than Winesap; striped; russet-resistant.

**Oberle**. -Orig. in Virginia by George Oberle, Virginia Polytechnic Institute, Blacksburg. Introduced in 1987. Parentage unknown; tested as SC-2-11. Fruit: large, to 85 mm; skin 50% to 75% striped or washed with bright red; lenticels conspicuous at calyx end; occasionally russeted; round, occasionally ribbed, flesh creamy white, crisp, tender, somewhat coarse, juicy, good. Matures very early, 2-4 days before Close, requiring more than one picking. Tree: moderate vigor; upright spreading, somewhat spurry and compact; precocious; annually productive.

**Orin**. -Orig. before 1942 by T. Otsuki, apple grower in Fukushima Prefecture, Japan. Golden Delicious × Indo. Fruit: medium-large, 250-300 g; oblong to conic; yellow-green with prominent russeted lenticels, sometimes with red-orange blush; flesh firm, aromatic, sweet, juicy, excellent quality; Harvest 1 week before Fuji; useful only in long-season areas; excellent shelf life.

**Par-Feet Spur Criterion** (*Fechtig*). -Orig. near Albany, Ore., by A.D. Fechtig. A semi-spur mutation of Criterion. Plant pat. 6043, 1 Nov. 1988; assigned to TRECO®, Woodburn, Ore. Fruit: medium to large; variable in shape; green to yellow groundcolor with pink to rose blush; skin tough; texture firmer than Criterion, coarse; flavor good, aromatic; harvest date mid-September, 1 week earlier than Criterion; storage life good; excellent shelf life. Tree: spur growth habit; tree 25% smaller than Criterion; precocious; annual cropping; spurs break off easily when picking.

**Pink Lady**. -Orig. from the breeding program of the Western Australian Dept. Agr. Introduced in 1989. Golden Delicious × Lady Williams. Selected in 1979 by John Cripps. Plant pat. applied for; assigned to Carlton Plants, Dayton, Ore. Fruit: medium to large; shape asymmetrical or oblong, with prominent ribbing; skin color attractive red, blush pattern, yellow ground; texture firm; flavor sweet, tart. Harvest later than Granny Smith; storage life long. Tree: very vigorous; prolonged bloom period.

**Pioneer Mac**<sup>TM</sup>. -Discovered in 1976 by Ernest Greiner, Marlboro, N.Y. Introduced in 1989. Plant pat. 7002, 29 Aug. 1989; assigned to Adams County Nursery, Aspers, Pa. Open-pollinated seedling of McIntosh; not a McIntosh sport. Fruit: appearance almost indistinguishable from McIntosh, perhaps better color than Rogers McIntosh; 90% red; eating qualities same as McIntosh. Harvest 10 days after Rogers McIntosh, with much less preharvest drop; excellent storage capacity. Tree: nonspur growth habit, less vigorous than Rogers McIntosh; very productive, similar to McIntosh, with less tendency to biennial bearing.

**Primicia**. -Orig. in Caçador, Santa Catarina, Brazil, by F. Denardi, L.F. Hough, and A.P. Camilo, Santa Catarina Experiment Station. Introduced in 1988. Cross: D1R101T117 × D1R103T245; crossed in 1975 at New Jersey Agr. Expt. Sta.; a sixth-generation derivative of C.S. Crandall's Rome Beauty × *M. floribunda* 821 sib cross; ancestry includes Yellow Newtown, Golden Delicious, Crandall, Cortland, Melba, Wealthy, Starr, and Rome Beauty. Selected in 1982; tested as Malus 29. Fruit: medium size, 150 g; round to round-conic, no russet, bright red over yellow ground, attractive; fleshlight cream, moderately juicy, firm; flavor mildly acid; ripens 3 weeks before Gala® and 6 weeks before Golden Delicious; early ripening results in no bitter pit; stores well in cold storage. Tree: medium vigor; branches 90° angles with the trunk; open, spreading; resistant to apple scab, moderately resistant to powdery mildew. Lower winter chilling requirement than Gala®, does not require chemical treatment to break dormancy at Caçador. Precocious; heavy, annual cropping; overripe fruits drop from the tree. Flowering: several days before Gala®.

**Princesa**. -Orig. in Caçador, Santa Catarina, Brazil, by F. Denardi, L.F. Hough, and A.P. Camilo, Santa Catarina Experiment Station. Introduced in 1988. NJ 56 (NJ440249 × NJ 39) × Anna; crossed in 1977; ancestry includes Adassia Red, Golden Delicious, Edgewood, Cox's

Grange Pippin, Yellow Newtown, Red Rome, and Jonathan. Selected in Brazil in 1984. Fruit: average weight 160 g; shape round, crowns at calyx end, nearly 100% red over a yellow ground, no russet, attractive; flesh whitish cream, firm, juicy; flavor sweet, subacid; harvest early, 3-4 weeks after Anna. Tree: moderately vigorous with strong, upright spreading lateral branches; chilling requirement low, similar to Anna, about 400 h below 7°C; flowering, 3-4 weeks after Anna; highly productive; precocious cropping: fruit hang well after fully ripened; susceptible to apple scab and powdery mildew.

**Razor Golden Delicious**. -Orig. near Millington, Term., by H.L. Jones. Introduced in 1970. A russet-skinned mutation of Golden Delicious. Thrusset is uniquely light colored, uniform and attractive. Resembles Golden Delicious in all other respects.

*Red Haralson*. -See Haralred<sup>TM</sup>.

**Redsleeves** (*Malling Redsleeves*). -Orig. from breeding program at East Malling Res. Sta., East Malling, Kent, England, by F.H. Alston. Introduced in 1986. Exeter Cross × TSR15T3 (a PRI scab-resistant selection). Tested as A232/2. Owned by Plant Breeding International, Cambridge. Fruit: medium size, 60-65 mm in diam.; attractive, predominantly bright red on yellow/green background; good skin finish; flavor pleasant, sweet; flesh texture crisp and juicy; best suited for home orchards; ripens early, in late August to early September; shelf life very good, at 18°C it retains good texture for at least 1 month after harvest. Tree: precocious cropping; compact growth habit, requiring little pruning; thinning is necessary; on M.27 stocks, especially suited for small gardens.

**Regal Gala®** (*Fulford Gala®*, *Gala Must*). -A red mutation of Gala®. Discovered near Hastings, New Zealand, by W. Fulford. Plant pat. 3309, 20 Feb. 1973. Fruit: a bright reddish orange blush over a yellow ground; shape ellipsoidal.

**Richelieu**. -Orig. by R.L. Granger and G.L. Rousselle, Agriculture Canada Research Station, St. Jean-sur-Richelieu, Quebec. Ottawa 521 × 11-51; ancestry includes Melba, McIntosh, Jonathan, Rome Beauty, and *Malus floribunda* 821; cross made in 1964 at Ottawa, selected at Trenton, Ont., and evaluated at Frelighsburg, Que. Tested as Ottawa 635. Described in 1983 by G.L. Rousselle; named in 1990 by R.L. Granger. Fruit: medium-large, 65-70 mm diam; color 60% to 65% red on light green ground color; shape oblong conical, flesh white, juicy, crisp, mild to subacid, high sugar and aroma; quality good. Introduced as midseason dessert apple also suitable for culinary use. Harvest 1 week before McIntosh; storage life 3 months or more in air. Tree: vigor medium; spreading; precocious; annually productive; resistant to apple scab (V); moderately resistant to powdery mildew and to fine blight; very susceptible to cedar apple rust and quince rust.

**Rouville**. -Orig. by R.L. Granger and G.L. Rousselle, Agriculture Canada Res. Sta., St. Jean-sur-Richelieu, Que. Introduced in 1983. 52-05-312 × 69-52; ancestry includes Red Melba, Melba, McIntosh, Wolf River, and *Malus atrosanguinea* 804. Cross made in 1962 at Ottawa, selected in 1972 at Trenton, Ont. and evaluated at Frelighsburg, Que. Tested as Ottawa 627. Described by G.L. Rousselle in 1983; named by R.L. Granger in 1991. Fruit: very large, 70-80 mm diam.; skin 75% red on pale green-yellow ground; shape oblate, symmetrical, somewhat ribbed, flesh white to creamy, juicy, slightly coarse; flavor subacid, high sugar and tannin, quality fair to good; dual purpose, including processing for juice; storage life 2 months. Tree: vigorous, semispreading; precocious; annually productive; cold hardy; resistant to apple scab in most years but foliage susceptible to race 5.

**Royal Empire**<sup>TM</sup> (*Teeple Red Empire*). -A limb, red-fruited mutation of Empire. Discovered in 1985 by John and Russell Teeple, Sodus, N.Y. Plant pat. applied for; assigned to Cornell Research Foundation.

**Rubinstar** (*Rubinstar Jonagold*). -Orig. at Gaiberg, Germany in 1980 as a bud mutation of Jonagold. U.S. plant pat. applied for; assigned to Wafler Farms, Wolcott, N.Y. Identical with Jonagold except that it matures about 1 week earlier and at maturity exhibits a more intense red coloration over 70% to 90% of the surface with little or no striping.

*Rubinstar Jonagold*. -See Rubinstar.

**Sansa**. -Orig. in Morioka, Iwate, Japan by Y. Yoshida, T. Haniuda, S. Tsuchiya, T. Sanada, T. Masuda, and H. Bessho, Morioka Branch,

Fruit Tree Res. Sta., in cooperation with Don McKenzie, DSIR Res. Sta., Havelock North, New Zealand. Gala × Akane; cross made in New Zealand in 1969; selected at Morioka in 1981; tested as Morioka #42. Introd. in 1986. U.S. plant pat. 6519, 10 Jan. 1989. Fruit: medium-small, 200-250 g; conical; skin bright red on yellow-green ground, some russet around basin, flesh whitish yellow, crisp, fine texture, juicy, slow browning; good sugar/acid balance; excellent dessert quality. Ripens early with Gravenstein, 3 weeks before Gala. Tree: vigor moderate to moderately weak; upright-spreading; precocious; very productive. Some genetic chlorosis of leaves. Blooms with Gala. Resistant to *Alternaria* blotch, apple scab and rust (*Gymnosporangium yamadai*)

**Sayaka.** -Orig. in Matsumoto, Nagano, Japan, by K. Hatakoshi. Introd. in 1984. Jonathan × Sekai-ichi. Fruit: very large, 300-400 g; purplish red stripe over yellow ground with prominent lenticels, flesh yellow, medium firm with some water core, subacid; harvest 5 days before Gala. Tree: medium vigor; spreading; productive.

**Scarlet.** -Orig. in Matsumoto, Nagano, Japan, by K. Hatakoshi. Introd. in 1984. Akane × Starking Delicious. Japanese Reg. No. P 528. Fruit: 250-300 g; skin brilliant red stripe on yellowish green ground, with no russet; flesh white, firm, juicy, low acid, sugar content 13.5° Brix; harvest early with Gravenstein; stores 1 month. Tree: medium to medium weak vigor; spreading; medium productivity.

**Scarlet Gala.** -Orig. near Cumberland, Ky., by John Creech. Plant pat. 6172, 10 May 1988; assigned to C&O Nursery, Wenatchee, Wash. A red-fruited mutation of Gala with striped color pattern; otherwise similar to Gala.

**Sekai-ichi (World #1).** -Orig. in Kuroishi, Aomori, Japan, in the breeding program of the Aomori Apple Res. Sta. Introd. in 1974. Delicious × Golden Delicious; tested as 6/7-1. Fruit: very large, 500-600 g, occasionally more than 1000 g; color red striped, similar to Starking, on greenish yellow ground; finish smooth; shape round conic, regular, less elongated than Delicious; flesh medium firm, fine-grained, aromatic; taste similar to Delicious. Harvest with Delicious; stores for 80-120 days. Tree: very vigorous; upright-spreading; not precocious; very productive, but tends to be biennial; blooms with Delicious; self-unfruitful. Susceptible to preharvest drop; susceptible to apple scab and to *Alternaria* leafspot.

**Senshu.** -Orig. in Japan in the breeding program of the Akita Fruit Tree Expt. Sta. by S. Tanno, T. Taguchi, J. Tanba, H. Suzuki, and K. Kon. Toko × Fuji; selected in 1974. Introd. in 1980. Japanese Reg. No. P 42. Fruit: medium-large, 270-300 g; round; skin bright striped red on greenish-yellow ground; flesh yellowish white, firm, juicy, excellent quality. Harvest about 10 days before Delicious; 20- to 30-day shelf life. Tree: medium vigorous; spreading; medium productivity; resistant to powdery mildew.

**September Ruby.** -Orig. at Morden, Manitoba, Agriculture Canada Research Station. Cross made by C.R. Ure; selected at Beaverlodge, Alberta; introduced by Prairie Fruit Breeding Coop. Committee in 1986. Rescue × Haralson; tested as PF36. Fruit: medium; round-oblate; skin bright red on light-green ground color; flesh greenish, moderately acid. Fruit is suitable for dessert and for juicing. Harvest in early September in the Canadian prairies. Tree: vigor moderate; annually productive; moderately susceptible to fire blight; hardy to zone 2A.

**Shamrock.** -Orig. in Summerland, B.C., by W.D. Lane and R.A. MacDonald, Agriculture Canada Res. Sta. Introd. in 1986. McIntosh 10C-8-43-1 (irradiated spur type) × Starkspur Golden Delicious; cross made by K. Lapins in 1970; selected in 1978; tested as 8C-1-15. Fruit: medium, about equal to Golden Delicious; shape round, slightly oval; color dark green with white lenticels, very similar to Granny Smith, attractive; sometimes a slightly brown-red color develops on the sun-exposed side; flesh juicy, firm, bruise-resistant; eating quality good, harvest 3 days before McIntosh. Storage life: at 0-3C keeps in good condition for 7 months. Tree: medium, smaller than McIntosh; compact, spurry growth habit; very precocious; moderately productive; bloom time early with McIntosh.

**Shizuka.** -Orig. in Kuroishi, Aomori, Japan in the breeding program of the Aomori Apple Res. Sta. Introd. by T. Murakami. Golden

Delicious × Indo. Plant pat. applied for. Fruit: very large, 450 g; skin yellow with pink blush; flesh fine-textured, sweeter than Mutsu, moderate acidity; harvest with Delicious; stores until April, longer than Mutsu. Tree: triploid, pollen not viable.

*Spur Criterion.* -See Par-Feet.

*Stark® Adina™.* -See Adina™.

**Starkspur® Ultra Red Delicious (Flanagan Delicious).** -Disc. in 1965 by Russell Flanagan, Thurmont, Md. Plant pat. 3557, 28 May 1974; assigned to Stark Bro's Nursery, Louisiana, Mo. Red-fruited limb mutation of Starking.

**State Fair.** -Orig. in St. Paul, Minn., by C. Stushnoff, S. Munson, L.B. Hertz, W. Gray, and D.K. Wildung, Univ. of Minnesota. Introd. in 1978. Mantet × Oriole; cross made in 1949; selected in 1959; tested as MN 1639. Fruit: medium, 65- mm diameter; skin 80% to 100% attractive bright red, glossy finish; round; flesh texture crisp, juicy; flavor moderately acid, sprightly, aromatic; ripens in early to mid-season; very long storage, long shelf life under Minnesota conditions, but not in Washington. Tree: moderately vigorous, round spreading; fully hardy, no cold injury following -40C; productive and precocious; no premature fruit drop; susceptible to apple scab, highly susceptible to fire blight.

**Sumac.** -Orig. in Summerland, B.C., by Agriculture Canada Res. Sta. breeding program. Complex pedigree, including Vista Bella and Jersey mac. Selected in 1968 and introd. in 1987. Tested as BC 9F-22-42. Fruit: small; color attractive; better quality than Vista Bella; summer apple, harvest 3 days before Vista Bella; storage life very short. Tree: good growth habit; more productive than Vista Bella.

**Summerdel (Applethorpe Summerdel).** -Orig. in Applethorpe, Queensland, Australia, by L.B. Baxter and A.D. McWate, Granite Belt Horticultural Research Station. Introd. in 1989. Delicious × Earliblaze: cross made in 1969 by C.W. Winks; tested as 64-111. Fruit: medium, 65-75 mm; globose to flat-globose, often lobed; skin 75% or more medium to cherry red with darker red overstripes; smooth, covered with thin waxy bloom, lenticels not conspicuous; slight stem-end russet; round to slightly conical; flesh creamy white to yellowish, coarse to medium, firm, juicy; flavor sweet subacid; aromatic. Ripens 2-3 weeks before Delicious; fruit hangs exceptionally well; shelf life about 14 days. Tree: vigor medium; mature size smaller and more compact than Delicious and Granny Smith; semi-spreading; precocious; production regular. Susceptible to scab and powdery mildew. Flowers just before and with Jonathan and Delicious.

**Sundowner.** -Orig. from breeding program of the Stoneville Res. Sta., Western Australia. Golden Delicious × Lady Williams. Introd. in 1979. U.S. rights assigned to Carlton Nursery, Dayton, Ore. Fruit: medium, up to 70 mm; shape oblong; skin color crimson, with pronounced white lenticels; flesh white, very firm; flavor sweet, tart, mildly aromatic; eating quality very good, harvest date very late, after Granny Smith; storage life up to 5 months; shelf life long. Tree: very vigorous, very productive; low chilling, 500 h; early bloom.

**Suntan (Mulling Suntan).** -Orig. from breeding program at East Malling Res. Sta., East Malling, Kent, England, by F.H. Alston and R. Watkins. Introd. in 1974. Protected by Plant Breeders' Rights. Cox's Grange Pippin × Court Pendu Plat; tested as A 1585. Fruit: 65 mm in diam. and larger; color orange red blush and stripes on a greenish golden ground, russet, appearance similar to Cox's Orange Pippin; shape slightly flattened, high acidity, fully aromatic flavor; high quality; ripens late; at 3.3C, stores well until late March, but subject to low-temperature breakdown at 1.7C. Tree: vigorous, spreading; high yields every year; triploid, pollen not viable; late flowering, 6 days later than Cox's Grange Pippin; avoids spring frost; can be pollinated by Golden Delicious and Kent; trees on M.7 roots not precocious.

**Super Chief™ Delicious.** -A mutation of Campbell Redchief Delicious. Plant pat. 6190, 31 May 1988; assigned to Van Well Nursery, Wenatchee, Wash. Fruit: stripe color pattern; color develops about 18 days before Campbell; shape long conic, typey; retains the qualities of Redchief Delicious. Tree: very compact spur habit; precocious.

**Sweet Sixteen.** -Orig. in St. Paul, Minn., by C. Stushnoff, S. Munson, L.B. Hertz, W. Gray, and D.K. Wildung, Univ. of Minnesota.

Introd. in 1979. MN 477 (Malinda open-pollinated) × Northern Spy; cross made by Alderman in 1937; selected in 1950; tested as MN 1630. Fruit: medium to large, 69-89 mm in diam.; shape round-conic; rosy red, attractive smooth finish; quality good with unique, pleasing flavor combined with high sugar, moderate acid, and crisp, fine-textured, juicy flesh; ripens early mid-season with McIntosh, good storage, handling and culinary properties. Tree: moderately vigorous, upright; very winter hardy, as hardy as McIntosh, consistently productive; much less subject to preharvest drop and bruising than McIntosh; resistant to fire blight; not highly susceptible to apple scab nor cedar apple rust.

**Swiss Gourmet™** (*Arlet*). -Orig. in Wadenswil, Switzerland, by B. Krapf and C. Papperswill, Swiss Federal Res. Sta. Introd. in 1984. Golden Delicious × Idared. U.S. plant pat. 6689, 1 Sept. 1989; assigned to TRECO®, Woodburn, Ore. Fruit: medium to large; 75% to 100% red, bright, striped, attractive, occasional russet; better color than Elstar; skin oily when over-mature; shape round to conic; flesh creamy white; texture, fine and firm; taste sweet, tart, very good, less acid than Elstar; harvest 10 days before Jonathan; storage life longer than Elstar. Tree: medium vigor, precocious; yields better than Elstar. Bloom season early to mid-season; diploid.

*Teple Red Empire*. -See Royal Empire.

**Telamon**. -Orig. at East Malling Res. Sta., East Malling, Kent, England. Introd. by K.R. Tobutt in 1989. Wijcik McIntosh × Golden Delicious. U.S. plant pat. 6224, July 1988. Fruit: medium; conical, regular; skin crimson; flesh firm; mild flavored; long storage life. Harvested a week or two after Cox's Orange Pippin. Tree: vigor and growth habit resemble Wijcik McIntosh; almost no lateral extension shoots; precocious; annually productive. Intended for home gardeners.

**Thome Empire™**. -Disc. at Thome Farms, Comstock Park, Mich. A whole-tree, red-fruited mutation of Empire; tested as TF 808. Fruit: fully colored 3 weeks before Empire; deep rich burgundy, slightly darker than Empire.

**Tift Spur Rome** -Orig. near Brewster, Wash., by Calvin L. Cooper. Discovered as a limb sport of Law Rome Beauty in orchard of Paul G. Tift. Plant pat. 7363, 23 Oct. 1990; assigned to TRECO®. Differs from Law Rome Beauty in that most axillary buds become fruit spurs, tree structure is more compact, the bourse is unusually enlarged, and the fruit is almost totally red, coloring several days earlier.

**Tom MacLean**. -Orig. in Margaretville, N.S. Parentage unknown, possibly an open-pollinated seedling of Red Astrachan. Fruit: most nearly resembles Mantet; medium to medium-small; globose; skin color bright red striped on light greenish-yellow ground; finish smooth, flesh creamy white, medium firm, subacid, sprightly, very good flavor. Ripens very early, with Close. Tree: medium-vigorous; upright spreading; precocious; hardy.

**Topspur Delicious** (*Kemp Delicious*). -Orig. near Royal Camp, Wash., by H.M. Kemp. A red-fruited limb mutation of Bisbee Delicious, discovered in 1973. Introd. in 1983. Plant pat. 5334, 13 Nov. 1989; assigned to C&O Nursery, Wenatchee, Wash.

**Trajan**. -Orig. from breeding program at East Malling Res. Sta., East Malling, Kent, England. Introd. by K.R. Tobutt in 1989. Golden Delicious × Wijcik McIntosh. U.S. plant pat. 6226, July 1988. Fruit: medium to medium-small; skin bicolored solid bright red and green; oval-conical; flesh crisp, juicy, sweet, pleasant. Harvested in mid-season, about with Cox's Orange Pippin. Can be kept in refrigerated storage for about 3 months. Tree: more vigorous than Wijcik McIntosh; produces some side shoots; strong biennial bearing tendency. Intended for home gardeners.

**Trent**. -Orig. by L.P.S. Spangelo, S.J. Leuty, and H.B. Heeney at Agriculture Canada Res. Sta., Ottawa, and Smithfield Experimental Farm, Trenton, Ont. Introd. in 1979. McIntosh × R18T40 [Jonathan × (Rome Beauty × *M. floribunda* 821 sib)]. Tested as Ottawa 531. Fruit: medium to large size; skin yellow; flesh moderately juicy, firm, cream-colored with greenish tinge, slightly coarse, moderately acid, processed fruit rated good for sauce and slices, fair for juice; susceptible to bitter pit; harvest late October, with Northern Spy; storage life 6 months at 2C. Tree: vigorous, semi-spreading; medium yield effi-

ciency; blooms 2 or 3 days after McIntosh, resistant to apple scab; susceptible to cedar apple rust; very susceptible to quince rust.

**Tsugaru**. -Orig. in Kuroishi, Aomori Prefecture, Japan, by the breeding program at the Aomori Apple Res. Sta. Introd. in 1975; Japanese Reg. No. P 277. Golden Delicious open-pollinated. Fruit: large 300-350 g; shape round; color with wide red stripes over yellow-green, not highly attractive; flesh firm, tender, subacid, mild, sweet flavor; juicy; harvest 3 weeks before Delicious; stores 2 months. Tree: preharvest drop.

**Tuscan**. -Orig. from breeding program at East Malling Res. Sta., East Malling, Kent, England. Introd. by K.R. Tobutt in 1989. Wijcik McIntosh × Greensleeves. U.S. plant pat. 6225, July 1988. Fruit: medium to medium-large; skin green with slight orange flush and traces of russet; shape rather irregular, oblong; flesh crisp, juicy, somewhat tart. Harvested early mid-season, 1 week or more before Cox's Orange Pippin. Storage season about 1 month. Tree: more vigorous than Wijcik McIntosh, produces side shoots.

**Vallee Spur Delicious™**. -Orig. near Prescott, Wash., by J.E. Valle. A mutation of Redchief Delicious (Campbell cultivar). Plant pat. 6702, 28 Mar. 1989; assigned to TRECO®, Woodburn, Ore., and to Cameron Nursery. Fruit: 100% red with fine stripes; color develops earlier than other Delicious strains. Tree: semi-dwarf, spur growth habit, heavy cropping.

**Williams' Pride**. --Orig. in West Lafayette, Ind., by a cooperative breeding program consisting of the Agr. Expt. Sta. of Indiana (J. Janick, F.H. Emerson, P.C. Pecknold, and J.A. Crosby) and Illinois (S.S. Korban and D.F. Dayton). Introd. in 1987. Plant pat. 6268; 6 Sept. 1988; assigned to Purdue Research Foundation, West Lafayette, Ind. PRI 1018 × NJ50; cross made in 1973; a sixth-generation derivative of C.S. Crandall's Rome × *M. floribunda* 821 sib cross. Pedigree includes Mollie's Delicious, Julyred, Jonathan, Melba, Red Rome, Wealthy, Starr, Rome Beauty, and *M. floribunda* 821. Selected in 1979 by E.B. Williams; named in his honor; tested as PRI 2845-1 and as Co-op 23. Fruit: medium-large, 74 mm in diam.; oblate to round, uniform shapes; skin ground color sap green, overcolor darkens to 90% ruby red, smooth, slightly waxy, no russeting; flesh light cream colored, medium grained, firm, crisp and juicy; flavor moderately subacid, slightly spicy, rich, quality excellent for the season; when stored at 1C quality and texture are retained 6 weeks.; a summer dessert apple, ripens 7-8 weeks before Delicious; requires more than one picking. Tree: vigorous, spreading; moderately heavy cropping; annual bearer; fruits hang well to tree after ripe; extended bloom period from very early to late mid-season; frost killing of blossoms less severe than Delicious, Jonathan, and Golden Delicious; immune to apple scab, apparently resistant to cedar apple rust, and moderately resistant to fire blight and powdery mildew; only slightly predisposed to bitter pit and water core.

**Yataka**. -Orig. near Masuda-town, Akita, Japan, by Tadao Hitaragi. An early ripening bud mutation of Fuji discovered in 1982. Registered in Japan in 1987. U.S. plant pat. 7001, 29 Aug. 1989; assigned to Pro Tree Nurseries, Brentwood, Calif. Matures 2-3 weeks earlier than Fuji; otherwise same as Fuji.

**Yoko**. -Orig. in Gunma Prefecture, Japan. Introd. in 1981; Japanese Reg. No. 129. Golden Delicious open-pollinated. Fruit: large, 300 g; shape round oval; color solid red with slight stripe, tendency to russet; flesh firm, white, sweet, slightly coarse; harvest late, 5 days after Mutsu; storage life excellent.

## ROOTSTOCKS FOR APPLES

James N. Cummins

**Bemali**. -Orig. at Balsgard, Sweden, by Viktor Trajkowski, Swedish Fruit Breeding Station. Introd. in 1974. Manks Codlin × Malling 4; cross made in 1948; tested as 10342, C204, and BM342. Plant pat. pending. Dwarfing in range of M.9 to M.26. Precocious and productive. Anchorage better than M.9, not as good as M.26. Moderately resistant to fire blight. Not yet tested in North American orchards. In the stoolbed, each mother plant generally produces four

or five rooted shoots; few spines; few root primordia on liners. More winter-hardy than M.9.

*Budagovsky 9*. -See Red-Leaved Paradise.

**Budagovsky 57-490** (*Bud.490*). -Orig. at Michurinsk, USSR, by V.I. Budagovsky, Michurinsk College of Agriculture. Red-Leaved Paradise (B9) × Bud. 13-14. A semi-vigorous clonal rootstock with winter hardiness similar to that of Common Antonovka. More precocious than MM.111, less so than MM.106. Some burrknots develop, usually less than on MM.111. Easily propagated by hardwood cuttings or in the stoolbed. Foliage bronze; wood, but not inner bark, red. No suckers. Susceptible to scab and powdery mildew. On an unbudded tree, most terminals carry fruit buds. Facultative parthenocarpic.

**Budagovsky 57-491** (*Bud. 491*). -Orig. at Michurinsk, USSR, by V.I. Budagovsky, Michurinsk College of Agriculture. A very dwarfing clonal rootstock with greater winter hardiness than Common Antonovka. Wood is very brittle; trees require firm, permanent support. Gives tree size control similar to M.27. Induces very early, very heavy fruiting. Wood is pink. Few burrknots. Propagated in stoolbeds. No suckers. Very susceptible to fire blight, woolly aphids; not resistant to *Phytophthora*.

**C6**. -Orig. at Louisiana, Mo., by Harry Guengerich, Stark Bro's Nurseries. Introduced in 1974. Selected from population of open-pollinated seedlings of Clark Dwarf (M.8) for use as dwarfing interstem tolerant of common latent viruses. Plant pat. 3057, 10 Aug. 1971; assigned to Stark Bros. Nurseries. Tree size control similar to that of M.9 when used as interstock or as rootstock. Less brittle than M.9; similar in susceptibility to fire blight and woolly aphids. Tolerant of common latent viruses. Induces early, heavy production. Very few suckers and burrknots. Compatible with wide range of cultivars.

**Jork 9** (*J9*). -Orig. at Jork, Germany, by K.-H. Tiemann and H.-J. Dammann, Fruit Tree Research Station. Introduced as a clonal rootstock in 1981. Selected from population of open-pollinated seedlings of M.9. Compared to M.26, J9 is slightly more dwarfing, induces heavier production, and is more brittle. Suckers are rare. Permanent support is required. Extremely susceptible to fire blight and to woolly aphids; susceptible to scab and to powdery mildew. Somewhat more winter hardy than M.9, less hardy than M.11. Root primordia are conspicuous on 2-year-old wood; many burrknots develop in the orchard; radial growth of burrknots is very rapid and girdling may occur. In the stoolbed, J9 is easily propagated, very productive of clean-shanked liners.

*MAC-9*. -See Mark.

**Mark** (*MAC-9*). -Orig. in East Lansing, Mich., by R.F. Carlson. Introduced in 1979. Plant pat. 4678, 5 Nov. 1979; assigned to Michigan State Univ., sublicensed to TRECO®. M.9 open-pollinated, selected in 1959. Compared to M.26, Mark is slightly more dwarfing, more precocious, more productive, better anchored, and somewhat less sensitive to fire blight. In limited orchard testing, Mark has been more winter hardy than M-7, MM.106, and MM.111. Tolerant of *Phytophthora*; susceptible to fire blight, woolly apple aphids. Tolerant of heavy soils; irrigation required on light sands. Mark appears to be tolerant of common latent viruses. In the nursery, staking of budlings is recommended to prevent blowouts; scions defoliate early, permitting early digging. Moderate numbers of burrknots initially, but rapid radial extension may result in girdling. Readily propagable in stoolbeds and by micropropagation.

**Maruba-kaido N-1**. -A clonal selection of the weeping form of Maruba-kaido (*Malus prunifolia ringo*), the standard vigorous rootstock of Japan. Semi-vigorous, hardy, resistant to woolly aphids and *Phytophthora*. Greatest potential value appears to be as rootstock to support interstem system. Tolerant of both drought and water-logging. Sensitive to common latent viruses.

**Nertschinsk**. -Orig. in Morden, Manitoba, by C.R. Ure. *Malus baccata* open-pollinated; selected in 1961. Valuable as a dwarfing interstem that is tolerant of extremely low midwinter temperatures. Very susceptible to fire blight. Very early budbreak. Virus sensitivities unknown.

**Novole**. -Orig. in Geneva, N.Y., by J.N. Cummins, H.S. Aldwinckle, and R. Byers. Selected from a population of *Malus prunifolia* open-pollinated seedlings; putative pollen parent is *M. sieboldii*;

tested as NY613. Plant pat. 5333, 13 Nov. 1984. Introduced in 1983 as a clonal trunk and rootstock nonpreferred by pine and meadow voles; both vole species consistently reject Novole tissue in free-choice tests. Not tested with related vole species. Novole is resistant to *Phytophthora cactorum* and apple scab, and moderately resistant to powdery mildew. Very sensitive to apple stem grooving virus. Propagated easily in the stoolbed, by hardwoodcuttings, and by micropropagation. Burrknots are absent. Scion cultivars grafted directly on Novole produce very large, productive trees. When a 20-cm virus-free dwarfing interstem is high-worked at ≈ 40-50 cm above soil level, a very productive dwarfed tree results. As a scion variety, Novole produces many white flowers over a period of 7-9 days beginning 2 days after king blossom opening of Delicious and just before Golden Delicious; pollen is abundant and flowers are attractive to bees.

**Ottawa 3**. -Orig. in Ottawa, Ont., by Lloyd Spangelo, S.O. Fejer, S.J. Leuty and R.L. Granger, Agriculture Canada Res. Sta. Introduced in 1974 as a hardy dwarfing rootstock. Not patented. Malling 9 × Robin Crab. Used either as a rootstock or interstock, slightly less dwarfing than M.9, more dwarfing than M.26. Non-brittle. Liners are sturdy, completely free of spines. Unusually large leaves. Micropropagation is efficient; very poor rooting in stoolbed; can be propagated by root cuttings. Induces very early, very efficient fruit production. Produces no burrknots, no suckers. More winter hardy than M.26. Very resistant to *Phytophthora* spp.; susceptible to fire blight and to woolly aphids. Sensitive to apple stem grooving virus. A highly useful parent in rootstock breeding; transmits *Phytophthora* resistance, dwarfing capacity, freedom from spines, and distinctive large leaves; each five-carpelled fruit produces 25 to 35 viable seeds.

**P.1**. -Orig. in Skierniewicz, Poland, by S. Zagaja and A. Czyczyk, Res. Inst. of Pomology. M.4 × Common Antonovka. A clonal rootstock slightly less dwarfing than M.26. Slightly less winter hardy than Common Antonovka. Many small burrknots are produced just below graft union; subsequent coalescence may result in girdling. No suckers. Good anchorage. Very easily propagated in stoolbed. Moderately susceptible to fire blight, *Phytophthora*, and woolly aphids.

**P.2**. -Orig. in Skierniewicz, Poland, by S. Zagaja and A. Czyczyk, Res. Inst. of Pomology. M.9 × Common Antonovka. A clonal rootstock about as dwarfing as M.26. Slightly less winter hardy than Common Antonovka. Burrknots are rare. Induces very early, heavy fruiting. Stoolbed propagation is satisfactory. Late budbreak. Moderately susceptible to fire blight; susceptible to woolly aphids; resistant to *Phytophthora*. May be susceptible to tomato ringspot virus.

**P.22**. -Orig. in Skierniewicz, Poland, by S. Zagaja and A. Czyczyk, Res. Inst. of Pomology. M.9 × Common Antonovka. A clonal rootstock about as dwarfing as M.27. Slightly less winter hardy than Common Antonovka. Induces very early, heavy fruiting. Burrknots are rare. Late budbreak. No suckers. Moderately susceptible to fire blight; very susceptible to woolly aphids; resistant to *Phytophthora*.

**Red-Leaved Paradise** (*Budagovsky 9, Bud. 9, B9*). -Orig. in Michurinsk, USSR, by V.I. Budagovsky, Michurinsk College of Agriculture. Introduced in 1946 as a very dwarfing rootstock; very useful as dwarfing interstock. M.8 × Red Standard. Not patented. Slightly more dwarfing than M.9. Not as brittle as M.8. Red wood. Trees on Red-Leaved Paradise bear early, heavily. Anchorage fair. Susc. to fire blight, woolly aphids; very resistant to *Phytophthora*. Tolerant of common latent viruses. Fair stoolbed subject. Suckers and burrknots are rare. Slightly more winter hardy than M.26.

**YP**. -Orig. in Piikkiö, Finland, by J. Säkö, Agr. Res. Center, Dept. of Horticulture. Introduced in 1977. *Malus baccata* open-pollinated; tested as Mb 4. Clonal rootstock, fairly easily propagated in stoolbed; easily raised by softwood cuttings and root cuttings. Vigorous, similar to Alnarp 2. Induces early fruiting and very good level of productivity in scion variety. Compatible with broad spectrum of scion varieties. Much more winter hardy than either Alnarp 2 or M.26; induces early dormancy in scion. Leaf fall early; budbreak early.

## APRICOT

R. E. C. Layne and D. W. Cain

**Flameburst™** (*Suapritwo*). -Orig. in Fresno, Calif., by John Weinberger, Superior Farming Co. Introduced in 1987. Plant pat. pending; assigned to Superior Farming Co. Annabelle × open-pollinated seedling of Lulubelle. Fruit: medium to large; round to slightly oblong; skin bright red blush on orange background, flesh bright orange, medium firm, juicy; excellent eating quality, superior to Castlebrite. Ripens 7-10 days after Castlebrite. Pollen-sterile. Tree: vigorous; productive. Suitable for fresh-market shipping.

**Flavor Giant**. -Orig. in Modesto, Calif., by Floyd Gary, and Grant Zaiger and Leith Gardner. Introduced in 1984. (Seedling of Flaming Gold) × King Cot; tested as 48-G-472. Plant pat. 5308, 30 Oct. 1984; assigned to Zaiger's Genetics. Fruit: large; globose; skin yellow; flesh dark yellow, firm; mild flavor. Tree: vigorous; upright; productive.

**Goldbar**. -Orig. in Prosser, Wash., by T.K. Toyama, Irrigated Agr. Res. and Ext. Center, Washington State Univ. Introduced in 1989. Plant pat. pending; assigned to Washington State Univ. Goldrich × Blenril. Cross made in 1972; selected in 1976; tested as PA 7201-1. Fruit: very large; sides slightly compressed; skin light orange with reddish-purple blush covering 20% of surface; flesh orange, moderately juicy, firm; quality fair; ripens 2 weeks before Wenatchee at Prosser; for fresh market. Tree: vigorous. Flowers require cross-pollination; Goldrich, Perfection, and Goldstrike are effective pollinizers.

**Goldstrike**. -Orig. in Prosser, Wash., by T.K. Toyama, Irrigated Agr. Res. and Ext. Center, Washington State Univ. Introduced in 1989. Plant pat. pending; assigned to Washington State Univ. Goldrich × (Earlirl × Blenril). Cross made in 1972; selected in 1975; tested as PA 7221-1. Fruit: very large; round to oval; skin 20% reddish purple blush on light orange background; flesh orange, firm, moderately juicy; quality fair; ripens 2 weeks before Wenatchee at Prosser; for fresh market. Tree: vigorous. Flowers require cross-pollination; Goldrich, Perfection, Rival, and Goldbar are effective pollinizers.

**Harogem**. -Orig. in Harrow, Ont., by R.E.C. Layne, Agr. Canada Res. Sta. Introduced in 1979. Rouge du Roussillon × NJA 2 (Morden 604 open-pollinated). Cross made by L.F. Hough and C.H. Bailey, Rutgers Univ., in 1963; selected by Layne at Harrow in 1969; tested as HW405. Fruit: medium; ovate, compressed sides; skin 60% glossy red blush on bright orange background, exceptionally attractive; flesh orange, exceptionally firm, moderately juicy, good texture; good flavor; freestone; ripens July 30 at Harrow; for fresh market. Tree: vigor medium; spreading; consistently productive; medium hardy like Veecot. Resistant to brown rot, *Leucostoma* canker, skin cracking, and preharvest drop; moderately susceptible to bacterial spot.

**Harval**. -Orig. in Harrow, Ont., by R.E.C. Layne, Agr. Canada Res. Sta. Introduced in 1989. Veecot × HW435 [Rouge du Roussillon × NJA 2 (Morden 604 open-pollinated)]. Cross made in 1969; selected in 1974; tested as HW437. Fruit: medium to large; skin 30% red blush on orange background, attractive; flesh orange, very firm; good quality; freestone; ripens 3 Aug. at Harrow; for late-season fresh market and home canning. Resistant to bacterial spot, *Leucostoma* canker, skin cracking and preharvest drop; fruit and spurs moderately susceptible to brown rot.

**Jersecot**. -Orig. in Cream Ridge, N.J., by S.A. Mehlenbacher, L.F. Hough, and C.H. Bailey, New Jersey Agr. Expt. Sta. Introduced in 1986. RR18-64 × CR3-135; pedigree includes Scout, McClure, Perfection, and Phelps. Cross made in 1970; selected in 1977; tested as NJA44. Fruit: medium; round; skin pale orange with no blush; flesh bright orange, sweet, juicy, soft, good quality, with distinctive cantaloupe aroma; usually freestone; ripens early, 2 weeks before Goldcot at Cream Ridge; for U-pick and roadside markets. Pit: medium; tan; surface grainy; kernel bitter. Tree: upright to spreading; unusually consistent cropper; cold hardy in New Jersey. Blossom time early, 1 day before Veecot. Resistant to bacterial spot; moderately resistant to brown rot and skin cracking; *Leucostoma* cankers have not been observed.

**Puget Gold**. -Orig. in Anacortes, Wash., by R.A. Norton, J. King, and G.A. Moulton, Northwestern Washington Res. and Ext. Center,

Mt. Vernon. Introduced in 1987. Chance seedling of unknown parentage, discovered by Jean Copeland. Fruit: medium; roundish ovate; skin light red to red-orange blush on clear yellow background; flesh deep yellow-orange, firm, sweet; freestone; ripens about 8 Aug. at Mt. Vernon, Wash., 1 week later than Rival; for home gardens. Tree: moderate to low vigor; spreading; prolific and consistent cropper; partially self-fruitful. Blooms prolifically, 3 days before Skaha. Tolerant to brown rot, *Corneum* blight, and blossom blight caused by *Pseudomonas syringae*. Particularly adapted to a cool, maritime climate.

**Southerner** (*Suaprione*). -Orig. in Fresno, Calif., by John Garabedian. Introduced in 1971. Plantpat. 3345, 22 May 1973; assigned to Superior Farming Co.; trademarked "Southerner." Blenheim-Royal open-pollinated. Fruit: large; flesh apricot yellow, firm; ripens 30 days before Blenheim-Royal, which it resembles. Well-adapted to shipping.

*Suaprione*. -See Southerner.

*Suapritwo*. -See Flameburst.

**Tomcot**. -Orig. in Prosser, Wash., by T.K. Toyama, Irrigated Agr. Res. and Ext. Center, Washington State Univ. Introduced in 1989. Plant pat. pending; assigned to Washington State Univ. Rival × P63-265 (Goldrich open-pollinated). Cross made in 1970; selected in 1974; tested as PA 7005-8. Fruit: large; oval to round; skin has trace of blush on light orange background, attractive; flesh light orange, firm, moderately juicy; quality very good, ripens very early, 18 days before Wenatchee at Prosser; for fresh market. Tree: vigorous; blooms early, 2 or 3 days before Wenatchee; flowers partially self-fertile.

**Tri-Gems**. -Orig. in Modesto, Calif., by Floyd Gary, and Grant Zaiger and Leith Gardner, Modesto, Calif. Introduced in 1989. Open-pollinated seedling of Flaming Gold. Plant pat. 6755, 25 Apr. 1989; assigned to Zaiger's Genetics. Fruit: medium; globose; skin apricot yellow; flesh butter-yellow, very firm; flavor subacid, mild. Tree: vigorous; semi-spreading; productive.

**Velvago**. -Orig. in Vineland Station, Ont., by O.A. Bradt and E.T. Andersen, Hort. Res. Inst. of Ont. Introduced in 1978. Veecot × Farmingdale. Cross made in 1960; selected in 1968; tested as V60091. Fruit: medium; skin light red blush on bright orange background; flesh orange; flavor fair to good, freestone; ripens uniformly with Goldcot in last week of July at Vineland Station. Tree: vigorous; spreading; productive. Moderately resistant to bacterial spot, brown rot and *Leucostoma* canker; resistant to preharvest drop and to skin cracking.

**Vivagold**. -Orig. in Vineland Station, Ont., by O.A. Bradt and E.T. Andersen, Hort. Res. Inst. of Ont. Introduced in 1978. Veecot × V49024 (Geneva × Gibb). Cross made in 1960; selected in 1965; tested as V60102. Fruit: medium; skin bright orange, attractive; flesh orange, somewhat dry; flavor good, freestone; ripens 1 week after Veecot at Vineland Station; for fresh market and home canning. Tree: moderately vigorous; spreading; moderately productive. Resistant to skin cracking and preharvest drop; moderately resistant to brown rot and bacterial spot.

**Westcot**. -Orig. in Morden, Manitoba, by L. Kerr, Agr. Canada Res. Sta. Introduced in 1982. (Scout open-pollinated) × (McLure open-pollinated). Fruit: medium; ovate; skin light reddish blush on yellow-orange background, flesh orange, smooth, juicy, sweet; flavor mild; freestone. Tree: vigor moderate; tree shape irregular; cold hardy; more bud-hardy than Scout or Morden 604; medium productivity (but best in very cold locations). At Morden, flowers 25 Apr. to 15 May; fruit ripens 7 to 15 July.

## ROOTSTOCKS FOR APRICOTS

J. N. Cummins and Tom Beckman

*Avimag*. -See Cadaman®.

**Cadaman®** (*Avimag*). -Not compatible.

**Citation**. -See under Peaches. Apricot trees dwarfed by 20% to 30%.

*Ferciana*. -See Ishtara®.

**GF 31**. -Orig. in Pont-de-la-Maye, near Bordeaux, France, by R. Bernhard, INRA Fruit Research Station. Sel. from a *Prunus cerasifera*

× *P. japonica* cross. Intro. as avigorous, productive stock for apricots. Compatible with very broad range of apricot varieties. Tolerant of high soil moisture and high calcium. Very susceptible to verticillium.

GF 677. -See under Peaches. Compatible under Bergeron, Luizet, Paviot, and Polonais, but incompatible with most varieties.

**Hansen 536.** -See under Almonds. Incompatible.

**Hansen 2168.** -See under Almonds. Incompatible.

**Ishtara®** (*Ferciana*). -See under Plums. Semidwarfing. Induces early, heavy fruiting of Bergeron; compatible with most varieties, including those of the Roussillon group. Anchorage not as good as that of Myran.

**Marianna GF 8-1.** -See under Plums. Not widely tested under apricots; known to be compatible under some, but not all, varieties.

**Mr.S.2/5.** -See under Peaches. Compatible with apricot.

**Myran®** -See under Peaches. Suitable as a vigorous rootstock for certain apricot varieties.

**Nemared.** -See under Peaches. Compatible with apricot.

## BLACKBERRY

James N. Moore

**Chester Thornless.** -Orig. in Carbondale, Ill., by J.W. Hull, USDA and Southern Illinois Univ. Introduced in 1985. SIUS × Thornfree; cross made in 1968; tested as SIUS 68-6-17. Fruit: large, high quality, v. firm; does not soften or lose color in hot weather. Ripens late, with Thornfree. Plant: vigorous, semi-trailing thornless canes, very productive, cold hardy. Most resistant of eastern U.S. thornless blackberries to cane blight. Propagates readily by tip layering, softwood cuttings or micropropagation.

**Choctaw.** -Orig. in Fayetteville, Ark., by J.N. Moore and J.R. Clark, Dept. of Horticulture, Univ. of Arkansas. Introduced in 1988. (Darrow × Brazos) × Rosborough; cross made in 1975; selected in 1978; tested as Ark. 876. U.S. Plant pat. 6678, 21 Mar. 1989; assigned to Univ. of Arkansas. Fruit: medium large (5.7 g), short conic, glossy black, similar in firmness to Shawnee, good flavor, small seed size. Fruit ripens very early, 2 weeks before Shawnee. Plant: very erect, very prolific, thorned, produces canes from root cuttings; very productive in warm winter locations. Immune to orange rust, moderately resistant to anthracnose, moderately susceptible to powdery mildew, susceptible to rosette, hardy to -20C.

**Ebano.** -Orig. in Pelotas, Brazil, by Maria do Carmo M. Bassols and James N. Moore, UEPAE de Cascata and Univ. of Arkansas. Introduced 1981. F<sub>2</sub> of Comanche × (Thornfree × Brazos); cross made in 1972; selected in 1975; tested as Black 44. Fruit: glossy black, medium large (5.0-6.5 g), firm, seeds smaller than Thornfree, good fresh and processed quality. Ripens very late, 40 days after Brazos. Excellent quality for production of jams, jellies, yogurt, and ice cream. Plants: canes semi-erect, genetically thornless, vigorous, productive, adapted to mild winter climates (<400 h chilling).

**Illini Hardy.** -Orig. in Urbana, Ill., by Robert M. Skirvin, Univ. of Illinois. Introduced in 1990. NY95 × Chester; tested as Ill. 4-1. Plant pat. pending. Fruit: medium size, elliptical, shiny black, good flavor, resembles Darrow. Plant: very vigorous, erect thorny canes, late ripening, very cold hardy (to -29C).

**Kotata.** -Orig. in Corvallis, Ore., by George Waldo, USDA and Oregon State Univ. Introduced in 1984. (Pacific × Boysen) × (Jenner-1 × Eldorado); selected in 1950; tested as OR-US 1050. Fruit: large, equal to Marion in size; glossy black, attractive; easily detached, firmer than Marion or Boysen, good shelf life, good flavor. Superior for fresh shipping. Plant: vigorous thorny trailing canes, yields equal Marion in most years, as resistant to cane and leaf as Marion and more winter hardy than Marion or Boysen.

**Navaho.** -Orig. in Fayetteville, Ark., by J.N. Moore and J.R. Clark, Dept. of Hort., Univ. of Arkansas. Introduced in 1988. (Thornfree × Brazos) × (Ark. 550 × Cherokee); cross made in 1977; selected in 1980; tested as Ark. 1172. U.S. plant pat. 6679; 21 Mar. 1989; assigned to Univ. of Arkansas. Fruit: medium (5.0 g); short conic, glossy black, very firm; stores well; high soluble solids, excellent flavor fresh and processed. Fruit ripens late, 7 days after Shawnee. Plants: genetically

thornless, erect canes; suckers poorly from roots; not as productive as Shawnee. Plants and fruit moderately resistant to anthracnose; orange rust has been observed in one location; reaction to rosette not known. Plants have shown good cold hardiness to -25C.

**Perron's Black.** -Orig. in Quebec, Canada, by W.H. Perron & Co., Ltd. Introduced in 1987. Selected from wild *Rubus canadensis* on the Appalachian plateau of southern Quebec. Fruit: black, slightly conical, 30 × 20 mm, high sugar content, aromatic. Plants: thornless, trailing canes, vigorous, no suckering, cold hardy.

**Shawnee.** -Orig. in Fayetteville, Ark., by J.N. Moore, W.A. Sis-trunk, and J.B. Buckley, Dept. of Hort., Univ. of Arkansas. Introduced in 1984. Cherokee × (Thornfree × Brazos); cross made in 1971; selected in 1974; tested as Ark. 730. U.S. plant pat. 5686; 11 Mar. 1986; assigned to Univ. of Arkansas. Fruit: very large (7.7 g); maintains size through season; shiny black; medium firm; good flavor. Plant: late ripening, long harvest period, very productive, thorned canes, very erect cane growth, vigorous, prolific, produces canes readily from root cuttings. Immune to orange rust, moderately resistant to anthracnose, susceptible to rosette, hardy to -23C.

**Silvan.** -Orig. in Victoria, Australia, by G.R. McGregor and K.H. Kroon, Research Inst., Dept. Agr., Victoria. Introduced in 1984. U.S. Ore 742 × Marion; seed obtained from G.F. Waldo in 1952; selected in 1964. Fruit: shiny purple black; 6-8 g; softens after harvest; excellent flavor, sweeter and less acid than Boysen, Marion, and Young; ripens 2 weeks earlier than Marion. Plants: primocanes trailing, densely armed, vigorous, high-yielding. Tolerant to anthracnose and crown gall and stress tolerant to wind, drought, and heavy soils. Cold hardiness has not been evaluated.

**Waldo.** -Orig. in Corvallis, Ore., by F.J. Lawrence, USDA and Oregon State Univ. Introduced in 1989. ORUS 1122 × ORUS 1367; selected in 1976; tested as ORUS 2031. Fruit: large, equal in size to Marion; firmer than Marion; glossy black; good shelf life; good quality fresh and processed. Plant: thornless, growth habit similar to Evergreen, moderately vigorous, yields high (9-12 t-ha<sup>-1</sup> in Oregon), more resistant to cane and leaf spot than Marion or Boysen, hardiness unknown.

## BLUEBERRY

Paul Lyrene

**Baldwin.** -Orig. in Tifton, Ga., by M.E. Austin, Univ. of Georgia, and A. D. Draper, USDA. Introduced in 1985. Tifblue × GA 6-40 (Myers × Black Giant); tested as T-117. Fruit: medium; skin dark blue; scar small; medium firm; good flavor. Very productive, late-ripening rabbiteye blueberry (*V. ashei*). Chilling requirement 450-500 h. Intended primarily for pick-your-own because of long ripening period.

**Bluegold.** -Orig. at Beltsville, Md., by A.D. Draper. Introduced in 1988. Bluehaven × ME-US-5 (Ashworth × Bluecrop), *V. corymbosum*. Selected in 1972 in Weymouth, N.J., by A.D. Draper, D.H. Scott, and G. Jelenkovic from cross made in 1968; evaluated by N. Vorsa and G.J. Galletta as G-355. Fruit: good blue color; good scar; firm; quality good; late ripening, with Jersey. Bush vigorous, low-growing, highly productive.

**Blue Ridge.** -Orig. at White Lake, N.C., by G.J. Galletta and A.D. Draper. Introduced in 1987. Southern highbush, mainly *V. corymbosum*. Patriot × US 74 (*V. darrowi* cv. Fla. 4B × Bluecrop). Selected in 1975; tested as NC 1440 by J.R. Ballington, C.M. Mainland, S.D. Duke, and A.D. Draper. Fruit: medium large; excellent color, firmness, and flavor; picking scar fair to poor. Ripens early midseason to midseason. Plant vigorous, erect, widely adapted. Chilling requirement 500-600 h. Susceptible to cane canker and mummy berry. Field tolerant to stem blight.

**Bonita.** -Originated in Gainesville, Fla., by P.M. Lyrene and W.B. Sherman. Introduced in 1985. Beckyblue open-pollinated; *V. ashei*. Fruit: medium-large; light blue; excellent scar; firm; flavor tart until fully ripe. Early ripening, mechanically harvestable rabbiteye blueberry. Self-incompatible. Moderately susceptible to *Phytophthora* root rot. Chilling requirement same as for Climax.

**Bounty.** -Orig. at Cypress Creek, N.C., by G.J. Galletta and A.D. Draper. Tested as NC 1074; *V. corymbosum*. Introduced in 1987. Murphy

× G-125. Selected in 1970; tested by J.R. Ballington, C.M. Mainland, S.D. Duke, A.D. Draper, and G.J. Galletta. Fruit: very large; color, stem scar and firmness above-average; good flavor; ripens early midseason to midseason. Bush: consistently productive; field tolerance to cane canker and stem blight.

**Cape Fear.** -Orig. at Castle Hayne, N.C., by G.J. Galletta and A.D. Draper. Southern highbush mainly *V. corymbosum*. US 75 (*V. darrowi* Fla. 4B × Bluecrop) × Patriot. Selected in 1975; tested as NC 1525 by J.R. Ballington, C.M. Mainland, S.D. Duke, and A.D. Draper. Fruit very large; good color, scar, and firmness. Bush: Precocious; productive; vigorous; semi-upright. Roots readily from cuttings. Susceptible to cane canker; field resistant to stem blight. Chilling requirement 500-600 h.

**Chaucer.** -Orig. in Gainesville, Fla., by P.M. Lyrene and W.B. Sherman. Introduced in 1985. *V. ashei*. Berry: light blue; medium firm; flavor good; poor scar limits shipping potential. Early ripening. Self-incompatible. No major disease problems other than those affecting all rabbiteyes. Low chilling.

**Choice.** -Orig. in Gainesville, Fla., by P.M. Lyrene and W.B. Sherman. Introduced in 1985. *V. ashei*. Fruit: light blue; excellent scar; firm; very good flavor. Late ripening; machine-harvestable. Self-incompatible. Somewhat susceptible to *Phytophthora* root rot. Chilling requirement similar to Tifblue.

**Cooper.** -Orig. at Poplarville, Miss., by J.M. Spiers and A.D. Draper. Southern highbush, mainly *V. corymbosum*. Introduced in 1987. G-180 (*V. corymbosum*) × US 75 (*V. darrowi* Fla. 4B × Bluecrop). Selected in 1977; tested as MS-78. Fruit: good color, firmness, scar, and flavor. Early ripening. Low chilling. Moderately productive.

**Duke.** -Orig. in Weymouth, N.J., by A. Draper, G. Galletta, G. Jelenkovic, and N. Vorsa. *Vaccinium corymbosum*. Introduced in 1987. G-100 (Ivanhoe × Earliblue) × 192-8 [(Berkeley × Earliblue) × (Coville × Atlantic)]. Selected in 1972; tested as G-354. Fruit: medium; scars small, dry; good color; firm; flavor mild, good shipping quality. Early ripening. Plant: vigorous; upright; consistently productive; canes numerous, stocky, moderately branched, high chilling requirement. Flowers late, after Weymouth, with Bluecrop.

**Georgiagem.** -Orig. in Tifton, Ga., by M.E. Austin and A.D. Draper. Southern highbush, mainly *V. corymbosum*. Introduced in 1987. G-132 × US-75; about 25% *V. darrowi*; pedigree includes Ashworth, Earliblue, and Bluecrop. Cross made in 1972; selected in 1977; tested as TH-285. Very good fruit color and quality; small stem scar; firm; pleasant flavor; early ripening. Low chilling, requiring at least 350 h below 7°C; tolerant of climate of southeastern U.S.; diseases have not been problem. Easy rooting. Bush: moderately vigorous; moderately productive; semi-upright.

**Gulfcoast.** -Orig. at Poplarville, Miss., by J.M. Spiers and A.D. Draper. Southern highbush, mainly *V. corymbosum*. Introduced in 1987. G-180 (*V. corymbosum*) × US75 (*V. darrowi* × Bluecrop). Tested as MS-90. Good fruit color, scar, firmness, and flavor. Early ripening. Low chilling.

**Nelson.** -Orig. at Weymouth, N.J., in 1965 by A.D. Draper and D.H. Scott. *V. corymbosum*. Introduced in 1988. Bluecrop × G-107 (F-72 × Berkeley). Tested as G-351 by N. Vorsa, G. Jelenkovic, and G.J. Galletta. Fruit: light blue; firm; high quality. Late ripening. Bush: vigorous; productive.

**Northcountry.** -Orig. in Becker, Minn., by J. Luby, D. Wildung, C. Stushnoff, S. Munson, P. Read, and E. Hoover. Introduced in 1986. B6(G65 × Ashworth) × R2P4 (open-pollinated seed from *V. corymbosum* × *V. angustifolium* hybrids). Tested as MN 350. Fruit: average weight 0.8 g; soft; scar small; flavor similar to *V. angustifolium*. Cold hardy and productive. Intermediate between highbush and lowbush in many characters.

**O'Neal.** -Orig. in Castle Hayne, N.C., by G.J. Galletta and A.D. Draper. Introduced in 1987. Wolcott × Fla. 4-15; southern highbush, mainly *V. corymbosum*; contains some genes from *V. angustifolium* *V. ashei*, and *V. darrowi*. Selected in 1970; tested as NC 1688 by J.R. Ballington, C.M. Mainland, S.D. Duke, and A.D. Draper. Fruit: large, with good color, scar, firmness, and flavor; early ripening. Bush: productive; vigorous; semi-upright; widely adapted. Low chilling, 400 h. Resistant to stem canker race 1.

**Reveille.** -Orig. at Castle Hayne, N.C., by J.R. Ballington. Introduced in 1990. Southern highbush, mainly *V. corymbosum*. NC 1171 (G111 (Bluecrop × Berkeley) × Fla. 61-7 [O.P. seedling of US39 × (*V. corymbosum* × *V. darrowi*)] × NC SF-12-L [Ivanhoe × NC 297 (Weymouth × Crabbe-4)]. Selected in 1979; tested as NC 2054 by J.R. Ballington, S.D. Duke, and C.M. Mainland. Fruit: small to medium; light blue color; good picking scar; good quality; excellent firmness; slightly earlier ripening than O'Neal or Wolcott. Bush: excellent vigor and precocity; good productivity; narrowly erect habit; broad soil adaptation; resistant to stem canker; some field tolerance to stem blight. Chilling requirement 600-800 h. Adapted to mechanical harvesting for fresh and processing markets.

**Sierra.** -Orig. at Beltsville, Md., in 1980 by A.D. Draper and G. Jelenkovic. Introduced in 1988. US 169 × G-156; US 169 originated by self-pollination of a pentaploid hybrid obtained by crossing diploid *V. darrowi* clone Fla. 4B × US56, a hexaploid *V. ashei*-*V. constablaei* hybrid; G-156 is a highbush selection (*V. corymbosum*). Cross made in 1976; selected at Weymouth, N.J., in 1980; evaluated as G-640 by N. Vorsa and G. Galletta. Fruit: medium; medium-blue color; firm; small scar; very good quality; midseason. Bush: vigorous; productive; upright. High chilling.

**Sunrise.** -Orig. in Beltsville, Md., by A.D. Draper. Introduced in 1988. Mainly *V. corymbosum*, but with some *V. angustifolium*. From a G180 × ME-US 6620 cross made in 1974. Selected in 1978; tested as G482. Fruit: medium-blue color; good scar; firm; high quality; early ripening, with Bluetta. Bush: moderately vigorous, taller than Bluetta; medium yields.

**Toro.** -Orig. at Weymouth, N. J., by A.D. Draper, D.H. Scott, and G. Jelenkovic. Introduced in 1987. (*V. corymbosum*). Earliblue × Ivanhoe; cross made by Draper at Beltsville, Md., in 1969; selected in 1972 in N.J.; evaluated by N. Vorsa and G.J. Galletta as G-360. Fruit: good scar, color, firmness, and flavor. Concentrated ripening in Bluecrop season. High-chill, upright, vigorous plant with consistent high yields.

## CHERRY

**Brooks.** -Orig. at Wolfskill Ranch, Univ. of California, Davis, by P.E. Hansche, W. Beres, J. Doyle, and W.C. Micke. Introduced in 1988. Rainier × Early Burlat. Plant pat. 6676, 14 Mar. 1989; assigned to Regents of Univ. of California. Fruit: large; skin dark burgundy red, occasionally some streaking and mottling over basal shoulders; flesh color variable with rays and streaks of red and pink, firm; numerous fibers; nearly freestone without air space; susceptible to rain cracking. Flavor exceptional, sweet, well-balanced, rich; not aromatic; overall quality outstanding. Ripens midway between Early Burlat and Bing; fruit hangs well on tree. Tree slightly smaller than most sweet cherries; upright to upright spreading; hardy in San Joaquin Valley; very productive; annual bearing. Bloom date between Early Burlat and Bing.

**Tulare.** -Orig. in LeGrand, Calif., by Norman G. and Lowell G. Bradford. Introduced in 1988. Open-pollinated seedling of an open-pollinated seedling of Bing. Plant pat. 6407, 22 Nov. 1988. Fruit: skin red. In central California, ripens in 2nd week of May, 5 days before Bing.

## ROOTSTOCKS FOR CHERRIES

### J. N. Cummins and Tom Beckman

**Camil (GM.79).** -Orig. at Kalmthout, Belgium, by P. Monin and R. Trefois, Fruit & Nut Research Station, Gembloux. Introduced in 1986. A *Prunus canescens* selection of unknown provenance. Original selection in 1964; tested as 3-8-K. Plant pat. 5802, 18 Nov. 1986; assigned to TRECO®, Woodburn, Ore. A semi-dwarfing rootstock for sweet cherries and tart cherries; tree size is reduced by about one-third compared to F12/1. Induces fruiting of sweetcherries earlier than does mazzard; Montmorency fruiting begins 1 year later than trees on mahaleb. Very susceptible to *Phytophthora cambivora*, *P. dreschleri*, and *P. megasperma*. Resistant to cherry leafspot. Readily propagated by greenwood cuttings and in micropropagation. Ungrafted tree is moderately vigorous, drooping habit.

**Charger.** -Orig. at East Malling, Kent, U.K., by H.M. Tydeman, East Malling Research Station. Selected from a population of seedlings of F1/3 selfed (*Prunus avium*); tested as Fd 1/57/4/13. Introduced in 1982. Productive in layer bed. Resistant to bacterial canker. Trees on Charger are standard size.

**Cob.** -Orig. at East Malling, Kent, U.K., by H.M. Tydeman, East Malling Research Station. *Prunus avium* × *P. pseudocerasus* Lindl. Tested as Fb 2/58/17. An easily propagated, vigorous clonal rootstock, used for *P. serrulata* and other ornamental cherries. Not recommended for sweet cherries.

**Damil** (*GM.61/1*). -Orig. at Gembloux, Belgium, by P. Monin and R. Trefois, Fruit and Nut Research Station. Selected from open-pollinated population of *Prunus dawykensis*; tested as 4-I-K. Introduced in 1986. Plantpat. 5803, 18 Nov. 1986; assigned to TRECO®, Woodburn, Ore. Semi-dwarfing rootstock for sweet cherries and tart cherries, compatible with wide range of cultivars. Reduces tree size by about one-half. Moderately precocious, inducing fruiting of sweet cherries 1 or 2 years earlier than does mazzard; for Montmorency, not as precocious as mahaleb. More tolerant than mazzard to *Phytophthora cambivora* and *P. megasperma*; relatively tolerant of waterlogging. Resistant to cherry leafspot. Susceptible to the mycoplasma causing Western X-disease. Readily propagated by greenwood cuttings and in micropropagation. Non-suckering; well-anchored. Ungrafted tree is of moderate vigor, semi-upright.

*GM.9.* -See Inmil.

*GM.61/1.* -See Damil.

*GM.79.* -See Camil.

**Inmil** (*GM.9*). -Orig. at Kahnhout, Belgium, by P. Monin and R. Trefois, Fruit and Nut Research Station. A *Prunus incisa* × *P. serrulata* clone of unknown provenance; tested as 9-14-K. Introduced in 1986. Plant pat. 5801, 18 Nov. 1986; assigned to TRECO®, Woodburn, Ore. Dwarfing rootstock for sweet and tart cherries, compatible with wide range of cultivars. Reduces tree size by two-thirds compared to F12/1. For sweet cherries, induces fruiting 1 or 2 years earlier than does mazzard; under Montmorency, as precocious as mahaleb. Susceptible to *Phytophthora cambivora* and *P. megasperma*. Ungrafted tree is dwarfish, semi-upright.

**“M×M” Series.** -Orig. at Forest Grove, Ore., by Lyle Brooks. Selected from a population of mahaleb open-pollinated seed; vegetative attributes indicate pollen parent was mazzard, hence the “Mahaleb × Mazzard” designation and its “M×M” diminutive. Semi-vigorous rootstocks for sweet cherries. Propagated by hardwood cuttings. Relatively resistant to *Phytophthora cambivora* and *P. megasperma*. Relatively tolerant of *Pseudomonas syringae*; appear to have promise as frameworking stocks. Suckering may be heavier than F12/1. Induce flower density and production efficiency slightly greater than does mazzard seedling stock. Clones available in commerce include M×M-2, M×M-14, M×M-39, M×M-46, M×M-60, and M×M-97.

## CHEERRY PLUM

**Queensland Earlisweet.** -Orig. in Applethorpe, Queensland, Australia, by C.W. Winks, A.M. Hibberd, and B.L. Topp, Granite Belt Hort. Res. Sta. Introduced in 1988. Early Jewel × Early Gem (both parents have *Prunus cerasifera* and *P. salicina* in pedigree); selected in 1981; tested as GB 3-91. Fruit: small, 32 mm; round; skin color bright red becoming dark red at fullmaturity; flesh yellow, melting, sweet, juicy; flavor balanced with slightly acid skin; pit small; clingstone. Ripens 2 weeks before Wilson and Methley, 5 weeks before Santa Rosa. Tree: very vigorous; shape intermediate between upright and spreading; moderately productive. Flowering is early, 10 days before Wilson; pollen sterile; Mariposa and Donsworth are suitable pollenizers. Good field resistance to bacterial spot (*Xanthomonas campestris* pv. *pruni*).

## CHESTNUT

**Heritage.** -Orig. by R.T. Dunstan. Plant pat. 6674, 14 Mar. 1989. Nuts: small (10 g); American type, elongated; chocolate brown; very sweet. Burrs split on tree; harvest late, short. Tree: very vigorous; very

upright, straight-boled, timber type form; cropping sparse; leaves light green. American-type with acute base and very dentate margins.

**Revival** -Orig. by R.T. Dunstan. Plantpat. 5537, 20 Aug. 1985. Nuts large (25 g); dark reddish-brown; two or three per burr; pellicle easily removed, sweet. Short dropping period, responds well to shaker harvest. Tree vigorous; upright, spreading in upper canopy; annual cropper; foliage dark, lustrous green.

## FILBERT (HAZELNUT)

Shawn A. Mehlenbacher

**Corabel.** -Orig. in Pont-de-la-Maye, near Bordeaux, France, by Eric Germain, I.N.R.A. Introduced in 1988. Open-pollinated seedling of Barcelona (Fertile de Coutard); pollen parent appears to be Daviana. Cross made in 1969; selected in 1975; tested as G1FC9. Nuts: very large (4.2 g); color light brown, attractive; kernel well-filled, 46% by weight, blanches readily. Tree: vigorous; late-leaving; few suckers. Moderately susceptible to big bud mites.

**Farris' Bellhusk.** -Orig. in Lansing, Mich., by Cecil Farris. Introduced in 1971. Chance seedling of *Corylus avellana*. Nuts: medium; shell thin; round; striped. Husk half as long as nut and recurved, resembling a bell. Matures in early September. Resistant to big bud mites. Produces average amounts of pollen, but with low germination rates.

**Grand Traverse.** -Orig. in Lansing, Mich., by Cecil Farris. Introduced in 1989. Faroka × Royal. Cross made in 1977; selected in 1981; tested as 81C. Nuts: nearly round; brown; 51% kernel by weight; ripens with Ennis. Kernels: plump; clean; excellent flavor. Introduced for the in-shell trade. Treevigorous, productive, winter hardy. Resistant to big bud mites.

**Lisa.** -Orig. in Lansing, Mich., by Cecil Farris. Introduced in 1990. Faroka × OSU 18-1114 (Barcelona × Royal). Shell lightly striped; husk open, recurved. Kernel slick, smooth, light colored; excellent flavor. Nut: slightly elongated, well-suited to marketing in the shell; ripe first week of September in central Michigan. Resistant to big bud mites.

**O'Rourke.** -Orig. in Lansing, Mich., by Cecil Farris. Introduced in 1985. Morrisoka × Royal. Cross made in 1976; selected in 1981. Nuts: very large; 41% kernel by weight; kernel development is very good for so large a nut. Husk: short, open. Trees precocious.

**Willamette.** -Orig. in Corvallis, Ore., by Shawn A. Mehlenbacher and Maxine M. Thompson, Oregon State Univ. Introduced in 1990. Montebello × Compton (Compton appears to be Barcelona × Daviana hybrid). Cross made in 1973; selected in 1979; tested as OSU 43-58. Nuts: medium (2.8 g); color dark brown, attractive; kernel 50% by weight; pellicle easily removed by dry heat; flavor and texture very good. Husk 50% longer than nut, not entirely free-husking. Matures 1 week later than Barcelona. Introduced for the blanched kernel market. Tree: vigorous; productive; susceptible to eastern filbert blight; intermediate susceptibility to big bud mites.

## GRAPE

John A. Mortensen, Bruce I. Reisch, and David Cain

**African Queen.** -Orig. in Brooks, Ga., by B.O. Fry and W.G. Ison. Introduced in 1988. Dixieland × Sugargate. Plant pat. pending. Female muscadine. Berry: large, up to 28 mm.; skinblack, medium thick; dry scar; tangy flavor; 22% solids; ripens midseason. Four to 10 berries per cluster. Vine: vigorous, productive.

**Alachua.** -Orig. in Leesburg, Fla., by J.A. Mortensen and J.W. Harris, Central Fla. Res. & Educ. Center. Introduced in 1990. Fry × Southland. Selected in 1982; tested as Fla. CA9-48. Self-fertile flowers. A mechanically harvestable black muscadine with uniform ripening and dry stem scar. Berry: size of Cowart; oval; ripens 26 Aug. at Leesburg. Vine: productive; moderately vigorous; disease resistant; may not need regular sprays except in areas of heavy disease pressure. Post-harvest susceptibility to angular leaf spot.

**Beaufort.** -Orig. in Cincinnati, Ohio, by Byron T. Johnson. Introduced in 1982. Open-pollinated seedling of *V. rupestris* Ft. Worth #3, Richter (PI 232091); pollen parent apparently French hybrid. Tested as selection 64.RFW-1. Berry: small; skin dark blue-black; round; flavor

light, resembling black currants. Ripens 10 Aug. in Cincinnati. Clusters: small; conical; borne live per shoot. Vine: vigorous; productive; winter hardy. Tolerant of insects and diseases. Produces a deeply colored red wine.

**Beaumont.** -Orig. in Cincinnati, Ohio, by Byron T. Johnson. Introduced in 1982. Open-pollinated seedling of Headlight; tested as selection 62.A-1. Berry: small; skin lavender-pink; round. Ripens midseason. Cluster well-filled, prominently shouldered, resembles Delaware; two or three per shoot. Vine: vigorous; moderately productive; fruit borne on first four nodes only; tolerant of common insects and diseases; winter hardy. Produces a neutral white wine.

**Black Beauty.** -Orig. in Brooks, Ga., by B.O. Fry and W.G. Ison. Introduced in 1988. Fry × 12-12-1 muscadine. Plant pat. pending. Female muscadine. Berry: large, 31 mm; skin black, edible; dry scar; good flavor; 24% solids; ripens mid- to late season. Cluster large. Vine: very vigorous; medium productivity; disease resistant.

**Black Fry.** -Orig. in Brooks, Ga., by B.O. Fry and W.G. Ison. Introduced in 1986. Fry × Cowart. Plant pat. 5824, 9 Dec. 1986. Female muscadine. Berry: large, 30 mm; skin black; 21% solids; good flavor. Uniform ripening, early to midseason. Cluster large; can be clipped in clusters. Vine: disease resistant, very productive.

**Black Imperial™** (Sugrathree). -Orig. in Madera, Calif., by John M. Garabedian. Introduced in 1973 as Sugrathree. Plant pat. 3295, 16 Jan. 1973; assigned to Superior Farming Co. Parentage: unnamed seedling of Ribier × Thompson Seedless. Fruit: large; skin purplish-black, tough; ovoid. Ripens 7-10 days before Black Monukka, which it most resembles. Does not require gibberellin applications to attain commercial size.

**Blanc Du Bois.** -Orig. in Leesburg, Fla., by J.A. Mortensen, Central Fla. Res. & Educ. Center. Introduced in 1987. Fla. D6-148 (self of Fla. A4-23) × Cardinal. Selected in 1974; tested as Fla. H18-37. White wine cultivar for southern United States. Berry: size of Suwannee; skin light green; flavor muscat-like. Ripens 3 July at Leesburg. Vine: productive and vigorous; self fruitful; resistant to Pierce's disease. Susceptible to anthracnose, black rot, and ripe rot. Does not require grafting except in limy soil.

**Brandis.** -Orig. in Terryville, Conn., by R. Grem. Introduced in 1985. Origin: roadside chance seedling; appears to have *V. aestivalis*, *V. riparia*, and *V. labrusca* ancestry. Berry: medium; skin blue; flesh pulpy until very ripe; pleasant flavor. Cluster medium cylindrical; loose to moderately compact; small shoulder. Vine: vigorous; productive compared to other wild vines; tolerant of marginal soils; slightly less hardy than Concord; female. Resistant to black rot; moderately resistant to powdery and downy mildew. Produces pleasant, fruity wine.

**Century I.** -Orig. in Blacksburg, Va., by George D. Oberle, Virginia Polytech. Inst. and State Univ. Introduced in 1973. Seyve-Villard 20-347 × Dunstan 3 (Chasselas Violet × Golden Muscat); tested as VPI 32. Berry: large; skin reddish black, adherent; ovate; flesh crisp, meaty, with a sweet and fruity flavor. Cluster large. Vine: ripens late mid-season; over-productive; above-average vigor; medium cold hardy.

**Challenger.** -Orig. in Mountain Grove, Mo., by Kenneth W. Hanson and Merlyn A. Haag, Missouri State Fruit Exp. Sta. Introduced in 1983. Parentage unknown. Selected in 1968; tested as G-2963. Berry: medium; round, tear-shaped; skin orange-red to deep red, thick tough, adheres to pulp; flesh very meaty and firm with one or two soft, small seeds; high soluble solids; sweet, delicate flavor. Ripens 10 days after Reliance and Himrod. Cluster: medium; loose, with almost no shoulders. Vine: moderately vigorous; winter hardiness comparable to Reliance. Susceptible to black rot, downy mildew, and powdery mildew.

**Darlene (Darling).** -Orig. in Brooks, Ga., by W.G. Ison. Introduced in 1988. 5-11-3 × Carlos. Plantpat. pending. Female muscadine. Berry: 31 mm, consistently large throughout vine; skin bronze to pinkish red, dry scar; melting pulp; 24% solids; excellent flavor. Ripens early to midseason. Cluster large. Vine vigorous, disease resistant.

Darling.-See Darlene.

**Early Superior Seedless™** (Sugrative). -Orig. in Riverside Co., Calif., by Luther C. Hahn and Joseph Maranto, Superior Farming Co. Introduced in 1983 as Sugrative. Plant pat. 5151, 6 Dec. 1983; assigned to

Superior Farming Co. Bud mutation of Superior Seedless, discovered in 1978. Fruit: slightly smaller than Superior Seedless; similar in color and shape; ripens with Perlette, 7 to 10 days before Superior Seedless. Develops a very mild muscat flavor when very ripe. Cluster: medium, loose to compact, cylindrical to conical. Vine: very vigorous; medium to low productivity; breaks bud very early.

**Edelweiss.** -Orig. in Osceola, Wis., by E. Swenson, P. Pierquet, and C. Stushnoff. Introduced in 1980. MN 78 (Beta × Witt) × Ontario; selected in 1955; tested as E.S. 40. Seeded table grape. Berry: medium; round; skin green, slipskin, white bloom; flesh tender, melting; flavor fruity-labrusca, becoming strongly foxy at late maturity. Early ripening. Cluster: large; conical; loosely formed, usually winged. Vine: vigorous; productive; resists foliage diseases like Beta; very cold hardy.

**Einset Seedless.** -Orig. in Geneva, N.Y., by B.I. Reisch, G.W. Remaily, R.M. Pool, and J.P. Watson, New York State Agr. Expt. Sta., Cornell & iv. Introduced in 1985. Plantpat. 6160, 26 Apr. 1988; assigned to Cornell Research Foundation. Fredonia × Canner Seedless; selected in 1967; tested as NY 63.878.1. Berry: skin bright red with a light, waxy bloom; ovoid; medium soft seed remnant. Cluster: medium, 150 g; well-defined shoulder; moderately loose; Vine: productive; vigorous; moderately winter hardy; tolerant to botrytis bunch rot; early ripening.

**Esprit.** -Orig. in Osceola, Wis., by Elmer Swenson. Introduced in 1984. Plant pat. 5716, 15 Apr. 1986; assigned to Swenson Smith Vines, Inc. Edelweiss × Villard Blanc; tested as E.S. 422. Berry: large; skin white. Cluster large. Suitable for both fresh and wine use. Vine: productive; ripens in midseason, with Seyval; winter hardy to -28C.

**Golden Isles.** -Orig. in Griffin Ga., by R.P. Lane, Univ. of Georgia, and R.P. Bates, Univ. of Florida. Introduced in 1987. Fry × Ga. 19-6 (Creek × US 53.8b). Tested as Ga. 18-7-3. A muscadine for less aromatic white wine of good quality. Berry: size of Dixie; skin bronze; dry stem scar; self-fruitful. Ripens 25 Sept; some unevenness of ripening may occur. Degrees Brix: usual 14.4, range 10.8 to 20.5, varying with season and picking date. Mean berries/cluster = 7.8. Vine: moderately vigorous and productive; not damaged by temperature of -21C in 1985. Intermediate resistance to bitterrot, angular leaf spot and powdery mildew. Moderately resistant to black rot. Has produced well without pest control program.

**Ison.** -Orig. in Brooks, Ga., by B.O. Fry and W.G. Ison. Introduced in 1986. Sugargate × Senoia. Plant pat. 5822, 9 Dec. 1986. Self-fertile muscadine. Berry: large, 28 mm; skin black; dry scar; 20% solids; good flavor. Ripens uniformly, early to midseason. Cluster large. Vine: very productive; vigorous; disease resistant.

Janebell. -Orig. in Brooks, Ga., by W.G. Ison. Introduced in 1988. Fry × Senoia. Plant pat. pending. Self-fertile muscadine. Berry: medium-large, 28 mm; skin bronze; dry scar; 22% solids; good flavor. Ripens midseason to late. Cluster large. Vine: very productive, disease resistant.

**Janet.** -Orig. in Brooks, Ga., by W.G. Ison. Introduced in 1988. Fry × Senoia. Plant pat. pending. Self-fertile muscadine. Berry: large, to 31 mm; skin bronze; wet stem scar; 21% solids; excellent flavor. Ripens midseason. Cluster large. Vine: vigorous; very productive; disease resistant; cold hardy.

**Joyous.** -Orig. in Cincinnati, Ohio, by Byron T. Johnson. Introduced in 1982. Mericadel × Delicatessen; tested as selection 64.ZZ-2. Berry: slipskin; seeded; red to dark red; medium-large; round; pulp tender, juicy. Clusters compact, medium-large, often with shoulder; borne three per shoot. Vine: very vigorous; growth habit open, with few laterals; moderately productive; drought tolerant; disease and insect resistant. Very late ripening; requires very long, hot growing season to ripen properly. Produces a light muscat wine of golden color, resembling Gewurztraminer.

**Kay Gray.** -Orig. in Osceola, Wis., by Elmer Swenson. Introduced in 1981. Plant pat. 4943, 16 Nov. 1982; assigned to Swenson Smith Vines. ES 217 (Minn. 78 × Golden Muscat) open-pollinated (Onaka is probable pollen parent); tested as ES 1-63. Berry: medium; skin white to golden; mild fruity labrusca flavor; seeded. Cluster small. For fresh fruit use, or used for wine. Vine: Excellent disease resistance,

especially to downy mildew; early ripening; productive, but limited by small cluster size; extremely hardy, better than Beta; primarily used as a home table grape.

**Kee-Wah-Din.** -Orig. in Cincinnati, Ohio, by Byron T. Johnson. Introd. in 1982. OSBU × Baco Noir; tested as selection 64.B-2. Berry: medium-small; skin blue-black, round. Cluster medium-large; four per shoot. Vine: vigorous; productive; self-fruitful; very cold hardy. Best adapted to Minnesota, Wisconsin, Northern Michigan, and regions with similar climate. Produces red wine resembling Baco Noir.

**Lacrosse.** -Orig. in Osceola, Wis., by Elmer Swenson. Introd. in 1983. (Minn. 78 × Seibel 1000) × Seyval; tested as E.S.294. Berry: medium; skin white. Clusters medium. Produces excellent, fruity non-labrusca wine. Vine: vigor medium; very productive; good disease resistance; tolerates 2,4-D; very winter hardy, ripens earlier than Seyval.

**Loomis.** -Orig. in Meridian, Miss., by N.H. Loomis. Introd. in 1989. Creek × US 15. Tested at Gay, Ga., as USDA 18-7B; selected by R.P. Lane and M.A. Owen in 1979. Female muscadine. Berry: larger than Cowart; skin burgundy colored, thin; dry stem scar; very good quality. Ripens with Nesbitt. Vine: vigorous; winter hardy to -21C; consistently productive. Disease resistance superior to other dark-fruited muscadines.

**Mars.** -Orig. in Fayetteville, Ark., by James N. Moore, Univ. of Arkansas. Introd. in 1985. Island Belle × Ark. 1339 (a complex hybrid derived from Buffalo, Alden, Ontario, Ribier, Russian Seedless, Vergennes, and Zinfandel); selected in 1975; tested as Ark. 1508. Plant pat. pending. Berry: seedless; medium-large; round; skin blue, non-adherent, medium thick, flavor resembles Campbell's Early. Clusters medium, cylindrical, well-filled. Vine: productive; vigorous; may bear fruit precociously. Resistant to black rot, anthracnose, powdery mildew, and downy mildew. Recommended for home gardens and limited commercial use.

**Melody.** -Orig. in Geneva, N.Y., by B.I. Reisch, R.M. Pool, J.P. Watson, W.B. Robinson, and T.H.E. Cottrell, New York State Agr. Expt. Sta., Cornell Univ. Introd. in 1985. Plant pat. 6159, 26 Apr. 1988; assigned to Cornell Research Foundation. Seyval × GW 5 (Pinot blanc × Ontario); selected in 1972; tested as NY 65.444.4. Berry: medium; spherical; skin light green to amber, resistant to cracking. Cluster: compact; medium, 150 g; does not require cluster thinning like the Seyval parent. Vine: productive; vigorous; moderately winter hardy; moderately resistant to powdery mildew and botrytis bunch rot. Produces high-quality wine with floral overtones and slight hints of herbaceousness.

**Nesbitt.** -Orig. in Raleigh, NC., by R.G. Goldy and W.B. Nesbitt, N.C. Agr. Res. Serv. Introd. in 1985. Fry × Cowart. Self-fertile muscadine. Selected in 1971; tested as NC 67A013-12. Berry: size of Fry, 30-32 mm, ≈ 12 g; skin black; tendency to wet scar; high quality for fresh consumption. Extended ripening between early September and early October. Vine: productive, 40 kg/vine; moderately vigorous. Moreresistant than Carlos to ripe rot. For U-pick, fresh fruit, dooryard.

**Orlando Seedless.** -Orig. in Leesburg, Fla., by J.A. Mortensen and D.J. Gray, Central Fla. Res. & Educ. Center. Introd. in 1986. Fla. D4-176 (Norris × Schuyler) × Fla. F9-68 (Fla. A4-23 × Perlette). Selected in 1981; tested as Fla. BD8-77. The first seedless grape with resistance to Pierce's disease. Berry: smaller than Lake Emerald, requiring gibberellin after bloom to promote berry size and reduce occasional gritty seed remnants; skin light green. Vine: moderately vigorous and productive; self-fruitful; budbreak early, sometimes leading to spring frost damage. Susceptible to anthracnose and leaf blight.

**Pam.** -Orig. in Brooks, Ga., by W.G. Ison. Introd. in 1988. 5-11-3 × Senoia. Plant pat. pending. Female muscadine. Berry: large, to 31 mm; skin superior bronze color; dry scar; 21% solids; very good flavor; uniform ripening in midseason. Clusters large, long. Vine: vigorous, productive, disease resistant.

**Pineapple.** -Orig. in Brooks, Ga., by W.G. Ison. Introd. in 1988. Fry × Senoia. Plant pat. pending. Self-fertile muscadine. Berry: medium-large, up to 28 mm; skin bronze; wet scar; 21% solids; good flavor, somewhat similar to pineapple. Cluster large. Vine: very vigorous; very productive; disease resistant.

**PreCal™ (Sugrasix).** -Orig. in Bakersfield, Calif., by John Weinberger and Timothy Sheehan, Superior Farming Co. Introd. in 1987 as Sugrasix. Plant pat. 6009, 8 Sept. 1987; assigned to Superior Farming Co. Ribier × Superior Seedless; tested as 20-5. Fruit: size variable; skin purplish-black, seedless, with medium-size vestigial seed traces; ovate; flesh greenish, translucent, juicy, firm; most nearly resembles Ribier; ripens about with Flame Seedless. Cluster: medium; double-shouldered, tapering; good berry attachment. Vine: medium vigor; medium productive.

**Rosa.** -Orig. in Brooks, Ga., by B.O. Fry and W.G. Ison. Introd. in 1988. Higgins × Granny Val. Plant pat. pending. Female muscadine. Berry: medium-large, 28 mm; skin pinkish red; wet scar; 22% solids. Ripens midseason to late. Cluster medium. Vine: very vigorous; moderately productive.

**Saint Croix.** -Orig. in Osceola, Wis., by Elmer Swenson. Introd. in 1981. Plant pat. 4928, 9 Nov. 1982; assigned to Swenson Smith Vines, Inc. ES 283 (Minn. 78 × Seibel 1000) × ES 193 (Minn. 78 × Seneca); tested as ES 2-3-21. Berry: medium; skin blue; very juicy. Cluster medium. Useful for neutral, high-quality red wine. Vine: Very hardy, but not as hardy as Kay Gray; vigorous; good resistance to black rot; leaves susceptible to downy mildew; very precocious.

**Saint Pepin.** -Orig. in Osceola, Wis., by Elmer Swenson. Introd. in 1983. Plant pat. 5771, 22 July 1986; assigned to Swenson Smith Vines, Inc. (MN78 × Seibel 1000) × Seyval; tested as E.S.282. Female bunch grape. Berry: medium; slipskin, skin white; flesh tender; pink juice; resembles Lacrosse. Produces an excellent German-style white wine; also has good dessert quality. Cluster: large; conical; loose. Vine: very vigorous; very productive; earlier ripening than Lacrosse; slightly less hardy than Lacrosse.

**Saturn.** -Orig. in Fayetteville, Ark., by James N. Moore, John R. Clark, and Justin R. Morris. Introd. in 1989. Dunstan 210 (Blackrose × Aurelia) × NY 45791 (Bath × Himrod); selected in 1974; tested as Ark. 1448. Plant pat. 6703. Berry: seedless; large; oval; skin bright red, adherent; texture firm, crisp; sweet and fruity, mild flavor; good in storage. Clusters medium-large, conical. Vine: ripens midseason; productive, may require cluster thinning; medium vigor; moderate resistance to black rot, powdery mildew, and anthracnose; susceptible to downy mildew; vines have withstood -23C with minimal injury in Ark.

**Scioto.** -Orig. in Cincinnati, Ohio, by Byron T. Johnson. Introd. in 1982. America × Westfield, tested as selection 64,AA-1. Berry: medium; oblate; skin dark blue-black; flavor resembles raspberries, labrusca-type. Ripens late midseason. Cluster medium; with shoulder; medium shank. Vine: vigorous; productive; healthy. Introduced as juice and jelly grape for southern Ohio.

**Simone.** -Orig. in Summerland, B.C., by A.G. Reynolds, L.C. Denby, and M. Bouthillier, Agriculture Canada Research Sta. Patricia × Himrod; selected in 1971; tested as Summerland Sel. 375 and under the provisional name Sovereign Charter. Berry: medium; orbicular; skin dark blue, thin; non-slipskin; seedless; mildly labruscana flavor; moderately crisp texture. Cluster: medium-large (265-300 g); well-filled; conical; winged; slight tendency to shatter in some years. Vine: ripens midseason; very vigorous; recommended for divided canopy culture; winter hardiness similar to Okanagan Riesling. Resistant to powdery mildew.

**Sovereign Opal.** -Orig. in Summerland, B.C., by A.G. Reynolds, L.C. Denby, G.E. Strachan, and M. Bouthillier, Agriculture Canada Research Sta. Introd. in 1988. Golden Muscat × Marechal Foch; tested as Summerland Selection 166. Berry: medium; round; skin green, thick, astringent. Cluster: medium-large; cylindrical. Produces high quality wine described as citrus, vegetative, herbaceous, and grassy. Vine: ripens late-midseason; moderately vigorous; reliably hardy to 20C. Resistant to powdery mildew.

**Sovereign Tiara.** -Orig. in Summerland, B.C., by A.G. Reynolds, L.C. Denby, M. Bouthillier, and G.E. Strachan, Agriculture Canada Research Sta. Introd. in 1989. Golden Muscat × Marechal Foch; tested as Selection 123. Berry: medium; orbicular; seeded; skingold. Ripens late-midseason. Produces high-quality wines described as fruity, herbaceous, vegetative, and candy-like. Cluster: medium, about 100

g; cylindrical; shouldered; slightly loose. Vine: highly productive; vigor moderate to high, best when grown with cordon training on a divided canopy; winter cold hardiness better than Okanagan Riesling, but less than Marechal Foch. Resistant to powdery mildew.

**Sugar Pop.** -Orig. in Brooks, Ga., by W.G. Ison. Introd. in 1988. Fry × 8-16-1. Plant pat. pending. Female muscadine. Berry: medium-large, 28 mm; skin bronze; dry scar; 21% solids. Ripens midseason to late. Cluster large. Vine: very vigorous, very productive.

*Sugrathree.* -See Black Imperial™.

*Sugrative.* -See Early Superior Seedless™.

*Sugrasix* -See PreCal™.

**Supreme.** -Orig. in Brooks, Ga., by W.G. Ison. Introd. in 1988. Black Fry x Dixieland. Plant pat. pending. Female muscadine. Berry: large, 31 mm; skin black, edible; dry scar; 24% solids. Ripens midseason to late; fruit shatters. Cluster large. Vine: vigorous, productive.

**Sweet Jenny.** -Orig. in Brooks, Ga., by W.G. Ison. Introd. in 1986. 11-2-2 × 12-12-1. Female muscadine. Berry: large, 30-35 mm; skin bronze; 24% solids. Ripens early to midseason. Cluster large. Vine: vigorous and productive; subject to angular leaf spot.

### HYBRID BERRY Hugh Daubeny

**Lincoln Logan.** -Orig. in Lincoln, New Zealand, by H.K. Hall, M.H. Quazi, and R.M. Skirvin, Crop Res. Division, DSIR, Christ church. Introd. in 1986. A tissue culture-derived genetically thornless (nonchimeral) sport of Thornless Loganberry. Fruit: color, flavor and texture indistinguishable from Thornless Loganberry. Plant: morphologically similar to Thornless Loganberry; primocanes vigorous, green, prickly- (thorn-) free; produces only thornless shoots from roots. Seedling populations include both thorned and thornless offspring.

**Malling Sunberry.** -Orig. in East Malling, Kent, England, by E. Keep, J.H. Parker, and V.H. Knight, Inst. of Hort. Research (East Malling Research Sta.). Introd. in 1981. *Rubus ursinus* × selfed tetraploid sport of Malling Jewel; cross made in 1967; tested as EM 2143/9. Fruit: medium-large, similar to Loganberry; very dark red, glossy; blunt conical; ripens early July until mid-August; excellent fresh flavor; canning quality fairly good; flavor and color after thawing good, but drip loss high. Moderately easy to pick, although sometimes concealed by large leaves on the lateral; plug (receptacle) remains with fruit when picked. Plant: canes very vigorous with short leafy laterals; productive.

**Tummelberry.** -Orig. in Invergowrie, Scotland, by D.L. Jennings, Scottish Crop Res. Inst. Introd. in 1983. Tayberry × SHRI 69102/18 (a sibling of Tayberry); tested as SHRI 73153C4. Fruit: medium-large; short conical; skinless purple and more red-purple than Tayberry; flavor slightly acid without aromatic characteristics of Tayberry; ripening over long period starting in July, a week later than Tayberry, and finishing a week later than Tayberry; plug (receptacle) remains with fruit when picked. Plant: vigorous; sturdy canes produced in moderate to large numbers, spreading to semi-erect, but slightly more erect than Tayberry; yields slightly more than Tayberry in season that followed a severe winter and slightly less in a season that followed a mild winter; fruiting laterals about 30 cm long and display fruit well. Primocanes dark green with anthocyanin pigments less intense than in Tayberry; dense, moderately sized prickles. Susceptible to raspberry leaf and bud mite.

### MAYHAW

**Big Red (No. 1 Big).** -Orig. near Sandy Hook, Miss., by T.O. Warren, Hattiesburg. Introd. in 1969. Chance seedling of *Crataegus aestivalis* discovered in Pearl River swamps. Fruit: large to very large, usually 2.5 cm; oval; skin brilliant red, glistening finish; flesh mixed white and red; sort; high soluble solids; ripens late April to early May in South. Tree: very vigorous; upright spreading; not precocious; very productive; susceptible to rust. Northern limits not yet defined, but

appears to be hardy in zone 5.

*No. 1 Big* -See Big Red.

### NECTARINE

David W. Cain, R.E.C. Layne, and Wayne Sherman

**Brendavilha.** -Orig. in New South Wales, Australia, by John Christie. Introd. in 1985. Sport of Maravilha peach. Registered in N.S.W. Fruit smaller, higher percent red blush, and rounder than Maravilha. Fruit subject to surface cracks. Other fruit, tree, and foliage characters resemble Maravilha.

**Columbina.** -Orig. in Agr. Exp. Sta., Univ. of Florida, Gainesville, by R.H. Sharpe. Complex parentage of Florida selections; selected in 1969; tested as Fla. 19-37S. Named in southern Brazil. Fruit: medium; skin 50% redblush, flesh yellow, semi-freestone. Ripens 85 days from bloom. Flowers showy; leaf glands reniform. Resistant to bacterial leaf spot. Chilling requirement: 350 chill units.

**Crimson Star™ (Sunecteleven).** -Orig. in Fresno, Calif., by John H. Weinberger. Introd. in 1982. Plant pat. 4942, 16 Nov. 1982; assigned to Superior Farming Co. Open-pollinated seedling of an unnamed late-ripening nectarine; selected in 1977; tested as 87-101. Fruit: compared to Fantasia, slightly smaller, more ovate, with less prominent apex tip; skin bright red on yellow ground color, medium thick; flesh yellow with red streaks next to pit; freestone. Ripens 1 week after Summer Grand. Tree: vigor medium; upright-spreading; productive. Flowers: large, showy, pink.

**Earliscarlet.** -Orig at USDA Appalachi an Fruit Research Station, Kearneysville, W. Va., by R. Scorza, H.W. Fogle, and L.E. Gilreath. Introd. in 1985. Parentage unknown; selected in 1971; tested as B68598. Fruit: skin 80% scarlet over bright yellow ground color; somewhat elongate without prominent suture; flesh yellow, firm, semi-freestone; excellent flavor. Ripens 3-7 days before Redhaven. Tree: vigorous; productive. Abundance and hardness of flower buds usually makes thinning necessary. Chilling requirement about 800 h. Winter hardiness similar to Redhaven. Blossoms: showy; self-fertile. Leaf glands globose. Apparently resistant to bacterial leafspot.

**Early Sun.** -Orig. in Del Rey, Calif., by Tom Chamberlin, H.P. Metzler & Sons. Introd. in 1990. Unknown parentage. Fruit: large; round, skin bright red on yellow ground color; flesh yellow, firm; ripens with May Grand. Tree: vigorous, productive.

**Fire Diamond.** -Orig. by Norman G. and Lowell G. Bradford, Le Grand Calif. Introd. in 1989. Early Diamond × unnamed genetic dwarf peach. Plant pat. 7064, 5 Dec. 1989; assigned to Bright's Nursery, LeGrand. Fruit most nearly resembles Early Diamond. Fruit: small, uniform; globose; skin dark red 75% to 90% on orange-yellow ground color; flesh yellow, medium firm; semi-freestone; mild subacid. Susceptible to skin cracking and to blossom brown rot in wet years. Ripens with Mayfire at Le Grand, 3 weeks before Early Diamond. Tree: vigor medium; size medium; spreading; very productive; regular production. Blossoms purplish red. Leaves mostly reddish brown from midsummer to dormancy.

**Fresno Sun.** -Orig. in Del Rey, Calif., by Tom Chamberlin, H.P. Metzler & Sons. Introd. in 1990. Unknown parentage. Fruit: large; round, skin bright red on yellow ground color, smooth, waxy; flesh yellow, firm; ripens just before Firebrite. Tree: vigorous, productive.

**Garden Delight.** -Orig. in Modesto, Calif., by Floyd Zaiger. Introd. in 1975. Second generation seedling of Red Grand nectarine × Flory Dwarf peach. Plant pat. 4155, Nov. 25, 1975; owned by Zaiger's Genetics. Fruit: medium; globose; skin yellow overspread with red; flesh yellow, firm; flavor good, subacid. Tree: non-vigorous; spreading; productive.

**Harblaze.** -Orig. in Harrow, Ont., by R.E.C. Layne, Agr. Canada Res. Sta. Introd. in 1989. Stark Delicious × Hardired. Cross made in 1973; selected in 1978; tested as HW104. Fruit: skin 90% bright red blush over yellow-orange ground color; larger and rounder than Nectared 2; flesh yellow, firm, freestone; good flavor. Ripens 3 days after Nectared 2. Tree: vigorous; productive; equally bud-hardy and wood-hardy with Redhaven. Flowers: showy, pink. Leaf glands

reniform. Resistant to bacterial spot, brown rot, *Leucostoma* canker and powdery mildew.

**Harvest Sun.** -Orig. in Del Rey, Calif., by Tom Chamberlin, H.P. Metzler & Sons. Introd. in 1988. Parentage unknown. Plantpat. 7012; owned by Metropolitan Insurance Co.; licensed exclusively to Agri Sun Nursery, Selma, Calif. Fruit: large; slightly elongated; skin red on yellow ground color, smooth, flesh yellow, firm; ripens just before Fairlane. Tree: vigorous, productive.

**Hi-Red™** (*Sunectsix*). -Orig. in Fresno, Calif., by John Garabedian. Introd. in 1970. Plant pat. 3133, 25 Apr. 1972; assigned to Superior Farming Co. Open-pollinated seedling of June Belle. Fruit: larger than LeGrand, which it most nearly resembles. Ripens earlier than LeGrand. Now surpassed by better cultivars.

**June Glo.** -Orig. in Modesto, Calif., by Floyd Zaiger. Introd. in 1984. Second generation seedling of Zee Gold × Early Sun Grand. Plant pat. 5228, 8 May 1984; assigned to Zaiger's Genetics. Fruit: large; nearly globose; skin yellow overspread with red; flesh dark yellow, firm; flavor mild. Tree: vigorous; upright; productive.

**Mid Glo.** -Orig. in Modesto, Calif., by Floyd Gary, and Grant Zaiger and Leith Gardner. Introd. in 1989. Second-generation seedling of May Grand × unknown late-maturing nectarine. Plant pat. 6753, 25 Apr. 1989; assigned to Zaiger's Genetics. Fruit: large; globose; yellow ground color almost covered by red blush; flesh yellow, firm; subacid. Tree: vigorous; upright; productive.

**Necta Zee.** -Orig. in Modesto, Calif., by Floyd Gary, and Grant Zaiger and Leith Gardner. Introd. in 1988. Second-generation seedling of a cross of Early Sun Grand × a dwarf nectarine. Plant pat. 6283, 31 Sept. 1988; assigned to Zaiger's Genetics. Fruit: medium to large; globose; skin dark yellow overspread with red; flesh yellow, firm; good flavor, subacid. Tree: medium vigor; spreading; very productive. For home garden use.

**Pacific Star™** (*Sunectseven*). -Orig. in Fresno, Calif., by John H. Weinberger. Introd. in 1982. Plant pat. 4893, 5 Oct. 1982; assigned to Superior Farming Co. Open-pollinated seedling of May Grand; selected in 1977; tested as 69-128. Fruit: most nearly resembles May Grand, but rounder and smoother; size medium, 60 mm; skin highly colored, crimson on yellow ground color; flesh yellow with slight red at apex, firm, melting, excellent quality. Ripens 1 week after May Grand. Tree: medium vigor; upright spreading; medium productive; regular bearing; midseason blossoming. Well-suited for commercial shipping.

**Roseprincess.** -Orig. at Byron, Ga., by W.R. Okie, USDA S.E. Fruit & Tree Nut Res. Lab. Introd. in 1989. F<sub>1</sub> open-pollination of Red King nectarine; seed collected in 1979 by V.E. Prince; selected in 1982; tested as BY80N384. Fruit: medium; skin attractive red blush on greenish-white groundcolor; round, flesh white, melting, freestone; flavor very good, high acidity. Ripens 2 weeks after Snow Queen, 1 week after Redhaven. Released to provide a firmer whitenectarine for local sales and mid-range shipping. Flowers showy, self-fertile; leaf glands reniform; moderately resistant to bacterial spot. Chilling requirement about 850 h, making it adapted to most of the Southeast.

**Sierra Star™** (*Sunectthirteen*). -Orig. in Fresno, Calif., by John H. Weinberger and Timothy Sheehan. Introd. in 1988. Plant pat. 6158, 26 Apr. 1988; assigned to Superior Farming Co. S#3 × Flamekist; selected in 1978; tested as 181-119. Fruit: very large, 77 mm in diam.; round; skin dark red on yellow ground color; flesh yellow with red at pit, firm, melting, freestone; ripens 7-10 days after Flamekist, which it most nearly resembles. Tree: medium vigor; upright-spreading; very productive; regular bearing; blossoming midseason. Flowers large, showy, pink. Useful for late-season shipping markets, for which the freestone characteristic is important.

**Star Bright™** (*Sunecten*). -Orig. in Fresno, Calif., by John H. Weinberger. Introd. in 1982. Plant pat. 4927, 9 Nov. 1982; assigned to Superior Farming Co. Open-pollinated seedling of Summer Grand; selected in 1977; tested as 83-50. Fruit most nearly resembles Summer Grand; compared to Early Sun Grand, moreround, smoother, with less prominent tip; medium; skin scarlet on yellow ground color; medium thickness; flesh yellow, mottled with red next to pit, fine texture, melting, excellent eating quality; freestone. In central California,

ripens about with Early Sun Grand. Tree: vigor medium; upright-spreading; productive. Flowers: large, showy, pink.

**Summer Bright.** -Orig. in LeGrand, Calif., by Norman G. and Lowell G. Bradford. Introd. in 1987. Red Diamond nectarine × unnamed peach seedling. Plant pat. 7049, 24 Oct. 1989; assigned to Bright's Nursery, LeGrand. Fruit most nearly resembles Red Diamond. Fruit: large; globose to slightly oblong; skin 75% to 90% deep red on reddish-orange ground color; finish very smooth; flesh yellow, very firm; clingstone; excellent flavor, good sugar/acid balance. In central California, ripens 18 days after Red Diamond, 5 days before Fantasia. Tree: very vigorous; spreading; very productive; hardy in central California. For long-distance shipping.

**Summer Diamond.** -Orig. in LeGrand, Calif. by Norman G. Bradford. Introd. in 1984. Red Diamond open-pollinated. Plant pat. 5654, 4 Feb. 1986; assigned to Bright's Nursery, LeGrand. Fruit resembles Red Diamond. Fruit: medium; slightly oblong; skin dark red on orange-yellow ground color; finish smooth and shiny; flesh yellow, very firm; flavor good; freestone; pit cavity larger than desired. In central California, ripens with Fantasia. Tree: medium vigor; spreading; production medium to heavy; hardy in central California. For long-distance shipping.

**Summer Star™** (*Sunecttwelve*). -Orig. in Fresno, Calif., by John H. Weinberger. Introd. in 1985. Plant pat. 5473, 21 May 1985; assigned to Superior Farming Co. Open-pollinated seedling of Fantasia; selected in 1977; tested as 90-110. Fruit: most nearly resembles Fantasia, with which it ripens, but skin has more red blush and better yellow ground color; rounder and more uniform; fewer cleft sutures; large, 75 mm; flesh yellow, with some red near stone; firm, melting; good eating quality. Tree: vigor medium; upright-spreading; productive.

**Sundollar.** -Orig. in Agr. Expt. Sta., Univ. of Florida, Gainesville, by P.C. Andersen, W.B. Sherman and R.H. Sharpe. Introd. in 1982. Sunlite × Armqueen, cross made in 1978; selected in 1982; tested as 2-4N. Fruit: medium when properly thinned, round, with no significant tip and smooth suture; skin 80% red blush; flesh yellow, melting, good firmness; relatively nonbrowning; semi-clingstone. Ripens 70 days from bloom, early May in northern Florida. Flowers showy, medium pink, leaf glands reniform. Tree: moderately vigorous; productive; semi-upright, but responds well to pruning to open center; sets moderate to high number of fruit buds; self-fertile. Resistant to bacterial leaf spot. Chilling requirement: 400 chill units.

**Sundowner.** -Orig. in Agr. Expt. Sta., Univ. of Florida, Gainesville, by W.B. Sherman and R.H. Sharpe and named by N.S.W. Dept. of Agr., Australia. Open-pollinated seedling of a Columбина × Sunred selection. Selected in 1976; tested as Fla. 6-3N. Fruit: medium; skin 90% red blush; flesh yellow, medium firm, semi-freestone. Ripens 90 days after bloom. Flowers showy; leaf glands reniform. Resistant to bacterial leaf spot. Chilling requirement: 250 chill units.

*Sunectsix.* -See Hi-Red.

*Sunectseven.* -See Pacific Star.

*Sunecteight.* -See Superstar.

*Sunecten.* -See Star Bright.

*Sunecteleven.* -See Crimson Star.

*Sunecttwelve.* -See Summer Star.

*Sunectthirteen.* -See Sierra Star.

**Sungem.** -Orig. in Agr. Exp. Sta., Univ. of Florida, Gainesville, by W.B. Sherman, P.M. Lyrene, P.C. Andersen, T.E. Cracker, and R.H. Sharpe. Introd. in 1977. Complex parentage of Florida selections × Armking; included in the pedigree are Okinawa, Panamint, and Columбина. Tested as Fla. 7-4N. Fruit: small to medium; skin 90% red blush, russeting rare; flesh yellow, melting, firm, semi-clingstone. Ripens 70-75 days after bloom, 5-12 days before Armking. Flowers large, showy, medium pink, self-fruitful; leaf glands reniform. Sets unusually high amount of flower buds. Resistant to bacterial leaf spot. Chilling requirement: 450 chill units.

**Sunhome.** -Orig. Agr. Expt. Sta., Univ. of Florida, Gainesville, by W.B. Sherman, P.M. Lyrene, and R.H. Sharpe. Introd. in 1985. Sunred × complex parentage of Florida selections; included in the pedigree are Elberta, J.H. Hale, and Southland. Selected in 1979; tested as Fla. 9-13NR. Fruit: mediumsmall; nearly round without prominent

suture or tip; skin 100% redblush; flesh yellow, firm, smooth-textured, relatively nonbrowning, semi-freestone; quality medium. Ripens 90 days from bloom. Petals large, pink, showy; leaves dark red (homozygous); leaf glands reniform. Intended for dooryard and landscape purposes. Chilling requirement: 300 chill units. Leaves and fruit highly resistant to bacterial leaf spot.

**Superstar™** (*Sunsecteight*). -Orig. in Fresno, Calif., by John H. Weinberger. Introd. in 1981. Plant pat. 4894, 12 Oct. 1982; assigned to Superior Farming Co. Open-pollinated seedling of Summer Grand; selected in 1978; tested as 84-55. Fruit: large; color brighter than either Sun Grand or Flavortop, with which it ripens; ovate; flesh yellow streaked with red at pit, firm, melting; excellent flavor; freestone. Most nearly resembles Summer Grand. Tree: medium vigor; productive. Flowers: large, showy, pink. Well suited for commercial shipping.

**Tasty-Gold**. -Orig. in Modesto, Calif., by Floyd Zaiger. Introd. in 1986. Ruby Gold × a peach seedling from the Early Sun Grand × Royal Gold cross. Plant pat. 5623, 7 Jan. 1986; assigned to Zaiger's Genetics. Fruit: large; globose; skin yellow overspread with red; flesh dark yellow, firm; mild subacid. Tree: vigorous; productive; chilling requirement 800-1000 h.

### ROOTSTOCKS FOR NECTARINES J. N. Cummins and Tom Beckman

**Damas GF 1869**. -See under Peaches. Incompatible with most nectarines. Compatible with Apache, Aurora Grand, Early Maygrand, Firegold, Fireking, John Rivers, July Red, June Star, Maria Emilia, Maygrand, Maystar, Merrill ×, Mike Star, Moongrand, Nectared 1, Nectarose, Niagara Grand, Pacific Star, Red Diamond, Red Free, Ruby Grand, Snow Queen, Spring Star, Stark Early Bird, Summer Beaut, Summer Red, Summer Star, Sun Star, and Zeegold.

**Flordaguard**. -See under Peach. Compatible with all nectarine varieties tested.

**GF 53.7**. -See under Peach. Compatible with many, but not all, nectarine varieties.

**Hansen 536**. -See under Almonds.

**Hansen 2168**. -See under Almonds.

**Ish tara®**. -See under Plums. Compatible with Summergrand; further compatibilities not yet determined. Semidwarfing.

**Jaspi®**. -See under Plums. Compatible under Fuzalode and Nectared 6; not tested under other varieties. Reduces tree by about 20% compared to peach seedling.

**Julior®**. -See under Peach. Compatible with nectarines. Medium vigor.

**Mr.S.2/5**. -See under Peach. Compatible with all varieties tested.

**Myran®**. -See under Peach. Compatible with nectarine.

**Nemared**. -See under Peach. Compatible with nectarine.

### PEACH

#### Jerry Frecon, Wayne Sherman, and David Cain

**Allgold**. -Orig. at Arkansas Agr. Expt. Sta., Clarksville, by James N. Moore, Roy C. Rom, Stanley A. Brown, and William A. Sistrunk. Introd. in 1984. NJ554367 × G17-5E; cross made by Catherine Bailey and L.F. Hough of New Jersey Agr. Expt. Sta.; selected in 1971; tested as A-142. Complex pedigree includes J.H. Hale, Slappey, Admiral Dewey, Grange Cling Seedling, Alameda, and St. Helena. Fruit: 60-80 mm when well-thinned; round, without prominent suture or tip; skin 25% red on yellow ground color; flesh orange-yellow, very firm, non-melting, clingstone. Ripens 7-10 days before Babygold 5 in Arkansas; uniform maturity within tree. Tree: vigorous; spreading, with good crotch angles. Winter hardiness above average. Leaves and fruit resistant to bacterial spot. Flowers nonshowy; self-fertile; blossom period early.

**Amparo**. -Orig. in Modesto, Calif., by Floyd Gary, and Grant Zaiger and Leith Gardner, Modesto, Calif. Introd. in 1988. Seedling of O'Henry × (seedling of May Grand nectarine × seedling of Sam Houston). Plant pat. 6472, 20 Dec. 1988; owned by Zaiger's Genetics.

Fruit: large; nearly globose; skin yellow ground color overspread with red; flesh golden yellow, medium firm; mild flavor. Tree: vigorous; productive.

*Andergen*. -See Stark® Sensation.

**Arctic Gem**. -Orig. in Modesto, Calif., by Floyd Gary, and Grant Zaiger and Leith Gardner. Introd. in 1988. O'Henry × Giant Babcock. Plant pat. 7065, 12 May 1989; assigned to Zaiger Genetics. Fruit: medium; skin 75% attractive red, medium pubescence; flesh white, very firm, flavorful, freestone. Ripens about 15 days after Redhaven in New Jersey. Tree: vigorous; upright-spreading. Chilling requirement 800-1000 h.

**August Sun**. -Orig. in Del Ray, Calif., by Tom Chamberlain, H.P. Metzler & Sons. Introd. in 1983. Plant pat. 5140, 15 Nov. 1983; licensed exclusively to Agri Sun Nursery. Open-pollinated seedling of O'Henry. Fruit: about 75 mm; skin color red on yellow ground color; round, flesh yellow, freestone. Ripens 55 days after Redhaven in Selma, Calif. Tree: vigorous; very productive; chilling requirement 350-500 h.

**Bellaire**. -Orig. near Martinsburg, W. Va., by Freddie Blair. Introd. in 1985. Discovered in 1977; tested as FB-244. Sport of Loring and similar to Loring except for ripening 10 days earlier. Fruit: medium to large; skin brilliant red blush on yellow-orange ground, little pubescence; round; flesh clear yellow, non-browning; very firm; excellent quality. Tree: vigorous; easily trained; leaves resistant to bacterial spot; hardness similar to that of Redhaven.

**Berenda Sun** -Orig. in Del Ray, Calif., by Tom Chamberlain, H.P. Metzler & Sons. Introd. in 1984. Plant pat. 5297, 23 Nov. 1984; licensed exclusively to Agri Sun Nursery. Open-pollinated seedling of O'Henry. Fruit: medium-large, about 75 mm; round; skin dark red; flesh yellow, freestone. Ripens 45 days after Redhaven in Selma, Calif. Tree: moderately vigorous; productive. Chilling requirement about 350-500 h.

**Bounty**. -Orig. at USDA Appalachian Fruit Research Station, Kearneysville, W. Va., by R. Scorza, H.W. Fogle, L.E. Gilreath, K. Patten, E.W. Neuendorff, and W.R. Okie. Introd. in 1988. [(Halberta O.P.) × Redskin] × (Loring × [(Hiley × Fireglow) × Fireglow]). Fruit: large (usually 65-75 mm, but can reach 100 mm); round; skin 30% to 80% red blush on yellow ground color; flesh yellow, non-browning, firm, freestone; flavor excellent. Ripens uniformly, about 16 days after Redhaven. Good cropping after natural freezes of -21C to -28C. Tree vigorous; flower bud production 1.25 times that of Redhaven. Resistant to bacterial leafspot under normal disease pressure; moderately susceptible under epiphytotic conditions. Chilling requirement ≈ 800 h.

**Cassie**. -Orig. in Modesto, Calif., by Floyd Zaiger. Introd. in 1980. O'Henry open-pollinated. Plant pat. 4571, 15 July 1980; assigned to Zaiger Genetics. Fruit: medium to large; pubescence medium; flesh yellow, firm, good flavor, freestone. Ripens 35 days after Redhaven at Modesto, 25 days after Redhaven in New Jersey. Tree vigorous; upright. Chilling requirement 800-1000 h.

**Chan** (*Extra, Extra Fancy*). -Orig. in Sutter Co., Calif., by Ronald Chan, Yuba City. Introd. in 1984. Bud sport of Andross. Plant pat. 5710, 8 Apr. 1986; assigned to Fowler Nurseries, Newcastle, Calif. Fruit most resembles Halford; large; symmetrical; skin color golden yellow, almost luminous; flesh golden yellow; firm; sweet but mild flavor; clingstone. For commercial canning. Ripens 5 days before Loadel. Tree: moderate vigor; highly productive; spreading; hardy in southern Calif.

*Clendining*. -See Jon Boy.

**Crown Princess** -Orig. in Le Grand, Calif., by Norman G. and Lowell G. Bradford, 11875 E. Savana Rd. Introd. in 1988. Red Diamond nectarine × unnamed peach seedling. Plant pat. 7070, 12 Dec. 1989; licensed exclusively to Bright's Nursery, Le Grand, Calif. Fruit: most nearly resembles Merrill Gemfree. Fruit: large, uniform; skin 50% dark red-streaked on dark pink ground color; attractive; globose, slightly oblate shape; flesh yellow, non-melting, very firm, semi-clingstone to clingstone; mild subacid, very good flavor. Ripens with Merrill Gemfree in California. Primarily for long-distance shipping. Tree: large; very vigorous; productive; regular bearing; spreading; adapted to central California.

**David Sun.** -Orig. in Del Ray, Calif., by Tom Chamberlain, H.P. Metzler & Sons. Introd. in 1985. Plant pat. 5874, 10 Feb. 1987; assigned to Metropolitan Ins. Co.; licensed exclusively to Agri Sun Nursery. Parentage unknown. Fruit: large, 70-75 mm; round; skin fully red on yellow ground; flesh yellow, semi-freestone; no split pits; ripens with Gemfree, 10 days before Redhaven in Selma, Calif. Good shipper. Tree: very vigorous; very productive. Chilling requirement about 300 h.

**Desertred.** -Orig. in Agr. Expt. Sta., Univ. of Florida, Gainesville, by W.B. Sherman and named in northwest Mexico. Complex parentage of Florida selections. Selected in 1979; tested as Fla. 9-10. Fruit: medium; skin 90% dark red blush; flesh yellow, firm, semi-freestone. Ripens 90 days after bloom, Flowers showy; leaf glands reniform. Highly susceptible to bacterial leaf spot. Chilling requirement 250 chill units.

**Diamond Princess.** -Orig. in LeGrand, Calif., by Norman G. and Lowell G. Bradford. Introd. in 1988. Red Diamond nectarine × unnamed peach seedling. Plant pat. 7066, 5 Dec. 1989; licensed exclusively to Bright's Nursery, Le. Grand, Calif. Fruit most nearly resembles RedTop. Fruit: large, uniform; globose; skin color 75% to 95% deep solid red on yellowish pink ground color; flesh yellow, very firm, freestone; light pubescence; excellent flavor with good sugar/acid balance. Ripens 3 days after RedTop in California. Tree: very vigorous; very productive; regular bearing; spreading; hardy in central California. For long-distance shipping.

**Double Jewel.** -Orig. in Modesto, Calif., by Floyd, Gary, and Grant Zaiger and Leith M. Gardner, Modesto, Calif. Introd. in 1988. Seedling of Red Grand nectarine × genetic dwarf peach. Plant pat. 6410, 22 Nov. 1988; owned by Zaiger's Genetics. Fruit: large; globose; skin red over yellow ground color; flesh light, pale yellow, firm; flavor mild, subacid. Tree: vigorous; upright; productive.

**Early Maycrest.** -Orig. in Reedley, Calif., by Ron Toeus. Plant pat. 6229, 26 July 1988; licensed exclusively to Riesner Nursery. Limb mutation of Maycrest. Fruit: medium to large; skin blushed red on golden yellow ground; flesh yellow, firm, clingstone; globose; most nearly resembles Queencrest. Ripens 20 days before Redhaven in Calif.

*Extra, Extra Fancy.* -See Chan.

**Fireprince,** -Orig. at USDA S.E. Fruit & Tree Nut Res. Lab., Byron, Ga. Introd. by W.R. Okie. [(Hal-Berta × Fireglow) × Redglobe] × [(Sunhigh × Southland) × Redcap]; cross made in 1964 by V.E. Prince; selected in 1966; tested as FV5-1942 and BY5-1942. Fruit: large; skin attractive red on yellow ground color, light pubescence; flesh yellow, melting; freestone. Ripens about 10-12 days after Redhaven; released to fill the gap between Harvester and Redglobe. Flowers showy, self-fertile; leaf glands reniform; moderately resistant to bacterial spot. Chilling requirement about 850 h, making it adapted to most of the Southeast.

**Flordabeauty.** -Orig. in Agr. Expt. Sta., Univ. of Florida, Gainesville, by R.H. Sharpe and named in Central America. Introd. in 1972. Complex parentage of Florida selections. Selected in 1967; tested as Fla. 26-31. Fruit: medium large; skin 40% red blush on greenish-yellow ground color; flesh yellow, firm, semi-freestone. Ripens 100 days after bloom. Flowers showy; leaf glands reniform. Moderately susceptible to bacterial leaf spot. Chilling requirement 150 chill units.

**Flordacrest.** -Orig. in Agr. Expt. Sta., Univ. of Florida, Gainesville, by W.B. Sherman, P.M. Lyrene, and T.E. Crocker. Introd. in 1989. Fla. 5-15N × Flordaking. Seed parent has complex parentage including Maygold, Okinawa, Southland, Hawaiian, Merrill Sunrise, Palomar, and Panamint. Selected in 1982, tested as Fla. 82-19. Fruit: medium; skin 70% red blush; flesh yellow, firm, semi-clingstone; some split pits when crop is light. Ripens 74 days after bloom, after Flordaking and before June Gold. Showy flower; leaf glands globose. Highly resistant to bacterial leaf spot. Chilling requirement 400 chill units.

**Flordadawn.** -Orig. in Agr. Expt. Sta., Univ. of Florida, Gainesville, by P.C. Andersen and W.B. Sherman. Introd. in 1989. Flordagold × EarliGrande. Selected in 1979; tested as Fla. G9-1. Fruit: medium small; skin striped red with 60% blush; flesh yellow, softening first at tip, semi-clingstone. Ripens 60 days from bloom. Flowers

showy; leaf glands reniform. Resistant to bacterial leaf spot. Chilling requirement 250 chill units.

**Flordaglo.** -Orig. in Agr. Expt. Sta., Univ. of Florida, Gainesville, by W.B. Sherman and P.M. Lyrene. Introd. in 1989. Sundowner nectarine × Maravilha. Selected in 1982, tested as Fla. 82-9W. Fruit: medium large; skin 90% red blush; flesh white, firm, melting, semiclingstone. Ripens 85 days after bloom. Flower showy; sets high amount of flower buds; leaf glands reniform. Moderately resistant to bacterial leaf spot. Chilling requirement 150 chill units.

**Flordaglobe.** -Orig. in Agr. Expt. Sta., Univ. of Florida, Gainesville, by P.C. Andersen, W.B. Sherman, and R.H. Sharpe. Introd. in 1989. Redglobe × EarliGrande. Selected in 1982; tested as Fla. M2-2. Fruit: medium small; skin 80% red blush; flesh yellow, firm, semi-clingstone. Ripens 63 days after bloom. Flowers non-showy; sets large number of flower buds, reniform leaf glands. Resistant to bacterial leaf spot. Chilling requirement 475 chill units.

**Flordastar.** -Orig. in Agr. Expt. Sta., Univ. of Florida, by W.B. Sherman, P.M. Lyrene, and T.E. Croker. Introd. in 1989. Flordagold × EarliGrande. Selected in 1978; tested as Fla. 8-1. Fruit: medium small; nearly round; skin 60% red blush; smooth suture; pubescence medium short; flesh yellow, some red in flesh when full ripe; firm, melting, semi-clingstone. Ripens with Flordaprince, 72 days after bloom. Flower showy; leaf glands globose. Highly resistant to bacterial leaf spot. Chilling requirement about 225 chill units.

**Goldilocks.** -Orig. at Arkansas Agr. Expt. Sta., Clarksville, by James N. Moore, Roy C. Rom, Stanley A. Brown, and William A. Sistrunk. Introd. in 1984. NJ554367 × G17-5E; cross made by Catherine Bailey and L.F. Hough of New Jersey Agr. Expt. Sta.; selected in 1966; tested as A-15. Complex pedigree includes J.H. Hale, Slappey, Admiral Dewey, Grange Cling Seedling, Alameda, and St. Helena. Fruit: about 6 cm when well-thinned; round, without prominent suture or tip; skin yellow with light splash of red, flesh yellow-orange with no red pigment, very firm, non-melting, clingstone. Ripens about 3 days before Baby gold 5 in Arkansas. Tree: medium vigor; upright-spreading, with good crotch angles. Considerable tolerance to bacterial spot. Flowers nonshowy; self-fertile; blossom period early. Leaf glands reniform. Chilling requirement about 750 h.

**Goldprince.** -Orig. at Byron, Ga., by W.R. Okie, USDA S.E. Fruit & Tree Nut Res. Lab. Introd. in 1989. Loring × [(Fairhaven × FV89-14) × (FV89-14 × Duke of Georgia)]; FV89-14 is an F2 of (Hiley × Fireglow) × Fireglow. Cross made in 1966 by V.E. Prince; selected in 1970; tested as FV7-1240 and BY7-1240. Fruit: medium; skin attractively, light pubescence; flesh melting, clingstone. Ripens with Junegold, 3 weeks before Redhaven. Better shape and color and fewer split pits than Junegold, which it replaces. Flowers showy, self-fertile; leaf glands reniform; moderately resistant to bacterial spot. Chilling requirement about 650 h, limiting its adaptation to the lower Southeast.

**Granite Supreme.** -Orig. in Applethorpe, Queensland, Australia, by C.W. Winks, A.M. Hibberd, and B.L. Topp, Granite Belt Hort. Res. Sta. Introd. in 1988. Selfed seedling of a Goldmine nectarine × Early Elberta selection. Seed collected in 1974 by A.M. Hibberd; selected in 1980, tested as N1T6. Fruit: medium; skin 75% red blush; flesh medium yellow with red flecks near pit; exceptionally firm, melting, clingstone; flavor well-balanced sub-acid, texture medium. Ripens 4 days before Redhaven. Flower non-showy. Tree vigorous, highly productive; chilling requirement about 800 chill units. Moderately susceptible to bacterial leaf spot.

**Haig Arakelian, Sr.** -Orig. near Modesto, Calif., by Haig Arakelian, Sr. Seedling of unknown parentage. Plant pat. 6230, 26 July 1988; assigned to Burchell Nursery. Fruit: medium to large, typically about 65 mm; globose, symmetrical; skin light red over 15% of surface on light yellow ground color; flesh bright yellow with no red around pit; nonmelting; flavor good, well-balanced; clingstone. Ripens last week of July at Modesto. Tree: vigorous; upright-spreading; very productive; regular production; hardy under typical San Joaquin Valley conditions. Leaf glands globose, small, light green, darkening with age. Flowers small, non-showy, abundant. Released for commercial canning.

*Harmon.* -See So More.

**Harrow Diamond** -Orig. at Harrow, Ont., by R.E.C. Layne, Agriculture Canada Research Station. Introd. in 1984. Redskin × Harbinger; tested as HW213. Fruit: medium, to 60mm when properly thinned; skin color solid, bright red blush over 60% to 70% of surface on bright yellow ground color; pubescence short and sparse; flesh yellow, nonbrowning, melting, medium firm, moderately sweet and juicy; freestone when fully ripe; free of split pits. Fruit ripens 1 day before Candor and Earlired. Pit deeply sculptured; medium; plump; without wings. Flowers showy, pink, midseason. Tree: vigor medium; productive; open-spreading, with medium to wide crotch angles; tolerant to *Leucostoma* canker; resistant to bacterial spot and brown rot. Wood and fruit buds are winter hardy like Redhaven; full crops were produced after exposure to -26 and -28C.

**Hawthorne** -Orig. at Calhoun, La., by C.E. Johnson, W.A. Young, J.E. Boudreaux, W. J. Bourgeois, F. J. Peterson, and P.W. Wilson, Louisiana Agr. Expt. Sta. Introd. in 1990. Open-pollinated seedling of L1-27-13, an OP selection of L9-10-40, which was selected from OP Southern Glow; selected in 1976; tested as L73-A10-10. Fruit: large, 70 mm; skin 90% red over medium yellow ground; flesh yellow, with some red near pit, firm, good texture, freestone; nearly round, with non-prominent suture. Ripens in late June at Calhoun, midway between Harvester and LaFeliciana. Flowers large, showy, self-fertile. Leaf glands reniform. Tree: vigorous, productive; no bacterial spot has been observed on fruit and relatively little on leaves. Chilling requirement 500-600 h at 7C or colder.

**Hermosillo** -Orig. in Agr. Expt. Sta., Univ. of Florida, Gainesville, by W.B. Sherman and named in northwest Mexico. Introd. in 1984. Complex parentage of Florida selections. Selected in 1981; tested as Fla. 81-30. Fruit: large; skin 90% purplish-red blush; flesh yellow, firm, freestone. Ripens 108 days after bloom. Flower showy; leaf glands reniform. Moderately resistant to bacterial leaf spot. Chilling requirement 300 chill units.

**Honey Bee** -Orig. in Modesto, Calif., by Floyd Gary, and Grant Zaiger and Leith Gardner. Introd. in 1984. Spring crest × genetic dwarf peach. Plant pat. 5276, 28 Aug. 1984. Fruit: large; slightly asymmetrical; skin bright yellow ground color almost covered by red blush, flesh yellow, moderately firm; subacid. Tree: relatively low vigor; spreading; productive.

**Jayhaven** -Orig. at South Haven, Mich., by Stanley Johnston, Michigan State Univ. Introd. in 1976 by R.L. Andersen, J.E. Moulton, T.M. Thomas, and H.J. Belter. SH333 [Redhaven × SH1171 (Halehaven O.P.)] × SH348 (Ambergem OP); selected in 1965; tested as SH467. Fruit: medium; round, uniform; skin 80% red blush over golden-yellow ground color, pubescence sparse; flesh clear yellow, very firm, freestone; quality commercially acceptable. Ripens with Glohaven, 10 days after Redhaven. Tree: vigor medium; upright-spreading; productive. Flower bud hardness similar to that of Redhaven. Blossoms non-showy. Tolerant of bacterial spot.

**Jon Boy (Clendining)** -Orig. in Richwood, N.J., by Edward Clendining. Introd. in 1981. Plant pat. 6827, 6 June 1989; assigned to Adams Co. Nursery. Limb sport of Loring. Resembles Loring, but ripens 10 days earlier with much more red skin color. Fruit: large; firm; semi-freestone. Tree: vigorous; productive; resistant to bacterial leaf spot.

**July Sun** -Orig. in Del Ray, Calif., by Tom Chamberlain, H.P. Metzler & Sons. Introd. in 1983. Plant pat. 5139, 15 Nov. 1983; assigned to Metropolitan Insurance Co.; licensed exclusively to Agri Sun Nursery. Open-pollinated seedling of July Lady. Fruit: very large, up to 100 mm; skin medium red on bright yellow ground; round, flesh yellow, freestone. Ripens 12 days after Redhaven in New Jersey, 20 days after Redhaven in Selma, Calif. Tree: very vigorous; very productive. Chilling requirement about 350 h.

**June Pride** -Orig. in Modesto, Calif., by Floyd Gary, and Grant Zaiger and Leith Gardner. Introd. in 1989. O'Henry × June Lady. Plant pat. 6747, 18 Apr. 1989; assigned to Zaiger Genetics. Fruit: medium-large; skindark, full red, attractive; pubescencemedium; flesh yellow, very firm, good flavor; semi-freestone. Ripens with Redhaven at Modesto. Tree: vigorous; upright. Chilling requirement 800-1000 h.

**June Sun** -Orig. in Del Ray, Calif., by Tom Chamberlain, H.P. Metzler & Sons. Introd. in 1987. Plant pat. no. 5873, 3 Feb. 1987;

owned by Metropolitan Insurance Co.; licensed exclusively to Agri Sun Nursery. Unknown parentage. Fruit: large, up to 85 mm; round; skin dark red on yellow ground, flesh yellow, freestone. Ripens with or just ahead of Redhaven in Calif. Tree: very vigorous; very productive; upright. Chilling requirement about 300 h.

**Junecrest** -Orig. in Modesto, Calif., by Floyd Gary, and Grant Zaiger and Leith Gardner. Introd. in 1986. Fayette × a Mexican cling peach of unknown parentage. Plant pat. 5641, 21 Jan. 1986; assigned to Zaiger Genetics. Fruit: medium to large; skin well-colored; pubescence medium; flesh yellow, semi-freestone; round with firm tip; very good flavor. Ripens 15 days before Redhaven at Modesto. Tree vigorous; upright. Chilling requirement 800-1000 h.

**Juneprince** -Orig. at Byron, Ga., by W.R. Okie, USDA S.E. Fruit & Tree Nut Res. Lab. [(Sunhigh × Southland) × Redcap] × Junegold; cross made in 1963 by V.E. Prince; selected in 1966; tested as FV4-3751 and BY4-3751. Fruit: large; skin attractive red on yellow ground color, pubescence light; flesh melting, freestone. Ripens 5-7 days before Redhaven; released to replace Coronet. Flowers showy, self-fertile; leaf glands absent; leaf margin serrate. Moderately resistant to bacterial spot. Chilling requirement about 650 h, limiting its use to the lower Southeast.

**Kern Sun** -Orig. in Del Ray, Calif., by Tom Chamberlain, H.P. Metzler & Sons. Introd. in 1983. Plant pat. 4980, 8 Feb. 1983; owned by Metropolitan Insurance Co.; licensed exclusively to Agri Sun Nursery. Open-pollinated seedling of June Lady. Fruit: medium, 65-75 mm; round; skin dark red on yellow ground; flesh yellow, semi-freestone, firm; early; attractive. Ripens 15 days before Redhaven in Selma, Calif. Tree: mediumvigorous; very productive; upright. Chilling requirement 300-350 h.

**La Festival** -Orig. at Idlewild Research Station, Clinton, La., by J.E. Boudreaux, C.E. Johnson, P.L. Hawthorne, W.A. Young, R.L. Cunningham, M.G. Lartigue, T.J. Raiford, F.J. Peterson, and P.W. Wilson. Introd. in 1985. Open-pollinated seedling of La Feliciana; selected in 1983; tested as L71-A73-3. Fruit: medium to large; skin 80% bright red over medium yellow ground; spherical; flesh yellow with red flecks; firm; freestone; very good flavor. Ripens midway between Harvester and La Feliciana. Tree: vigorous; productive. Leaves and fruit resistant to bacterial spot. Chilling requirement 400-500 h.

**Lady Lou** -Orig. in Parlier, Calif., by Kengo Osumi. Plant pat. 6940; 25 July 1989. Licensed exclusively to Riesner Nursery. Limb sport of June Lady. Fruit: medium; globose; skin fully red-blushed; flesh yellow, firm, clingstone. Productive. Ripens 16 days before Redhaven in Calif.

**Lady Nancy** -Orig. near Hammonton, N.J., by Medio DeMarco, De Marco Orchards. Introd. in 1989. Plant pat. 7069, 12 Dec. 1989; assigned to Adams Co. Nursery and Burchell Nursery. Limb sport of Jerseyqueen. Fruit: large to very large; shape globose to ovate, not symmetrical; skin 75% scarlet red, on greenish-white ground color; flesh white, firm, with yellow suture line through the flesh; excellent quality; ripens with Jerseyqueen, before Rio Oso Gem. Excellent storage characteristics. Tree: similar to Jersey Queen; very vigorous; large; open-spreading; production regular.

**LaJewel** -Orig. in Calhoun, La., by C.E. Johnson and W.A. Young. Introd. in 1988. Redglobe × Prairie Rose. Cross made in 1959; selected in 1962; tested as L-9-6-4. Fruit: medium to large, up to 76 mm; skin medium red over 40% of surface, ground color deep yellow; pubescence short; flesh yellow; firm; freestone; occasionally flesh at stem end separates from stone. Ripens about 15 days after Elberta. Flowers: showy; rose; self-fertile; tolerant of spring frosts. Leafglands reniform. Tree: vigorous; productive; resistant to bacterial spot; no tendency to sunscald or cold damage. Chilling requirement about 850 h below 7.2C.

**Maravilha** -Orig. in Agr. Expt. Sta., Univ. of Florida, Gainesville, by R.H. Sharpe and named in southern Brazil. Complex parentage of Florida selections; heterozygous for nectarine. Selected in 1966; tested as Fla. 13-72. Fruit: medium small; skin 90% red blush; flesh white; softens first at tip; semicling. Ripens 80 days after bloom. Flower showy; reniform leaf glands. Moderately resistant to bacterial leaf spot. Chilling requirement 250 chill units.

**May Sun.** -Orig. in Del Ray, Calif., by Tom Chamberlain, H.P. Metzler & Sons. Introd. in 1989. Plant pat. 6992, 22 Aug. 1989; owned by Metropolitan Insurance Co.; licensed exclusively to Agri Sun Nursery. Parentage unknown. Fruit: large, about 3.5 inches; round; skin medium red on bright yellow ground; flesh yellow, clingstone; ripens 25 days before Redhaven in Selma, Calif. Tree: very vigorous; very productive. Chilling requirement about 300 h.

**Newbelle.** -Orig. in Agr. Expt. Sta., Univ. of Florida, Gainesville by R.H. Sharpe and named by local growers. Introd. in 1984. Complex parentage of Florida selections. Selected in 1968; tested as Fla. 1E-138. Fruit: large; skin 60% red blush; flesh yellow, firm, freestone. Ripens 105 days after bloom. Flower showy; leaf glands reniform. Resistant to bacterial leaf spot. Chilling requirement 150 chill units.

**Newhaven.** -Orig. at South Haven, Mich., by Stanley Johnston, Michigan State Univ. Introd. in 1978 by R.L. Andersen, J.E. Moulton, T.M. Thomas, and H.J. Belter. Open-pollinated SH371 (Redhaven × Fairhaven); selected in 1962; tested as SH415. Fruit: medium-large; roundish oblong; skin 70% bright red over golden-yellow ground color; flesh clear yellow, non-browning, very firm, freestone; flavor excellent. Ripens 5-7 days after Redhaven. Tree: vigor medium; spreading; productive; leaf glands reniform. Flower bud hardness similar to that of Redhaven. Blossoms non-showy. Considerably more tolerant than Redhaven to bacterial spot.

**Oro-A.** -Orig. in Agr. Expt. Sta., Univ. of Florida, Gainesville, by W.B. Sherman and released jointly with J. Rodriguez, Centro de Fruticultura, Colegio de Postgraduados, Chapingo, Mexico. Introd. in 1990. Diamante open-pollinated. Selected in 1984; tested as Fla. 84-12C. Fruit: medium small; skin yellow; flesh yellow, non-melting, clingstone; devoid of red in skin and flesh. Ripens 85 days after bloom. Flower small, showy; leaf glands reniform. Resistant to bacterial leaf spot and powdery mildew. Chilling requirement 275 chill units. Released for use in breeding and for processing.

**Queencrest.** -Orig. in Reedley, Calif., by Leo and Rosalie Balakian, Reedley, Calif. Introd. in 1986. Plant patent 6025, 29 June 1987. Bud sport of Maycrest; tested as B41871. Fruit: medium to large; round; skin red-blushed on golden ground color; flesh yellow amber, firm, clingstone; flavor sweet, not acid. Ripens 20 days before Redhaven in California. Good shipper. Tree: vigorous and productive for an early variety.

**Rayon.** -Orig. in Agr. Expt. Sta., Univ. of Florida, Gainesville, by R.H. Sharpe and named in northwest Mexico. Introd. in 1982. Complex parentage of Florida selections. Selected in 1971; tested as Fla. 1-11. Fruit: large; skin 40% red blush; flesh yellow, medium firm, freestone. Ripens 102 days after bloom. Flower showy; leaf glands reniform. Moderate resistance to bacterial leaf spot. Chilling requirement 200 chill units.

**Ryan Sun.** -Orig. at Del Ray, Calif., by Tom Chamberlain, H.P. Metzler & Sons. Introd. in 1983. Plant pat. 5103, 13 Sept. 1983; owned by Metropolitan Insurance Co.; licensed exclusively to Agri Sun Nursery. Open-pollinated seedling of O'Henry. Fruit: large, up to 100 mm; round; skin dark red on yellow ground; flesh yellow, freestone. Ripens 60 days after Redhaven in Selma, Calif. Tree: very vigorous; upright. Chilling requirement about 500 h.

**San Pedro.** -Orig. in Agr. Expt. Sta., Univ. of Florida, Gainesville, by R.H. Sharpe and named in northern Argentina. Complex parentage of Florida selections. Selected in 1964; tested as Fla. 16A-33. Fruit: medium large; skin 30% red blush; flesh yellow, medium-firm, semi-freestone. Ripens 85 days after bloom. Flower showy; leaf glands reniform. Moderate resistant to bacterial leaf spot. Chilling requirement 300 chill units.

**Scarletpearl.** -Orig. at Byron, Ga., by W.R. Okie, USDAS. E. Fruit & Tree Nut Res. Lab. Introd. in 1989. (Biscoe × Redgold nectarine) open-pollinated; seed collected in 1980, selected in 1983; tested as BY81P1411. Fruit: medium; skin attractive red blush on greenish white ground color, light pubescence; shape round; flesh white, melting; clingstone. Flavor is typical of other early-season peaches. Ripens with June Gold, 3 weeks before Redhaven. Flowers showy, self-fertile; leaf glands globose; moderately resistant to bacterial spot. Chilling requirement about 750 h, making it adapted to most of the Southeast. Released to provide a firmer white peach for local sales and mid-range shipping.

*Sensation (Andergen).* -See Stark® Sensation.

**September Sun.** -Orig. at Del Ray, Calif., by Tom Chamberlain, H.P. Metzler & Sons. Introd. in 1987. Plant pat. 6008, 8 Sept. 1987; assigned to Metropolitan Insurance Co.; licensed exclusively to Agri Sun Nursery. Parentage unknown. Fruit: large, up to 100 mm; round; skin medium red on yellow ground; flesh yellow, freestone. Ripens 90 days after Redhaven in Selma, Calif. Tree: very vigorous; very productive; upright. Chilling requirement >500 h.

**Shermans Early.** -Orig. in Agr. Expt. Sta., Univ. of Florida, Gainesville, by R.H. Sharpe and named in New South Wales, Australia. Introd. in 1985. Complex parentage of Florida selections. Selected in 1973; tested as Fla. 3-1. Fruit: small; skin 60% red blush; flesh yellow, medium-firm but softening first at tip, semi-clingstone. Ripens 60 days from bloom. Flower non-showy; leaf glands reniform. Resistant to bacterial leaf spot. Chilling requirement 400 chill units.

**Shermans Red.** -Orig. in Agr. Expt. Sta., Univ. of Florida, Gainesville, by R.H. Sharpe and named in New South Wales, Australia. Introd. in 1985. Sunred × Springbrite. Selected in 1972; tested as Fla. 2-2. Fruit: medium small; skin 90% red blush; flesh yellow, firm, semi-clingstone. Ripens 70 days from bloom. Flowers showy; leaf glands reniform. Resistant to bacterial leaf spot. Chilling requirement 300 chill units.

**Sierra Lady.** -Orig. in Reedley, Calif., by Michael Jost. Plantpat. 6045, 27 Oct. 1987; licensed exclusively to Sierra Gold Nursery. Limb sport of O'Henry discovered in 1981. Fruit: medium-large to large; globose to slightly irregular; skin red to red-orange on yellow ground; flesh yellow with moderate amount of red flecking; pit cavity dark red; very firm, melting, fine textured; freestone; flavor very good, moderate acid, well balanced. Ripens 35 days after Redhaven in California, 2 weeks before O'Henry. Tree: vigor medium; upright spreading; productive. Flowers large, pink, showy, slightly later than most varieties.

**Som-Mor.** -Orig. in Woolwine, Va., by Murray Harmon. Introd. in 1988. Plant pat. 6828, 6 June 1989; assigned to Adams Co. Nursery. Chance seedling. Fruit: large; skin 3/4 red blush over yellow ground color; flesh yellow, firm, freestone. Ripens with and similar to Rio Oso Gem. Buds above average cold hardness and frost tolerance. Blossoms large, pink, showy, usually profuse. Some brown rot tolerance.

**Stark® Sensation (Andergen, Sensation).** -Orig. in Le Grand, Calif., by Norman G. Bradford. Introd. in 1983. Plant pat. 5124, 18 Oct. 1983; assigned to Stark Bro's Nurseries. Unnamed nectarine seedling 16K275 × unnamed peach seedling 54P105. Fruit: medium to large; globose; skin 85% red on yellow ground color; flesh yellow; medium firm; flavor mild, very good. Ripens late June in central California, 7 weeks before Elberta. Tree: genetic dwarf; medium productivity; spreading and drooping limbs; leaves large; hardy in zones 5 to 8. Suitable for pot culture.

**Sugar Lady.** -Orig. in Modesto, Calif., by Floyd, Gary, and Grant Zaiger and Leith Gardner. Introd. in 1989. Plant pat. pending; owned by Zaiger Genetics. Fruit: large; skin dark red blush on cream background; flesh white, very firm, sweet, low acid, freestone. Ripens 25 days after Redhaven in California.

**Summer Sun.** -Orig. in Del Rey, Calif., by Tom Chamberlain, H.P. Metzler & Sons. Introd. in 1986. June Lady open-pollinated. Plant pat. 6007, 8 Sept. 1987; owned by Metropolitan Insurance Co.; licensed exclusively to Agri Sun Nursery. Fruit: most resembles June Lady; medium; skin bright red on yellow ground; flesh yellow, crisp, excellent flavor. freestone. Ripens 10 days after Redhaven in Selma, Calif., 3 days after June Lady. Tree: vigorous; productive.

**Sweet Sue.** -Orig. near Glassboro, N.J., by J. Wilson Hughes, Broad Acres Fruit Farm. Chance seedling of unknown parentage. Introd. in 1979. Plant pat. 4451, 21 Aug. 1979; assigned to Newark Nurseries. Fruit: large; skin bright red blush over strong yellow ground; smooth suture; flesh deep yellow, very firm, melting, pleasant aroma, excellent flavor. Ripens uniformly with or slightly later than Rio-Oso-Gem; excellent storage and shipping quality. Tree vigorous, spreading; very productive; moderate resistance to bacterial spot.

**Sweethaven.** -Orig. at South Haven, Mich., by Stanley Johnston, Michigan State Univ. Introd. in 1976 by R.L. Andersen, J.E. Moulton, T.M. Thomas, and H.J. Belter. SH333 [Redhaven × SH171 (Halehaven

O.P.]] × Crosby; selected in 1965; tested as SH448. Fruit: medium-small, requiring heavy thinning; round, skin brilliant 90% red-striped blush over bright yellow ground color; pubescence short; flesh clear yellow, semicling; few split pits; flavor superior for its season. Ripens with Garnet Beauty, 14 days before Redhaven. Tree: vigor medium; spreading; leaf glands globose. Flower buds hardier than those of Redhaven. Blossoms non-showy. Slightly more tolerant than Redhaven to bacterial spot.

**TAMU Denman.** -Orig. at Stephenville, Texas, by J.W. Worthington, J.S. Newman, and J. Lasswell, Texas A&M Univ. Res. & Ext. Center. Introd. in 1984. Redglobe open-pollinated; selected in 1962. Fruit: mostly 55-70 mm if well-thinned; skin color attractive red blush on 75% to 100% of surface; medium pubescence; round, flesh yellow, fine textured, excellent flavor; very firm; freestone. Small pit. Harvest about 1 week after Loring. Tree: vigorous; upright-spreading, easily trained to open center; highly branched, producing large quantities of fruiting wood. More resistant to bacterial spot than is Redglobe. Abundant bud set and extended bloom period has reduced crop failure from late spring frosts.

**Tasty Zee.** -Orig. in Modesto, Calif., by Floyd, Gary, and Grant Zaiger and Leith Gardner, Modesto, Calif. Introd. in 1988. O'Henry × Giant Babcock. Plant pat. 6409, 22 Nov. 1988; owned by Zaiger Genetics. Fruit: medium to large; globose; attractive, 80% red; pubescence medium; flesh white, very firm, good flavor, free to semi-freestone. Ripens about 18 days after Redhaven in New Jersey. Tree: vigorous; upright-spreading. Chilling requirement 800-1000 h.

**Texstar.** -Orig. in College Station, Texas, by D.H. Byrne and J.S. Kamas. Introd. in 1984. Parentage unknown; selected in 1973 by H.H. Bowen; tested as TAES M9. Distributed by Foundation Seed Services, Texas AES. Fruit: moderately large (57-68 mm); skin attractive red blush over 40% of surface; pubescence moderate; flesh yellow, firm, good flavor and texture, semi-freestone; round to oblong with no prominent suture or tip when sufficient chilling has been received; good storage life. Ripens about with Junegold, 45 days before Elberta. Tree: vigorous; productive; heavy thinning required to size fruit. Susceptible to peach leaf curl; no observation of bacterial leaf spot. Leaf glands reniform. Flowers: showy; bloom date 6 days before Junegold. Chilling requirement about 550 h below 7.2C.

**Topcrest.** -Orig. in Modesto, Calif., by Floyd, Gary, and Grant Zaiger and Leith Gardner, Modesto, Calif. Introd. in 1986. Fayette × a Mexican seedling of unknown parentage. Plant pat. 5745, 13 May 1986. Owned by Zaiger Genetics. Fruit: medium; pubescence medium; flesh yellow, firm, semi-freestone; very good flavor. Ripens 35 days before Redhaven in Modesto. In New Jersey, smaller than Redhaven, clingstone; ripens 40 days before Redhaven. Tree: vigorous; upright-spreading. Chilling requirement about 800 h.

**TropicBeauty.** -Orig. in Agr. Expt. Sta., Univ. of Florida, Gainesville, by W.B. Sherman. Introd. in 1988 by R.E. Rouse, Texas Agr. Expt. Sta. and W.B. Sherman. Complex parentage of Florida selections × Flordaprince. Selected in 1982; tested as Fla. 82-10. Fruit: medium; skin 80% red blush on bright yellow ground color; pubescence short; round, flesh bright yellow, very firm, semi-clingstone. Ripens 90 days after bloom. Flowers showy with small calyx cup; leaf glands reniform. Heterozygous for nectarine. Moderately susceptible to bacterial leaf spot. Chilling requirement 150 chill units.

**TropicSnow.** -Orig. in Agr. Expt. Sta., Univ. of Florida, Gainesville, by W.B. Sherman. Introd. in 1988 by R.E. Rouse, Texas Agr. Expt. Sta. and W.B. Sherman. Complex parentage of Florida selections × Maravilha. Selected in 1982; tested as Fla. 82-24W. Fruit: large; skin 25% red blush; flesh white, medium firm, melting, freestone; pronounced suture bulge; flavor tart but sweet. Ripens 95 days after bloom, 18-20 days after Flordaprince. Flower showy; leaf glands reniform. Resistant to bacterial leaf spot. Chilling requirement 200 chill units.

**TropicSweet.** -Orig. in Agr. Expt. Sta., Univ. of Florida, Gainesville, by R.H. Sharpe and W.B. Sherman. Introd. in 1986 by R.E. Rouse of Texas Agr. Expt. Sta. and W.B. Sherman. Complex parentage of Florida selections. Selected in 1975; tested as Fla. 5-12. Fruit: medium large; skin 70% red blush on dull yellow ground color; flesh

orange-yellow, firm, semi-freestone. Ripens 98 days after bloom. Flowers showy; small calyx cup; leaf glands reniform. Moderately susceptible to bacterial leaf spot. Chilling requirement 175 chill units.

**ValleGrande.** -Orig. in Weslaco, Texas, by R.E. Rouse and D.H. Byrne. Introd. in 1990. Bud mutation of EarliGrande, discovered in 1983; tested as RGV-83-1. Fruit: compared to EarliGrande, larger (120 g). more highly blushed (60% to 75% red) and 5-7 days later ripening; round, flesh yellow, moderately firm, fine-textured, slightly red next to pit, resistant to browning; semi-freestone. Tree: vigorous; productive; leaf glands globose; flowers non-showy. Susceptible to rust; assumed to be moderately tolerant to bacterial leafspot as is EarliGrande. Chilling requirement 250 chilling units; will set and mature a crop with less chilling, but flowering and foliation will be delayed 5-10 days.

**Valley Gem.** -Orig. by Paul E. Hansche, Univ. of California, Davis. Introd. in 1989. Cal Red × A 54P455 (a brachytic dwarf selection from the late Fred Anderson). Plant pat. 6976, 8 Aug. 1989; assigned to Regents of Univ. of California. Fruit: medium; fairly regular in shape, slightly oblong; skin covered 80% to 100% with deep red blush on bright golden ground; flesh medium to moderate orange yellow with occasional short radiating red lines near pit; very firm; freestone; sweet with mild subacid flavor; excellent eating quality. Ripening relatively uniform, 10-12 days after O'Henry at Davis. Tree: brachytic dwarf, not expected to exceed 2 m on standard rootstock; very precocious and very productive; blooms about 1 week earlier than standard cultivars. Flowers showy, profuse.

**Valley Red.** -Orig. by Paul E. Hansche, Univ. of California, Davis. Introd. in 1989. A high-quality standard peach, 11,7-15, × A54P455 (a brachytic dwarf selection from the late Fred Anderson). Plant pat. 6671. Assigned to Regents of Univ. of California. Fruit: medium; nearly spherical; skin covered 80% to 100% with deep red blush on bright golden ground; flesh medium to golden yellow with little or no red; firm; sweet with mild subacid flavor; very good eating quality. Ripening relatively uniform, about 2 weeks before O'Henry at Davis. Tree: brachytic dwarf, not expected to exceed 2 m on standard rootstock, very precocious and very productive; blooms about 1 week earlier than standard cultivars. Flowers showy, profuse.

**Valley Sun.** -Orig. by Paul E. Hansche, Univ. of California, Davis. Introd. in 1989. 11,5-19 (a high-quality standard peach) × A50P620 (a brachytic dwarf selection from the late Fred Anderson). Plant pat. 6912, 11 July 1989; assigned to Regents of Univ. of California. Fruit: medium; nearly spherical; skin covered 80% to 100% with deep red blush on bright golden ground; pubescence very fine, light; flesh medium to golden yellow with little or no red; very firm; freestone; sweet with mild subacid flavor; very good eating quality. Ripening relatively uniform, slightly later than O'Henry at Davis. Tree: brachytic dwarf, not expected to exceed 2 m on standard rootstock; very precocious and very productive; blooms about 1 week earlier than standard cultivars. Flowers showy, profuse.

**White Lady.** -Orig. in Modesto, Calif., by Floyd, Gary, & Grant Zaiger and Leith Gardner, Modesto, Calif. Introd. in 1986. [(O'Henry × Giant Babcock) × May Grand] × Sam Houston Plant pat 5821, 9 Dec. 1986; owned by Zaiger Genetics. Fruit medium to large; skin highly colored; pubescence medium; flesh white, very firm, high-quality, low acid, mild-flavored. Ripens 5 days after Redhaven in N.J. Tree vigorous; upright-spreading. Chilling requirement 800-1000 h.

**Zee Lady.** -Orig. in Modesto, Calif., by Floyd, Gary, and Grant Zaiger and Leith Gardner, Modesto, Calif. Introd. in 1986. O'Henry × June Lady. Plant pat. 5832, 16 Dec. 1986; owned by Zaiger Genetics. Fruit: large; skin full red; pubescence medium; round; flesh yellow, very firm, very good flavor; freestone. Ripens 35 days after Redhaven in Calif, 30 days after Redhaven in New Jersey. Tree: vigorous; upright-spreading. Chilling requirement 800-1000 h.

**Zee Red.** -Orig. in Modesto, Calif., by Floyd, Gary, and Grant Zaiger and Leith Gardner, Modesto, Calif. Introd. in 1986. Fayette × May Grand nectarine. Plant pat. 5831, 16 Dec. 1986; owned by Zaiger Genetics. Fruit: large; skin even, dark red, pubescence medium; flesh yellow, very firm, good flavor, freestone. Ripens 20 days after Redhaven in New Jersey. Tree: vigorous; upright-spreading. Chilling requirement 800-1000 h.

**ROOTSTOCKS FOR PEACHES**  
**Tom Beckman and J.N. Cummins**

*Avimag*. -See Cadaman®.

**Cadaman®** (*Avimag*). -Orig. jointly at INRA Fruit Research Station, Pont-de-la-Maye, France, and GDFVEA, Budapest, Hungary. Introduced in 1989. Selected from across of *Prunus persica* × *P. davidiana* made by I. Gergely (GDFVEA); tested as No. 41-4-21. A clonal rootstock propagated by softwood and semi-hardwood cuttings and by in vitro techniques. Very vigorous in early years, then stabilizing when production begins. Compatible with all varieties of peaches and almonds. Tolerance to waterlogging better than GF 677; similar productivity and tolerance to root-knot nematodes. On the unbudded tree, flower showy, light pink; fruit small, freestone.

**Citation**. -Orig. in Modesto, Calif., by Floyd Zaiger. Introduced in 1982. Open-pollinated seedling of Red Beaut (presumed plum × peach hybrid); tested as 4-G-816. Plant pat. 5112, dated 29 Apr. 1982; owned by Zaiger Genetics. A red leaved, precocity-inducing clonal rootstock compatible with most peach varieties. Reduces tree size by about 40% to 50%. Readily propagated by hardwood and softwood cuttings. Recommended for use only with virus-free scions. Induces very early maturation of wood and very early leaf fall. The unbudded tree is an attractive ornamental, with showy pink flowers that are mostly female-sterile. Leaf glands globose.

**Damas GF 1869**. -Orig. at Pont-de-la-Maye, near Bordeaux, France, at INRA Fruit Res. Station. Open-pollinated Damas de Toulouse; selected in 1945; introduced in 1955. Putative parent *P. spinosa*. A clonal rootstock compatible with most peach varieties, but incompatible with Babcock, Fairway, Redwing, Summer Pearl, Sunnyside, and several European varieties. Semi-vigorous, producing tree somewhat smaller than one on peach rootstock. Intermediate productivity index. More tolerant than peach roots on poorly drained soils. Propagated readily by softwood and hardwood cuttings. Suckers profusely.

*Fereley*. -See Jaspi®.

*Ferdor*. - See Julior®.

**Flordaguard**. -Orig. at Gainesville, Fla., by W.B. Sherman and R.H. Sharpe, Univ. of Florida. Introduced in 1991. Derived in six generations from Chico 11 × *Prunus davidiana* (C-26712). Chico 11 = Shau Thai (PI 65821) open-pollinated. Tested as Fla. 14-11. A red-leaved seedling rootstock. Resistant to *Meloidogyne javanica* and *M. incognita* (races 1 and 3). Susceptible to lime-induced chlorosis. On the unbudded tree, flower pink, showy; leaf gland reniform; fruit small, yellow-fleshed freestone.

**GF 43**. -See under Plums. Compatible with many peach varieties; very vigorous.

**GF 53.7**. -Orig. at Pont-de-la-Maye, near Bordeaux, France, by Ch. Grasselly, INRA Fruit Research Station. Introduced in 1975. An open-pollinated seedling of St. Julien d'Orleans selected in 1960. A pentaploid, probably after natural cross with *Prunus spinosa*. A clonal rootstock easily propagated by hardwood cuttings. Compatible with all peach and nectarine varieties tested. Tolerant to waterlogging. Considerable suckering after 5-6 years.

**GF 305**. -Orig. at Pont-de-la-Maye, near Bordeaux, France, by R. Bernhard, INRA Fruit Research Station. Selected in 1940 from seedling population of local peach variety of Montreuil near Paris. Introduced in 1950. A high-vigor seedling rootstock. Used as plant indicator for viruses. Susceptible to crown gall, root-knot and lesion nematodes, and waterlogging. Flower pink, non-showy; fruit white-fleshed, freestone.

**GF 557**. -Orig. at Pont-de-la-Maye, near Bordeaux, France, by R. Bernhard, INRA Fruit Research Station. Introduced in 1955. An open-pollinated seedling of Shalil selected in 1945. A presumed peach × almond hybrid. A very vigorous clonal rootstock rarely producing suckers. Ease of propagation similar to GF 677. Resistant to chlorosis and *Meloidogyne incognita*. Susceptible to crown gall and very susceptible to waterlogging. On the unbudded tree, flower pale pink, showy; fruit freestone, dehiscent at maturity.

**GF 677**. -Orig. near Lot-et-Garonne in southwestern France. Natural hybrid of peach × almond; discovered in 1938 by Siloret and

Souty; selected in 1939 by R. Bernhard and Ch. Grasselly. Introduced in 1965; UPOV no. 692; assigned to Agri Obtention, Guyancourt, France. Very vigorous, making a tree 10% to 20% larger than tree on peach rootstock, high productivity index. A clonal rootstock difficult to propagate by conventional methods; readily amenable to micropropagation. Susceptible to *Meloidogyne*, but high vigor makes it suitable for replant situations. Tolerant of high lime concentration in soil. Sensitive to root asphyxia. As unbudded tree, flower small, showy, pale pink, fruit freestone.

**Hansen 536**. -Compatible; see under Almonds.

**Hansen 2168** -Compatible; see under Almonds.

**Higama**. -Orig. at Pont-de-la-Maye, near Bordeaux, France, by Ch. Grasselly, INRA Fruit Research Station. Introduced in 1970. Selected in 1960 from mixed lot of peach seedlings received from Japan. Tested as S-2543. Seed-propagated; very vigorous rootstock. Tolerant to *Meloidogyne incognita*. Very susceptible to lime-induced chlorosis. As unbudded tree, flower pale pink, showy; leaf glands reniform; fruit white-fleshed, freestone.

**Ishtara®**. -See under Plums. Semidwarfing. Compatible with Springcrest and Merrill O'Henry; further compatibilities not yet determined. Productivity and fruit size are enhanced.

**Jaspi®** (*Fereley*). -See under Plums. Compatible with Redhaven, Merrill O'Henry, Springtime and a number of French varieties. Reduces tree size by about 20% compared with peach seedling stocks. Induces very good productivity. Excellent anchorage; no suckers.

**Julior®** (*Ferdor*). -Orig. at Pont-de-la-Maye, near Bordeaux, France, by Ch. Grasselly, INRA Fruit Research Station. Selected in 1965 from St. Julien (*Prunus insititia*) × Pershore (*P. domestica*). Introduced in 1988. A clonal rootstock moderately easy to propagate by hardwood cuttings; very amenable to micropropagation. Confers very high vigor. Tolerant of waterlogging and crown gall. Induces medium vigor; almost no suckers. Susceptible to chlorosis at pH above 8. On unbudded tree, flower white, small, showy; fruit yellow skin, freestone.

**Mirabi®**. -See under Plums. Compatible with some peach varieties.

**Montclar®** (*Chanturgue*). -Orig. at Pont-de-la-Maye, near Bordeaux, France, by Ch. Grasselly, INRA Fruit Research Station. Local peach seedline, tested as S-2489. Seedling rootstocks are very vigorous, very uniform. More resistant to chlorosis than most peach seedling lines. Susceptible to root-knot nematodes. As unbudded tree, flowers pink, showy; fruit white-fleshed freestone.

**Mr.S.2/5**. -Orig. at Pisa, Italy, by F. Scaumuzzi, Univ. of Pisa. Open-pollinated myrobalan; pentaploid, presumed to be *Prunus cerasifera* × *P. spinosa*. Readily propagated by cuttings and by layering. Compatible with all peach and nectarine varieties tested. Compared to Damas GF 1869, which it most resembles, similarly tolerant of waterlogging, similar vigor, more productive; produces very few suckers. As unbudded tree, flowers white, mostly female sterile; no thorns; vigorous.

**Myran** (*Yumir*, *PPH<sub>1</sub>*). -Orig. in Pont-de-la-Maye, near Bordeaux, France, by R. Bernhard and Ch. Grasselly, INRA Fruit Research Station. Introduced in 1988. Belsiana plum (P322, probably *Prunus cerasifera* × *P. salicina*) × Yunnan peach S1058. UPOV registration #2116. When used as a rootstock under peach, slightly more vigorous than peach seedlings. Compatible with all peach varieties tested. Productivity moderate during early years, improving as tree matures. Propagated by semi-hardwood cuttings. More resistant than peach and peach × almond to *Armillaria mellea*; tolerant to *Meloidogyne arenaria*, *M. javanica*, and *M. incognita*; susceptible to *Pratylenchus vulnus*. Tolerant of alkaline soils to pH 8. More resistant to root anoxia than are peach roots. As an unbudded tree, flower pale pink, non-showy, sterile; vigorous.

**Nemared**. -Orig. at Fresno, Calif., by J.H. Weinberger, USDA; introduced in 1983 by D.W. Ramming. An F<sub>1</sub> derivative from Nemaguard × a red-leaved seedling of Tennessee Natural. Tested as P115-95. A very red-leaved seedling rootstock. More tolerant of *Meloidogyne incognita* and *M. javanica* than is Nemaguard. In the nursery, liners produce fewer side branches and can be budded earlier than Nemaguard.

Pixy. -Not compatible under peaches.

PPH<sub>r</sub>. -See Myran®.

**Rubira.** -Orig at Pont-de-la-Maye, near Bordeaux, France, by Ch. Grasselly, INRA Fruit Research Station. Introd. in 1980. Selected in 1960 as a second-generation open-pollinated seedling of a red-leaved peach from the United States. Tested as S-2605. A semi-dwarfing, precocity-inducing, red-leaved, seed-propagated rootstock. Susceptible to root-knot nematodes. As an unbudded tree, flowers pale pink, showy; leaf glands reniform; fruit white-fleshed freestone.

**St. Julien GF 655-2.** -Orig. at Pont-de-la-Maye, near Bordeaux, France, by Ch. Grasselly, INRA Fruit Research Station. Introd. in 1965. Open pollinated seedling of St. Julien d'Orleans (*Prunus instititia*). UPOV #699; assigned to Agri Obtention, Guyancourt, France. Clonal rootstock for peaches and prunes. Readily propagated by cuttings and by suckers. Induces medium level of tree vigor, good productivity index with concentrated fruit maturity. Few suckers produced under peaches, very few under prunes. Fair resistance to *Phytophthora* and to bacterial canker. As unbudded tree, flower white, showy; produces typical blue-skied fruit with green flesh; freestone.

**St. Julien No. 1** -Orig. in Pont-de-la-Maye, near Bordeaux, France, by Ch. Grasselly, INRA Fruit Research Station. Introd. in 1960. A controlled F<sub>1</sub> seedling rootstock produced by field hybridization of a self-sterile selection of St. Julien d'Orleans (*Prunus instititia*) × Common Mussel (*P. domestica*). Produces tree similar to that on Lovell. Resistant to lime-induced chlorosis. More tolerant to waterlogging than peach stocks. More uniform than most St. Julien seedling lines, but less uniform than St. Julien No. 2. Less winter hardy than St. Julien A. Moderate suckering. As unbudded tree, flowers white, self-sterile; fruit purple, semi-freestone, 2 cm.

**St. Julien No. 2.** -Orig. in Pont-de-la-Maye, near Bordeaux, France, by Ch. Grasselly, INRA Fruit Research Station. Introd. in 1960. A controlled F<sub>1</sub> seedling rootstock produced by field hybridization of a self-sterile selection of St. Julien d'Orleans (*Prunus instititia*) × Brompton (*P. domestica*). Produces tree about 75% of standard size. Moderately productive. Moderately resistant to *Phytophthora*. More uniform than most St. Julien seedling lines. More tolerant to waterlogging than peach stocks. Less winter hardy than St. Julien A. Moderate suckering. As unbudded tree, flowers white, self-sterile; fruit purple, semi-freestone, 2 cm.

*Yumir.* -See Myran®

## PEAR

**Cascade.** -Orig. at Medford, Ore., by F.E. Reimer, Southern Oregon Expt. Sta. Max Red Bartlett × Cornice. Plant pat. 6245, 9 Aug. 1988; assigned to Carlton Plants. Fruit: large; skin dark red blush on yellow ground; texture similar to Bartlett; excellent dessert quality; susceptible to limb rub. Matures late in Bartlett season; keeps well in refrigerated storage for 6-8 months. Tree: vigorous; upright; mature trees crop regularly. Blooms just after Bartlett; Bartlett, Bose, and Cornice are suitable pollinizers.

**Daves's Delight.** -Orig. at Kentville, Nova Scotia, by A.D. Crowe, Agriculture Canada Research Station. Beierschmidt × Bartlett. Fruit: medium to below medium; pyriform, slightly irregular to ribbed, skin yellow, up to 50% washed with attractive bright red; many inconspicuous lenticels; flesh light cream, very fine and buttery, nearly free of grit cells; flavor aromatic, equal to or better than Bartlett. Early maturing, with Buerre Gifford; holds well on or off tree with good resistance to core breakdown. Tree: vigor moderate; relatively precocious and productive. Released as a dessert pear; processing qualities not known.

**Golden Russet Bosc.** -Orig. in Hood River, Ore., by Sumio Fukui in 1983. Chance seedling most resembling Beurre Bosc. Plant pat. 5243, 4 June 1984; assigned to Carlton Plants, Dayton, Ore. Fruit: skin uniformly russetted, ripens with Bosc.

**Warren.** -Originated at Hattiesburg, Miss., by T.O. Warren as chance seedling. Introd. in 1976. Fruit: medium to large; shape variable; skin dull brown, sometimes with red blush, smooth; flesh whitish, buttery, smooth, moderately firm; flavor comparable to Magness or Cornice; ripens about with Magness; stores much better

than Bartlett. Tree: vigorous; pyramidal, with flat crotch angles; cold hardy; tolerant of high summer temperatures; resistant, but not immune, to fire blight; disease-free foliage.

## ROOTSTOCKS FOR PEARS

**OH×F Series (Brooks Selections's).** -Orig. near Forest Grove, Ore., by Lyle A. Brooks from seed obtained at Agriculture Canada Research Station, Summerland, B.C. Old Home × Farmingdale. From several thousand seedlings, Brooks, M.N. Westwood, and P. Lombard selected and evaluated in the orchard >500 candidates. Thirteen have been introduced commercially; all are resistant to fire blight, pear decline, and woolly pear aphids; they produce no or few suckers; propagation (with difficulty) is by hardwood cuttings. The Brooks Selections are compatible with *Pyrus communis* varieties and appear to be compatible with Asian pear varieties. Patented clones are assigned to Carlton Plants; all carry the "Brooks Selection®" trademark.

**OH×F 18** -Vigorous.

**OH×F 40** (*Daygon*). -Plant pat. 5412, 5 Mar. 1985. Semi-dwarfing.

**OH×F 51.** -Dwarfing, but less so than EM Quince A. only moderately winter hardy.

**OH×F 69** (*Daynir*). -Plant pat. 5559, 14 Sept. 1985. Intermediate vigor. Induces early, heavy production, especially of Bartlett.

**OH×F 87** (*Daytor*). -Plant pat. 6362, 1 Nov. 1988. Semi-vigorous.

**OH×F 97.** -Vigorous. Induces early, heavy production.

**OH×F 217.** -Plant pat. 5468, 14 May 1985. Semi-vigorous.

**OH×F 266.** -Semi-dwarfing.

**OH×F 267.** -Semi-vigorous.

**OH×F 282** (*Dayre*). -Plant pat. 5573, 15 Oct. 1985. Nearly as vigorous as seedling but more productive.

**OH×F 288.** -Semi-vigorous.

**OH×F 333.** -Intermediate vigor. Induces early, heavy production. Fruit may be slightly smaller than from trees on OH×F 69.

**OH×F 514.** -Vigorous.

**OH×F S16.** -Vigorous.

## PLUM

G. Tehrani, W. R. Okie and David W. Cain

**Alderman.** -Orig. in Excelsior, Minn., by W.H. Alderman, Hort. Res. Center, Univ. of Minnesota. Introd. in 1985 by J.J. Luby, W.H. Alderman, S.T. Munson, D.K. Wildung, W.H. Gray, and E.E. Hoover. Burbank × Older; cross made in 1937; tested as MN 416. Fruit: large, 40-50 mm wide and 50-60 mm long; skin burgundy-red with little or no bloom; flesh bright golden-yellow, sweet; quality excellent; clingstone. Ripens 1 week later than Superior or Toka. Tree: precocious; vigorous; round-headed, spreading; winter hardy; self-fruitful; pollinated by Toka and South Dakota.

**Anna Sun.** -Orig. in Del Rey, Calif., by Tom Chamberlin, H.P. Metzler & Sons. Introd. in 1986. Parentage unknown. Plant pat. 6077, 5 Jan. 1988; licensed exclusively to Agri Sun Nursery, Selma, Calif. Fruit: resembles Kelsey; large; slightly elongated; skinmedium green, smooth, flesh yellowish-green, slightly crisp; ripens 3 weeks after Kelsey. Tree: vigorous, productive; apparently self-fruitful.

**Autumn Giant.** -Orig. in Modesto, Calif., by Floyd, Gary, and Grant Zaiger and Leith Gardner. Introd. in 1986. King David × Roysum. Plant pat. 5624, 7 Jan. 1986; assigned to Zaiger's Genetics. Fruit: very large, 65 mm; globose; skin yellow ground color covered by red blush; flesh yellow, firm; flavor mild. Tree: vigorous; upright; productive.

**AU-Amber.** -Orig. at Auburn Ala., by J.D. Norton, Auburn Univ. Introd. in 1988. Parents are siblings of double backcross of Starcher No. 1 (a native selection at least partly *Prunus angustifolia*) to Methley; cross made in 1965; selected in 1975; tested as Methley 12-10. Fruit: medium; skinreddish-purple; flesh amber, moderately firm; high quality. Ripens 3-4 weeks before Santa Rosa, 1 week before Methley. Tree: vigorous on peach rootstock; spreading; resistant to bacterial spot and bacterial canker; tolerant of plum leaf scald; suscepti-

ble to black knot. Chilling requirement about 650 h. Adapted to the humid Southeast for local sales. Flowers large, self-infertile; blooms about 4 days before Santa Rosa.

**AU-Cherry.** -Orig. at Auburn, Ala., by J.D. Norton, Auburn Univ. Introd. in 1988. Parents are siblings of double backcross of Starcher No. 1 (a native selection at least partly *Prunus angustifolia*) to Methley; cross made in 1965; selected in 1975; tested as Methley C-50. Fruit: small; skin dark red; flesh dark red, moderately firm, good quality. Ripens with Santa Rosa and up to 10 days later. Resistant to bacterial spot, bacterial canker and black knot; tolerant of plum leaf scald. Chilling requirement 700-750 h. Adapted to the humid Southeast for local sales and backyardgrowers. Flowers large, self-infertile; blooms about with Santa Rosa.

**AU-Rosa.** -Orig. at Auburn, Ala., by J.D. Norton, Auburn Univ. Introd. in 1988. Parents are siblings of double backcross of Starcher No. 1 (a native selection at least partly *Prunus angustifolia*) to Methley; cross made in 1965; selected in 1975; tested as Santa Rosa A-5. Fruit: large; skin red, flesh amber, firm, highquality. Ripens a few days after Santa Rosa. Tree: vigorous and upright on peach rootstock; moderately resistant to bacterial spot and bacterial canker; tolerant of plum leaf scald and brown rot. Chilling requirement about 750 h. Better adapted to the humid Southeast than is Santa Rosa, which it replaces. Flowers large, self-infertile; blooms with Santa Rosa.

**AU-Rubrum.** -Orig. at Auburn, Ala., by J.D. Norton, G.E. Boyhan, D.A. Smith, and B.R. Abrahams, Dept. of Horticulture and Ala. Agr. Expt. Sta., Auburn Univ. Introd. in 1988. Bud mutation of Crimson; tested as Crimson M-1. Fruit: large, 60 mm diameter, compared to 4.2 for Crimson; skin scarlet red; flesh dark red, moderately firm, clingstone. Excellent eating quality; canned quality acceptable, but not equal to AU-Amber. At Auburn, fruit matures about 1 week after Methley, 5 weeks before Crimson; stores well at 0C. Tree: more vigorous than Crimson; spreading; productive; dark green foliage. Chilling requirement about 700h. Resistant to *Pseudomonas syringae*, *Xanthomomys pruni*, and *Apiosporina morobosa*; tolerant of plum leaf scald and brown rot. Flowers large, self-infertile; blooms 2 days before Santa Rosa.

**Black Diamond™** (*Suplumeleven*).- Orig. in Fresno, Calif., by John H. Weinberger. Introd. in 1982. Plant pat. 4902, 26 Oct. 1982; assigned to Superior Farming Co. Open-pollinatedseedling of Angeleno (most probably pollinated by Midsummer). Fruit: large, 60 mm diam.; round, skin black, smooth finish, inconspicuous suture, medium thick; flesh red, medium firm; semi-freestone; excellent eating quality; most nearly resembles Queen Ann. In central California, ripens 1 week before Queen Arm. Tree: medium vigor; very productive; average precocity; upright; midseason blossoming; Angeleno is suitable pollinizer.

**Black Flame™** (*Suplumfifteen*).- Orig. in Fresno, Calif., by John H. Weinberger. Introd. in 1985. Plantpat. 5487, 4 June 1985; assigned to Superior Farming Co. Open-pollinated seedling of Simka; tested as 295-198. Fruit: large, 60-65 mm; globose; skin dark purple; flesh yellow, firm, clingstone. In central California, ripens about 3 weeks after Simka, which it most nearly resembles. Very productive; regular bearer. Tree: medium vigorous; upright; late-blossoming; Black Torch is suitable pollinizer.

**Black Jewel.** -Orig. at Fresno, Calif. by J.M. Garabedian. Introd. in 1987. Plant pat. 5905, 17 Mar. 1987. Chance seedling; Japanese type. Fruit: medium-large. 63 mm wide and 60 mm long; skin dark maroon-red with moderately heavy blue-gray bloom; flesh light amber, melting to meaty texture; quality good to excellent; clingstone. In central California, ripens 8 Aug. Tree: productive; medium vigor; upright.

**Black Torch™** (*Suplumthirteen*).- Orig. in Fresno, Calif., by John H. Weinberger. Introd. in 1984. Plant pat. 5343, 20 Nov. 1984; assigned to Superior Farming Co. Open-pollinated seedling of an unnamed seedling, selected in 1979. Fruit: large, 60 mm; skin black, flesh cream, clingstone; round, smooth, uniform; attractive. In central California, ripens 1 week after Santa Rosa. Most nearly resembles Eldorado. Tree: vigor medium; productive; upright, round-topped.

**Broken Heart.** -Orig. at Visalia, Calif. by Frank A. Vieira. Introd. in 1988. Plant pat. 6118, 1 Mar. 1988; assigned to L.C. and E.E.

Huerta, Reedley, Calif. Sport of Elephant Heart. Fruit: medium, 58 mm wide and 58 mm long; broadly cordate; skin greenish yellow with heavy gray bloom; flesh yellowish-orange near the skin surface to lighter orange in and around the cavity, firm, meaty; quality excellent; semi-freestone; in central California, ripens second week of August. Tree: precocious; productive; vigorous.

**Byrongold.** -Orig. at Byron, Ga., by J.M. Thompson, USDA S.E. Fruit&Tree Nut Res. Lab. Introd. in 1985. Open-pollinated seedling of BY68-87; BY68-87 = [Gaviota × (Ozark Premier × *Prunus angustifolia*)] open-pollinated; seed collected in 1973; selected in 1976; tested as BY7401-5. Fruit: large; skin golden yellow; round; flesh yellow, firm, semi-freestone; good quality. Ripens 3 days after Ozark Premier, 12 days after Santa Rosa. Tree: very vigorous on peach rootstock; spreading; very resistant to bacterial spot and bacterial canker; tolerant of plum leaf scald and brown rot. Flowers large, three or four per cluster; mostly self-incompatible; blooms about 3 days before Santa Rosa. Adapted to the humid Southeast.

**Catalina.** -Orig. in Californiaby Walter Krause. Introd. in 1982. Angeleno open-pollinated. Japanese type. Fruit: large; round; skin dark purple with waxy bloom; flesh amber, very firm; outstanding flavor. In central California, ripens 7-10 days before Friar. Tree: very vigorous; very productive; not as hardy as Friar.

**Celebration.** -Orig. in Koelenhof, South Africa, by M.A. Oosthuizen and Jan Stadler, Fruit and Fruit Tech. Res. Inst., Stellenbosch. Introd. in 1989. An open-pollinated seedling of Songold (most probably pollinated by Eldorado). Fruit: size same as Sungold; round to oblate; skin black with heavy bloom; flesh deep yellow to orange, semi-melting, juicy; pit medium to large, clingstone; quality similar to Eldorado. Ripens a week later than Sungold. Tree: compact; upright, similar to Santa Rosa; self-unfruitful, pollinated by Harry Pickstone and with same bloom date.

**Double × French Prune.** -Sport of Petite. Fruit European type: large; skin dark blue; flavor rich, sweet. Very good for drying, long-distance shipping. Tree productive; hardy. Partially self-fruitful.

**Ebony Sun.** -Orig. in Del Rey, Calif., by Tom Chamberlin, H.P. Metzler & Sons. Introd. in 1986. Parentage unknown. Plant pat. 6153, 19 Apr. 1988; licensedexclusively to Agri Sun Nursery, Selma, Calif. Fruit: large; slightly elongated; skin black, smooth; flesh yellow, crisp, firm. In central California, ripens mid-August. Tree: moderately vigorous, productive when provided good pollination.

**Fortune.** -Orig. at Fresno, Calif., by D.W. Ramming, USDA Hort. Crops Res. Lab. Introd. in 1988. Laroda × B65-11 (=QueenAnn × Late Santa Rosa). Cross made in 1967 and selected in 1971 by J.H. Weinberger; tested as C36-107. Fruit: large; skin bright red on yellow ground color; fleshyyellow, firm, semi-clingstone; goodquality. Ripens with Friar. Flower self-infertile; blooms with Santa Rosa. Released to provide an alternative to the standard black-skinned varieties.

**Gar Jumbo.** -Orig. at Fresno, Calif., by J.M. Garabedian. Introd. in 1987. Plant pat. 5903, 17 Mar. 1987. Chance seedling, Japanese type. Fruit: large to very large, 60 mm wide and 58 mm long; globose, symmetrical, uniform; skin medium red to dark maroon to mahogany red with blue-grey bloom; semi-freestone. In central California, ripens with Autumn Rosa. Tree: productive; vigorous.

**Golden Nectar.** -Orig. in Exeter, Calif., by William E. Hengst. Introd. in 1987. Plant pat. 4977, 25 Jan. 1983; assigned to L.E. Cooke Co., Visalia, Calif. Open-pollinated seedling of Mariposa. Fruit: very large; oblong, pointed, suture shallow but distinct; skin amber, waxy, thin; flesh amber, firm, sweet; flavor excellent. Pit very small. Ripens 3 weeks after Mariposa. Fruit stores well at room temperature and under refrigeration. Flowers small, white, between Mariposa and Casselman; self-fertile. Excellent for drying. Chilling requirement about 500 h.

**Howard Sun.** -Orig. in Del Rey, Calif., by Tom Chamberlin, H.P. Metzler & Sons. Introd. in 1986. Parentageunknown. Plantpat. 6006, 8 Sept. 1987; licensed exclusively to Agri Sun Nursery, Selma, Calif. Fruit: resembles Friar; large; round; skin very dark blue to reddish-blue; flesh amber yellow, mild, sweet, excellent texture; ripens 1 week before Angeleno; excellent storage and shipping qualities. Tree: productive.

**Mid Red.** -Orig. in Modesto, Calif., by Floyd, Gary, and Grant Zaiger and Leith Gardner. Introd. in 1986. Casselman limb sport × King David. Plant pat. 5744, 13 May 1986; assigned to Zaiger's Genetics. Fruit: large, 65 mm; slightly elongated; skin red on yellow ground color; flesh yellow, firm; flavor mild subacid. Tree: vigorous; upright; productive.

**Midnite Sun.** -Orig. in Del Rey, Calif., by Tom Chamberlin, H.P. Metzler & Sons. Introd. in 1986. Parentage unknown. Plantpat. 6044, 27 Oct. 1987; assigned to Metropolitan Insurance Co.; licensed exclusively to Agri Sun Nursery, Selma, Calif. Fruit: large; nearly round, skin black, very smooth, flesh nearly white, firm; flavor mild with no hint of acidity. Good handling and storage characteristics. Tree: Vigorous, productive.

**Milton Early Italian.** -Orig. in Wenatchee, Wash., in the experimental plots of E.L. Reeves, USDA. A bud sport of Fellenberg (Italian Prune) selected in 1943 by S.M. Zeller; tested as E-76; introd. by Q.B. Zielinski and J.A. Milbrath in 1954. Identical with Fellenberg, except flowering is 4 or 5 days earlier, fruit maturity is 10-14 days earlier, and productivity is somewhat less.

**October Sun.** -Orig. in Del Rey, Calif., by Tom Chamberlin H.P. Metzler & Sons. Introd. in 1990. Parentage unknown. Plant pat. pending; licensed exclusively to Agri Sun Nursery, Selma, Calif. Fruit: resembles Casselman; medium to large; slightly elongated; skin red on yellow ground color; flesh yellow, juicy, sweet. In central California, ripens 10 days after Roysum. Tree: vigorous, productive.

**Queensland Bellerosa.** -Orig. in Applethorpe, Queensland, Australia, by B.L. Topp and D.M. Russell, Granite Belt Hort. Res. Sta. Introd. in 1988. Burbank × Santa Rosa. Cross made in 1979; selected in 1984; tested as GB 22-10. Fruit: medium to large, 48 mm; oblong with pronounced suture; skin color 90% to 100% brightred at maturity, turning dark red with bloom on shelf; flesh bright yellow tinged with red at stone and near skin; juicy; flavor aromatic; skin slightly bitter. Ripens 11 days before Santa Rosa. Tree: vigorous; less upright than Santa Rosa; productive; flowers self-unfruitful; pollinated by Santa Rosa. Good levels of field resistance to bacterial spot (*Xanthomonas campestris* pv. *pruni*).

**Royal Zee.** -Orig. in Modesto, Calif., by Floyd, Gary, and Grant Zaiger and Leith Gardner. Introd. in 1985. Open-pollinated seedling of Royal Beaut. Plant pat. 5486, 4 June 1985; assigned to Zaiger's Genetics. Tested as 42-GA-1200. Fruit: large, 60-65 mm; skin over-color bluish red; globose; flesh yellow, firm; mild flavor. Tree: medium vigor; upright; productive. For local and long-distance marketing.

**Rubysweet.** -Orig. at Byron, Ga., by W.R. Okie, USDA S.E. Fruit & Tree Nut Res. Lab. Introd. in 1989. Mariposa × Methley. Cross made in 1968 by V.E. Prince; selected in 1973 by J.M. Thompson; tested as BY69-350. Fruit: large; skin reddish-bronze; round; flesh blood-red, firm, freestone; high-quality. Ripens between Santa Rosa and Ozark Premier. Tree: vigorous on peach rootstock; mostly upright; resistant to bacterial spot and bacterial canker; tolerant of plum leaf scald and brown rot. Adapted to the humid Southeast. Flowers large, two or three per cluster, self-incompatible; bloom about 2 days before Santa Rosa.

**Santa Rosa-Two.** -Orig. at Fresno, Calif. by J.M. Garabedian. Introd. in 1987. Plant pat. 5904, 17 Mar. 1987. Chance seedling, Japanese type. Fruit: medium to large, 60 mm wide and 59 mm long; broadly ovate, slightly asymmetrical; skin purplish-red with medium blue-gray bloom; flesh amber, firm to meaty; quality good to excellent; clingstone. Ripens in late June, 5 days before Santa Rosa. Tree: very productive; vigorous.

**Scarlet Sun.** -Orig. in Del Rey, Calif., by Tom Chamberlin, H.P. Metzler & Sons. Introd. in 1986. Bud mutation of Roysum Plum. Plantpat. 6200, 14 June 1988; assigned to Metropolitan Insurance Co.; licensed exclusively to Agri Sun Nursery, Selma, Calif. Fruit: resembles Rosemary; large; round, slightly elongated; skin deep, bright red, slightly rough, flesh moderate orange-yellow; slightly tart; ripens 2 weeks after Rosemary. Excellent cold storage and shipping qualities. Tree: vigorous; productive; requires cross-pollination.

**Segundo.** -Orig. at Byron, Ga., by J.M. Thompson, USDA S.E. Fruit & Tree Nut Res. Lab. Introd. in 1985. Open-pollinated seedling

of a selection of [Queen Arm × Santa Rosa] × (Ozark Premier × *Prunus angustifolia*); seed collected in 1967; selected in 1973; tested as BY68-971. Fruit: medium; skin color changes from greenish-yellow to yellow red as it ripens; round; flesh yellowish-red, firm when green, clingstone; fair quality. Ripens 1 week after Santa Rosa, 10 days before Bruce. Tree: very vigorous on peach rootstock; spreading; very resistant to bacterial spot and bacterial canker; tolerant of plum leaf scald and brown rot. Adapted to the humid Southeast. Released for use as a green plum similar to Bruce. Flowers large, two per cluster; self-incompatible; blooms about 3 days before Santa Rosa.

*Suplumeleven.* -See Black Diamond.

*Suplumthirteen.* -See Black Torch.

*Suplumfourteen.* -See Sweet Rosa.

*Suplumfifteen.* -See Black Flame.

**Sweetheart.** -Orig. in Oregon City, Ore., by L.L. McGraw. Introd. in 1976; assigned to Men's Garden Club of Portland. Chance seedling, European type. Fruit: flesh golden color, juicy, meaty, sweet, aromatic; quality good; freestone. Tree: precocious; productive; moderately vigorous; upright-spreading; probably self-fruitful.

**Sweet Rosa™** (*Suplumfourteen*). - Orig. in Fresno, Calif., by John H. Weinberger. Introd. in 1984. Plant pat. 5342, 20 Nov. 1984; assigned to Superior Farming Co. Open-pollinated seedling of Angeleno (most probably pollinated by Midsummer); tested as 193-65. Fruit: 5-10 mm larger than Santa Rosa, which it most nearly resembles; skin red to purple, with prominent lenticels; more ovate than Santa Rosa; flesh dark red; medium firm to soft; clingstone. Fruits attain very high sugar levels; eating quality excellent. Tree: medium vigor; upright; medium productive; average precocity; midseason blossoming.

**Voyageur.** -Orig. in Vineland Station, Ont., by G. Tehrani, Hort. Res. Inst. of Ontario. Introd. in 1987. Open-pollinated seedling of Ruth Gerstetter; tested as V60322. Fruit: small, 39 mm wide and 44 mm long; elliptical; skin dark purple with bloom removed, violet purple with bloom intact; flesh yellow, firm, juicy; quality good; semiclingstone. Ripens in late August, 1 week later than California Blue. Tree: productive; precocious; semi-vigorous, as Stanley. Self-fruitful; tends to overbear and benefits from fruit thinning; good pollinizer for Bluebell, Early Blue, Fellenberg, and Verity. Resistant to European red mite; low susceptibility to black knot and bacterial canker.

## ROOTSTOCKS FOR PLUMS AND PRUNES Tom Beckman and J. N. Cummins

**Citation.** -See under Peaches. Reduces tree size by about 25%.

**Eruni.** -Orig. in Balsgard, Sweden, by E. Olden, Swedish Univ. of Agr. Introd. in 1987 by V. Trajokowski. Open-pollinated Pershore; selected in 1952; tested as BPR 32. European plums on Eruni make medium-sized, precocious tree. Compatible with wide range of *Prunus domestica* varieties. Readily propagated by layers or by hardwood cuttings. Root system is similar to that of Myrobalan B. Ungrafted tree is upright, semi-vigorous.

*Ferciana* -See Ishtarta®.

*Fereley.* -See Jaspi®.

**GF 43.** -Orig. at Pont-de-la-Maye, near Bordeaux, France, by R. Bernhard and Ch. Grasselly, INRA Research Station. Introd. in 1967. Open-pollinated seedling of French Prune; UPOV #708, assigned to Agri Obtention, Guyancourt, France. Clonal rootstock for hexaploid plums and for peaches. Very vigorous, comparable to peach seedling stocks; compatible with very broad spectrum of *P. domestica* varieties. Readily propagated by hardwood cuttings. Resistant to lime-induced chlorosis. More tolerant to waterlogging than peach seedling stocks. Resistant to crown gall; more resistant than Brompton to *Phytophthora*; susceptible to apple chlorotic leafspot virus. Winter hardiness doubtful. On an unbudged tree, flowers are white, self-fertile; fruits are blue with yellow-green flesh.

**GF 557.** -See under Peach. Compatible with European and Japanese plum varieties.

**GF 677.** -See under Peaches. Incompatible with many varieties; compatible with Prune d'Ente, President, Imperial Epineuse, Fellenberg, and Coe's Golden Drop.

**GF 1869.** -See under Peaches; compatible with plums and prunes.

**Hansen 536.** -See under Almonds. Compatible with Japanese plums.

**Hansen 2168.** -See under Almonds. Compatible with Japanese plum varieties.

**Ishtara®** (*Ferciana*, *PPH*.) -Orig. in Pont-de-la-Maye, near Bordeaux, France by R. Bernhard, INRA Fruit Research Station. Introduced in 1986 under the trademark Ishtara®. Belsiana plum × a natural plum-peach hybrid [F<sub>1</sub>(322×871)]; cross made in 1950; tested as PPH<sub>1</sub>. Semi-dwarfing rootstock for almond, apricot, peach, plums, and prunes. Compatible with broad range of *P. domestica*, including Althan, Oullins, and California Blue. For some European plan cultivars, reduces tree size 15% to 20%; induces high productivity index and increased fruit size; scion foliage may be less intensely green than on other Stocks. Fruits of Reine Claude and French Prune on this rootstock are larger than when grown on Myrobolan B rootstocks. Non-suckering. Propagated readily as hardwood or semi-hardwood cuttings. Sensitivity to winter waterlogging similar to that of peach seedling, greater than Marianna GF 8-1; anchorage may be weak in such conditions. Tolerance to *Armillaria mellea* better than peach seedling stocks. Resistant to root-knot nematodes. As ungrafted tree, upright, precocious, well-anchored, partially female sterile; scarce fruits are intermediate between peach and plum, clingstone.

**Jaspi®** (*Fereley*). -Orig. at Pont-de-la-Maye, near Bordeaux, France, by R. Bernhard, INRA Fruit Research Station. Introduced in 1989; UPOV applied for. Methley × *Prunus spinosa* (2069 × 106)4. Compatible with European plums, including Reine Claude d'Althan, and most peaches and nectarines. Semi-dwarfing for French Prune, Reine Claude, and Mirabelle de Nancy. Induces earlier bearing and more efficient production than does Marianna GF 8-1. Anchorage excellent; no suckers are produced; good resistance to waterlogging; drought-tolerant; resistant to lime chlorosis. Readily propagated by hardwood cuttings and in micro-propagation. In the nursery, liners are vigorous, produce no spines, and take the bud well. As an unbudded tree, vigorous, semi-upright, few branches, no spines; rust resistant.

**Marianna GF 8-1.** -Orig. at Pont-de-la-Maye, near Bordeaux, France, by R. Bernhard INRA Fruit Research Station. Introduced in 1965. Open-pollinated seedling of diploid Marianna; GF 8-1 is a triploid, probably derived by fertilization of an unreduced ovule by *P. cerasifera*. UPOV #698; assigned to Agri Obtention, Guyancourt, France. Very vigorous. Compatible with all varieties of European plums, although unions with California Blue and Althan Green Gage may be weak. Relatively shallow rooting; well-adapted to calcareous soils. More tolerant to root asphyxia than is myrobolan. Very sensitive to nematodes. Not very winter hardy. On an unbudded tree, flowers white; fruit small, 35 mm; round; skin red on yellow groundcolor; flesh yellow; clingstone; very vigorous, bushy.

**Mirabi®.** -Orig. at Pont-de-la-Maye, near Bordeaux, France, by Ch. Grasselly, INRA Fruit Research Station. Introduced in 1980. Open-pollinated seedling of P2032 (*Prunus cerasifera*), selected in 1957. A medium-vigor clonal rootstock. Waterlogging tolerance better than peach seedlings. As unbudded tree, flowers white, self-sterile; fruit clingstone.

**Myran®** (*Yumir*, *PPH*.) -See under Peaches. Compatible with some, but not all, *P. domestica*.

**Myrobolan GF 31.** -See under Apricots. Compatible with most plums and prunes.

**Pixy.** -Orig. in Maidstone, Kent, U.K., by A.B. Beakbane. Introduced in 1975. Open-pollinated *Prunus instititia*; seed collected in France in 1947; tested as E.340.4.6. Semi-dwarfing rootstock for European plums. Propagated by hardwood cuttings or layers. Trees on Pixy are precocious; productive, but fruit size smaller than usual; almost free from suckering. Very sensitive to drought. As unworked plant, resistant to bacterial canker and to silver leaf.

*PPH*<sub>1</sub>. -See Ishtara®.

**St. Julien GF 655-2.** See under Peaches. Compatible with most *Prunus domestica* varieties.

**St. Julien X.** -Semi-dwarfing. Some suckers produced. Shoots are thorny. Propagated by cuttings. Induces somewhat early leaf fall of scion.

*Yumir*. -See Myran®.

## PLUMCOT

**BY69-1637P.** -Orig. at Byron, Ga., by J.M. Thompson, USDA S.E. Fruit & Tree Nut Res. Lab. Released in 1985. Open-pollinated seedling of BY4-997 × seedling apricot; BY4-997 = Nubiana open-pollinated. Seed collected in 1968; selected in 1973. Fruit: large; skin dark purple-black, very light pubescence; round; flesh apricot colored, very firm, freestone, tart. Ripens 2 weeks after Santa Rosa. Tree: vigorous on peach rootstock, upright; moderately productive. Moderately resistant to bacterial canker and bacterial spot; tolerant of plum leaf scald and brown rot. Adapted to the humid Southeast. Flowers large, pink, solitary, self-fertile; fertile with both plum and apricot. Released for breeding purposes because of tree health, fruit size, and fertility with both plum and apricot.

**Flavor Delight.** -Orig. in Modesto, Calif., by Floyd, Gary, and Grant Zaiger and Leith Gardner. Introduced as a home garden variety in 1989. Apricot × plumcot. Plant pat. 7090, 2 Jan. 1990. Fruit: medium; skin dull yellow; flesh yellow, firm, freestone, with good sugar/acid balance; flavor delicate; high sugar, with 4° Brix higher than standard cultivars; early maturing. Tree: vigorous; large; semi-upright; regular production.

**Flavor Supreme.** -Orig. at Modesto, Calif., by Floyd, Gary, and Grant Zaiger and L.M. Gardner. Introduced as a home garden variety in 1989. An interspecific plum × plumcot hybrid, from a cross between two open-pollinated seedlings of Red Beaut. Plant pat. 6763, 25 Apr. 1989. Fruit: medium, 50-56mm wide and 53-56 mm long; globose to slightly flattened at stem end; skin violet brown to purplish gray with moderate to heavy bloom; flesh deep red, firm, moderately juicy; quality excellent; clingstone; ripens 13-20 June. Suitable for long distance shipping. Tree: precocious and productive; semi-vigorous; upright.

## RASPBERRY Hugh Daubeny

**Algonquin.** -Orig. in Vancouver, B.C., by Hugh Daubeny, Agr. Canada Res. Sta. and T.M. Sjulín, Washington State Univ., Puyallup. Released in 1984 as germplasm BC 72-1-7. Named in 1989 by Hugh Daubeny and A. Dale, Hort. Res. Inst. Ont., Simcoe. Haida × Canby; cross made in 1972; selected in 1975. Fruit: medium; skin bright, non-darkening red; may separate with some difficulty from receptacle in some environments; medium firmness; similar to commercial cultivars in reactions to pre- and postharvest rots caused by *Botrytis cinerea*; some resistance to postharvest rot caused by *Rhizopus* spp. Plant: high yielder; upright; compact habit with medium length laterals, short internodes. Primocanes numerous; glabrous; nonwaxy; relatively few prickles. Floricanes have basal cracking; moderately susceptible to cane *Botrytis*. Some resistance to spur blight, root rot, and to pollen transmission of raspberry bushy dwarf virus; homozygous for resistance to the North American aphid vector of raspberry mosaic virus. Winter hardy in British Columbia, Washington, Ontario, and Nova Scotia.

**Amity.** -Orig. in Corvallis, Ore., by F.J. Lawrence, released jointly by USDA-ARS Ore. Agr. Exp. Sta. and Wash. Agr. Res. Center. Selected in 1976. Introduced in 1984. ORUS 1839 (Fallred × ORUS 1347) × ORUS 1835 (PI 338908 × Heritage) (PI 338908 is an East Malling selection 791/45 derived from Malling Landmark and *Rubus occidentalis*); tested as ORUS 2036. Fruit: medium; uniform shape; very firm; skin fairly dark red, ease of separation from receptacle varies and can be rather difficult under cooler weather conditions; good fresh market and processing qualities. Fruit produced on primocanes in August; ripens up to 7 days earlier than Heritage in the Pacific Northwest. Plant: moderate yielder, slightly less than Heritage over the entire season; primocanes vigorous, glabrous, non-waxy, green with purple overlay; scattered pale purple prickles that are not objectionable; fruiting laterals medium to short length. Some resistance to root rot; susceptible to pollen transmission of raspberry bushy dwarf virus and to the North American aphid vector of raspberry mosaic virus; cane diseases and winter hardiness are not considered since the primocanes are usually removed after fruiting.

**Centennial.** -Orig. in Puyallup, Wash., by P.P. Moore, T.M. Sjulín, B.H. Barritt, and H.A. Daubeny, Washington State Univ. Introd. in 1989. Meeker × Skeena; cross made by H.A. Daubeny in 1974, selected by B.H. Barritt in 1978; tested as WSU 738. Fruit: large; long conic shape; skin bright, glossy, medium red; pleasant, mild flavor; medium firm; suitable for fresh market and processing; separates with some difficulty from receptacle and thus not suited to machine harvesting; ripening season similar to Meeker, several days later than Willamette and Skeena; relatively susceptible to pre- and post-harvest rots. Plant: yields similar to Meeker; more upright habit than Meeker, but less upright than Skeena; long, strong fruiting laterals. Primocanes not numerous; vigorous; pubescent; numerous dark purple, moderately soft prickles, susceptible to spur blight, cane *Botrytis*, cane spot, pollen transmission of raspberry bushy dwarf virus and the North American aphid vector of raspberry mosaic virus; some resistance to root rot; not winter hardy in British Columbia or northern Washington, but hardy in southern Washington and Oregon.

**Chilliwack.** -Orig. in Vancouver, B.C., by Hugh Daubeny, Agr. Canada Res. Sta. Introd. in 1987. BC 64-10-198 (Summer × Carnival) × Skeena; cross made in 1974; selected in 1978; tested as BC 74-10-81. Fruit: large; conic; skin medium red, glossy; firm; drupelets numerous; high soluble solids; excellent fresh eating quality; suitable for processing; separates readily from receptacle and thus well-suited to machine harvesting; ripens several days later than Skeena and Willamette; some resistance to pre- and postharvest rots. Plant: moderate yielder similar to Willamette; upright growth habit with long, strong fruiting laterals. Primocanes numerous, erect, glabrous, and non waxy; purple prickles largely restricted to basal portions; floricanes erect, reddish to yellow brown with basal cracking. Susceptible to cane *Botrytis*, cane spot and crown gall; some resistance to spur blight, root rot, and to pollen transmission of raspberry bushy dwarf virus; resistant to the North American aphid vector of raspberry mosaic virus; winter hardy in the Pacific Northwest.

**Comox.** -Orig. in Vancouver, B.C., by Hugh Daubeny, Agr. Canada Res. Sta. Introd. in 1987. BC 64-9-81 (Creston × Willamette) × Skeena; cross made in 1974; selected in 1978; tested as BC 74-12-42. Fruit: very large; conic; skin medium red; firm; drupelets numerous; good fresh eating quality; suitable for processing; fairly easy separation from receptacle and can be machine-harvested; ripens several days later than Willamette and Skeena; some resistance to pre- and postharvest rots. Plant: very high yielder; vigorous and fairly upright growth habit, but laterals tend to droop because of large numbers of fruits. Primocanes reasonably numerous, fairly upright, glabrous, non waxy; purple prickles largely restricted to basal portions; floricanes fairly erect, yellow-brown with basal cracking; susceptible to cane *Botrytis*, spur blight, cane spot, and root rot; some resistance to pollen transmission of raspberry bushy dwarf virus; resistant to the North American aphid vector of raspberry mosaic virus; relatively winter hardy in the Pacific Northwest.

**Haut.** -Orig. at College Park, Md., by the late I.C. Haut, Univ. of Maryland. Introd. in 1987 by H.J. Swartz. 37-22-11 [Manteo selfed (Manteo = Cumberland selfed)] × B16 (=Bristol selfed). Fruit: medium; spherical; black with moderate bloom; flesh firm, cohesive; very sweet, aromatic. Fruit ripens over longer period than most black raspberries, beginning 3-5 days after Bristol. Plant: vigorous; freely branching; thorny. Susceptible to orange rust and to *Elsinoe* anthracnose; fruit moderately resistant to *Botrytis*; tobacco streak-infected plants show no loss of vigor or fertility.

**Himbo-Queen.** -Orig. in Rafz, Switzerland, by Peter Hauenstein, Hauenstein AG, Nursery/Rosery, 8197 Rafz, Switzerland. Registered brand Switzerland No. 352547, International No. 512691. Registered as Rafzeter. Malling Exploit × Puyallup. Fruit: very large; conic; skin bright, non-darkening red; firm; sweet, aromatic, excellent flavor; separates readily from receptacle; good for fresh market, including long-distance shipping; good for deep freezing. Plant: very productive; vigorous with thick canes; laterals very long, firmly attached; minimum susceptibility to cane diseases; winter hardy; resistant to drought.

**Kiwigold.** -Orig. in Murrinsville, New Zealand, by C.E.H. and M.A. Thomas. Introd. in 1988. Sport of Heritage discovered in 1984;

released in 1988. Fruit: medium; conic; skin yellow; firm; excellent quality; produced on primocanes; ripening time similar to Heritage. Plant: primocanes vigorous, numerous, erect, sturdy; more prickles than Heritage; no red pigmentation.

**'Malling' Autumn Bliss.** -Orig. in East Malling, England by E. Keep, J.H. Parker, and V.H. Knight, Inst. of Hort. Res. (East Malling Res. Sta.). Introd. in 1984. Complex parentage involving *Rubus strigosus*, *R. arcticus*, *R. occidentalis*, and the red raspberry varieties 'Malling' Landmark, 'Malling' Promise, Lloyd George, Pyne's Royal, Burnetholm, and Norfolk Giant; cross made in 1974; selected in 1976; tested as EM 3676/78. Fruit: large; oval-conic; skin slightly dark red; pleasant, rather mild flavor; produced on primocanes; earlier ripening than either Heritage or Zeva Herbsternte, overlapping with late floricanes fruiting types; fairly easy separation from receptacle. Plant: outyields Heritage and Zeva Herbsternte in England. Primocanes moderately numerous, glabrous, fairly erect, green with pink tinge; numerous light purple spines. Susceptible to pollen transmission of raspberry bushy dwarf virus; has the gene A10 for resistance to all races of the European aphid vector of raspberry mosaic virus; cane diseases and winter hardiness are not considered since primocanes are usually removed after fruiting.

**Nordic.** -Orig. in St. Paul, Minn. by J. Luby, E. Hoover, D. Bedford, S. Munson, W. Gray, D. Wilding, and C. Stushnoff, Dept. of Hort. Sci. and Landscape Architecture, Univ. of Minnesota. Introd. in 1987. Boyne × Fall Red, cross made in 1969; selected in 1972; tested as MN 603. Fruit: produced on floricanes and on primocanes; most similar to Boyne, but lighter color and superior for firmness, skin strength, and flavor. Frozen product similar to Boyne for appearance, texture, and flavor. Primocane fruit ripens 2-3 weeks later than Heritage. Plant: high yielder from floricanes, low yielder from primocanes. Primocanes green, sparse purple prickles largely restricted to basal portions; primocane production moderate with frequent branching. Reaction to spur blight similar to Boyne; less susceptible to cane spot than Boyne, susceptible to tomato ring spot virus; susceptible to pollen transmission of raspberry bushy dwarf virus; winter hardy in Minnesota.

**Perron's Red.** -Orig. in Quebec, Canada by W.H. Perron and Co. Ltd. Introd. in 1987. Zeva Herbsternte × Pathfinder; selected in 1977. Fruit: large; conic; skin medium red, slightly more glossy than Heritage; less firm than Heritage; produced on primocanes; season similar to Heritage in British Columbia. Plant: vigorous; numerous canes, fairly erect, glabrous, light green with some red overlay, purple prickles; cane disease and winter hardiness are not considered since primocanes are usually removed after fruiting; susceptible to the North American aphid vector of raspberry mosaic virus.

**Redwing.** -Orig. in St. Paul, Minn., by J. Luby, E. Hoover, D. Bedford, S. Munson, W. Gray, D. Wilding, and C. Stushnoff, Dept. of Hort. Sci. and Landscape Architecture, Univ. of Minn. Introd. in 1987. Heritage × Fall Red; cross made in 1969; selected in 1972; tested as MN 629. Fruit: size and color similar to Heritage in Minnesota, but color lighter and brighter in British Columbia; firmness and skin strength slightly less than Heritage; flavor similar or slightly inferior to that of Heritage; produced on primocanes in August. Ripens 10-14 days earlier than Heritage in Minnesota; season similar to Heritage in British Columbia. Plant: yields usually lower than Heritage. Primocanes vigorous; moderate numbers; stout; green with light red overlay; moderately dense; light red to pink canes; short, purple spines. No infections of raspberry bushy dwarf, tomato ringspot or raspberry mosaic viruses have been recorded, but susceptible to the North American aphid vector of the last named; susceptible to cane spot, but cane diseases and winter hardiness are not considered since primocanes are usually removed after fruiting.

**Ruby (Watson).** -Orig. in Geneva, N.Y., by J. Sanford, K. Maloney, and J. Reich. Introd. in 1988 as Watson. Heritage × Titan. Cross made in 1980; selected in 1982; tested as NY 114. Plant pat. pending; assigned to Nourse Farms. Watson will be distributed under the commercial trademark "Ruby." Fruit: very large, larger than any other fall-bearing cultivar in North America; produced on primocanes; ripens several days later than Heritage in New York; conic; skin bright medium red; flavor rated similar to or slightly inferior to that of

Heritage in most comparisons; ease of separation from receptacle can vary; susceptible to pre- and postharvest fruitrot. Plant: yields similar to Heritage; vigorous; numerous primocanes; somewhat spreading; green with some purple overlay; sharp, light purple prickles distributed uniformly and sparsely. Susceptible to root rot, crown gall, and the North American aphid vector of raspberry mosaic virus; in California, reported resistant to yellow rust and powdery mildew; cane diseases and winter hardiness are not considered since primocanes are usually removed after fruiting.

**Stonehurst.** -Orig. in Santa Clara Valley, Calif., by J.M. Reiter and E.V. Goldsmith. Selected in 1973. Released in 1979 by J.M. Reiter, La Selva Beach, Calif. Plant pat. 4485, 20 Nov. 1979. Parentage unknown. Fruit: smaller than Willamette and larger than Heritage; skin rosy red to pomegranate purple; numerous drupelets; surface can be irregular; round, partially hidden by leaves; easy separation from receptacle in Watsonville, Calif. Production peaks on primocanes from early August until mid-September and on floricanes during last week of May and the first 2 weeks of June; can be produced continuously from May until December. Plant: high yielder with two-thirds on primocanes and one-third on floricanes; primocanes upright and rigid, non-branching, light green with soft, reddish-brown prickles at base; floricanes light brown and branching; some root rot resistance.

**Summit.** -Orig. in Corvallis, Ore., by F.J. Lawrence, released jointly by USDA-ARS Oregon Agr. Exp. Sta. and Washington Agr. Res. Center. Introduced in 1989; selected in 1976. ORUS 1838 (Falhed × ORUS 1347) × ORUS 1842 (NY 600 × OR 1347) (ORUS 1347 is a very late primocane fruiting selection with firm, attractive fruit with a pedigree involving Newburgh, Washington, and Willamette.) Tested as ORUS 2033. Fruit: small to medium; skin medium red color; firm; round, produced on primocanes in August; ripens 10-14 days earlier than Heritage in the Pacific Northwest; reasonably easy separation from receptacle; good fresh market and processing qualities. Plant: high yielder; primocanes vigorous, non-pubescent, waxy; a few scattered purple prickles; fruiting laterals strong and medium long. Good resistance to root rot; susceptible to pollen transmission of raspberry bushy dwarf virus and to the North American aphid vector of raspberry mosaic virus; cane diseases and winter hardiness are not considered since primocanes are usually removed after fruiting.

**Sweetbriar.** -Orig. in Santa Clara Valley, Calif., by J.M. Reiter and E.V. Goldsmith. Selected in 1973. Released in 1979 by J.M. Reiter, La Selva Beach, Calif. Plant pat. 4486, 20 Nov. 1979. Parentage unknown. Fruit: slightly smaller than Willamette, larger than Heritage; skin rose to rose red; firmer than Willamette, softer than Heritage; conical; symmetrical; individual drupelets sometimes irregular in size; well-exposed; easy separation from receptacle. In Watsonville, Calif. production peaks on primocanes during September and into early October and on floricanes during June and first week in July; can be produced continuously from May until December. Plant: high yielder with 65% of the crop on primocanes and 35% on floricanes. Primocanes upright, rigid, non-branching, lightgreen with soft light brown prickles at base; floricanes light brown and branching.

**Titan.** -Orig. in Geneva, N.Y., by J.C. Sanford, D.K. Ourecky, and J.E. Reich, New York State Agr. Expt. Sta., Cornell Univ. Introduced in 1985. Hilton × N.Y. 598 (Newburgh × St. Walfried); cross made in 1963; selected in 1966; tested as N.Y. 883. Fruit: very large; skin bright red; long conical; large cavity; firm in New York, but soft in British Columbia; pleasant, mild flavor, early ripening; can be difficult to remove from receptacle and thus not suited to machine harvesting; susceptible to pre- and postharvest rots. Plant: unusually high yield potential; moderate vigor. Primocanes usually not numerous; stout; green; glabrous; prickles small, basal, green, with darkened tips. Floricanes dark brown; some cracking. Susceptible to cane diseases in New York; in British Columbia shows some resistance to spur blight and moderate susceptibility to cane *Botrytis* and cane spot; susceptible to pollen transmission of raspberry bushy dwarf and tobacco streak viruses; susceptible to tomato ringspot virus and to root rot; susceptible to the North American aphid vector of raspberry mosaic virus and to the aphid vector of leaf curl virus and to the viruses themselves; winter hardy in most parts of New York state.

*Watson.* -See Ruby.

## STRAWBERRY

### Gene Galetta

**Cavendish.** -Orig. in Kentville, Nova Scotia, by D.L. Craig, Agr. Canada Res. Sta. Introduced in 1990. Glooscap × Annapolis; cross made in 1981, selected in 1983; tested as K83-4. Fruit: medium to very large; surface deep glossy red, medium firm; flesh firm, red except white beneath calyx near core; flavor sweet, less tart than Honeoye, melon-like; tolerant to gray mold. Ripens midseason. Plants: medium vigor; runner well, but not excessively; crown size small to medium; very productive. Tolerant or resistant to *Verticillium* wilt; resistant to red stelerases A-4, A-6, and A-7; tolerant to powdery mildew; susceptible to green petal virus.

**Jewel.** -Orig. in Geneva, N.Y., by J.C. Sanford, D.K. Ourecky, and J.E. Reich, New York State Agr. Expt. Sta. NY1221 ((Tennessee Shipper × Fairfax) × Geneva) × Senga Sengana) × Holiday; cross made in 1969; selected in 1971; tested as NY1324. Plant pat. 5897; assigned to Cornell Research Foundation. Fruit: large, firm, attractive; glossy, bright red; wedge-conic; very flavorful; good for fresh or processed use. Ripens in late midseason. Plants: runner moderately; not quite as productive as Honeoye; hardy, drought-tolerant; open habit with dark green foliage; susceptible to red stele and to *Verticillium* root rots.

**Lateglow.** -Orig. in Beltsville, Md., by D.H. Scott, USDA. Introduced in 1987. Tamella × MDUS 3184 (NCUS 1768 × Surecrop); cross made in 1974; selected at Wye Inst., near Queenstown, Md., in 1976 by A.D. Draper and P. Rosati; tested as MDUS 4839. Fruit: large to very large; uniform in symmetry; skin firm, deep glossy scarlet; flesh soft to medium, medium red; sweet, juicy, aromatic; tolerant to gray mold and leatherrot. Ripens after Allstar, with Delite and Rosanne. Plants: runner freely; medium size; marketable yields very high, like those of Lester. Very resistant to most races of red stele; resistant to *Verticillium* wilt; tolerant to leaf spot and leaf scorch; susceptible to anthracnose, leaf blight, and powdery mildew. Flowers late with Allstar and Guardian.

**Lester.** -Orig. in Beltsville, Md., by D.H. Scott, USDA. Introduced in 1984. Raritan × MDUS 3413 ((Tennessee Shipper × Maytime) × Stelemaster) × Earlidawn); cross made in 1969; selected at Wye Inst. near Queenstown, Md. in 1971; tested as MDUS 4359. Fruit: medium large, very attractive, symmetrical, uniform deep red; flesh pink, firm, mild flavor; tolerant to gray mold and leather rot. Plants: vigorous; medium size; medium-heavy production; runner freely to form medium-dense fruiting beds. Resistant to seven races of red stele; susceptible to *Verticillium* wilt; tolerant or resistant to powdery mildew, leaf scorch, and leaf blight; susceptible to anthracnose.

**Sumas.** -Orig. in Vancouver, B.C., by H.A. Daubeny, Agriculture Canada Research Sta. Introduced in 1986. Cheam × Tioga; cross made in 1969; tested as BC 69-5-34. Fruit: large; bright, does not darken; slightly aromatic; suitable for fresh use and processing; ripens ahead of Totem and Benton; tolerant to fruit rots. Plants: high yields of marketable fruit; winter-hardy. Resistant to red stele races A-1, A-3, and A-4, tolerant to two-spotted mites and powdery mildew; susceptible to leaf spot.

## WALNUT

**Cisco.** -Orig. at Davis, Calif., by Gale H. McGranahan, David E. Ramos, Harold I. Forde, and Ronald G. Snyder. Introduced in 1990 as a pollinizer for Chandler and Howard. Meylan and Pedro; cross made in 1965 by Forde. Moderate to heavy pollen crop is produced during period of peak receptivity of Chandler and Howard, beginning by the seventh leaf, with light yields as early as second leaf. Nuts: shell medium to light in color; texture medium; slightly larger than Franquette; kernel color variable. Tree: intermediate vigor, making tree of moderate size; semi-upright; laterally fruitful; late-leaving; precocious; not productive in early years.

**PATENTED VARIETIES**

3057	C6, apple rootstock	5831	Zee Red, peach
3133	Hi-Red™, nectarine	5832	Zee Lady, peach
3295	Black Imperial™, grape	5873	June Sun, peach
3309	Regal Gala, apple	5874	David Sun, peach
3345	Southerner, nectarine	5897	Jewel, strawberry
3557	Starkspur® UltraRed Delicious, apple	5903	Gar Jumbo, plum
4155	Garden Delight, nectarine	5904	Santa Rosa-Two, plum
4451	Sweet Sue, peach	5905	Black Jewel, plum
4485	Stonehurst, raspberry	5937	Jonagored, apple
4486	Sweetbriar, raspberry	5947	Elbee, apple
4571	Cassie, peach	6006	Howard Sun, plum
4587	Ace® Spur Delicious, apple	6007	Summer Sun, peach
4633	Jonafree, apple	6008	September Sun, peach
4678	Mark, apple rootstock	6009	PreCal™, grape
4724	McShay, apple	6025	Queencrest, peach
4824	Haralred™, apple	6043	Par-Feet Spur Criterion, apple
4893	Pacific Star™, nectarine	6044	Midnite Sun, plum
4894	Superstar™, nectarine	6045	Sierra Lady, peach
4902	Black Diamond™, plum	6077	Anna Sun, plum
4927	Star Bright™, nectarine	6118	Broken Heart, plum
4928	Saint Croix, grape	6148	Daliguy Jonagold, apple
4942	Crimson Star™, nectarine	6153	Ebony Sun, plum
4943	Kay Gray, grape	6158	Sierra Star™, nectarine
4977	Golden Nectar, plum	6159	Melody, grape
4980	Kern Sun, peach	6160	Einset Seedless, grape
5103	Ryan Sun, peach	6172	Scarlet Gala, apple
5112	Citation, peach rootstock	6190	Super Chief™ Delicious, apple
5124	Stark® Sensation, peach	6200	Scarlet Sun, plum
5139	July Sun, peach	6224	Telamon, apple
5140	August Sun, peach	6225	Tuscan apple
5151	Early Superior Seedless™, grape	6226	Trajan, apple
5228	June Glo, nectarine	6229	Early Maycrest, peach
5243	Golden Russet Bosc, pear	6230	Haig Arakelian, Sr., peach
5276	Honey Bee, peach	6245	Cascade, pear
5297	Berenda Sun, peach	6268	Williams' Pride, apple
5308	Flavor Giant, apricot	6283	Necta Zee, nectarine
5333	Novole, apple trunkstock	6361	Adina, apple
5334	TopSpur Delicious, apple	6362	OHxF 87, pear rootstock
5342	Sweet Rosa, plum	6407	Tulare, cherry
5343	Black Torch™, plum	6409	Tasty Zee, peach
5412	OHxF 40, pear rootstock	6410	Double Jewel, peach
5468	OHxF 217, pear rootstock	6450	Elstar, apple
5473	Summer Star™, nectarine	6472	Amparo, peach
5486	Royal Zee, plum	6519	Sansa, apple
5487	Black Flame™, plum	6671	Valley Red, peach
5537	Revival, chestnut	6674	Heritage, chestnut
5559	OHxF 69, pear rootstock	6676	Brooks, cherry
5573	OHxF 282, pear rootstock	6678	Choctaw, blackberry
5584	Dayton, apple	6679	Navaho, blackberry
5623	Tasty-Gold, nectarine	6689	Swiss Gourmet™, apple
5624	Autumn Giant, plum	6702	Vallee Spur Delicious™, apple
5641	Junecrest, peach	6703	Saturn, grape
5654	Summer Diamond, nectarine	6747	June Pride, peach
5680	Mars, grape	6753	Mid Glo, nectarine
5686	Shawnee, blackberry	6755	Tri-Gems, apricot
5710	Chan, peach	6763	Flavor Supreme, plumcot
5716	Esprit, grape	6827	Jon Boy, peach
5744	Mid Red, plum	6828	Som-Mor, peach
5745	Topcrest, peach	6912	Valley Sun, peach
5761	Earlee Granee, apple	6940	Lady Lou, peach
5771	Saint Pepin, grape	6955	Galaxy, apple
5801	Inmil, cherry rootstock	6976	Valley Gem, peach
5802	Camil, cherry rootstock	6992	May Sun, peach
5803	Damil cherry rootstock	7001	Yataka, apple
5821	White Lady, peach	7002	Pioneer Mac™, apple
5822	Ison, grape	7012	Harvest Sun, nectarine
5824	Black Fry, grape	7049	Summer Bright, nectarine
		7063	Ginger Gold™, apple
		7064	Fire Diamond, nectarine

7065 Arctic Gem, peach  
 7066 Diamond Princess, peach  
 7067 Ruby™, raspberry  
 7069 Lady Nancy, peach  
 7070 Crown Princess, peach  
 7090 Flavor Delight, plumcot  
 7328 Early Spur Rome, apple  
 7363 Tift Spur Rome No. 21, apple  
 9533 Fire Diamond, nectarine  
 Pending African Queen, grape  
 Pending Bemali, apple rootstock  
 Pending Black Beauty, grape  
 Pending Coromandel Red, apple  
 Pending Daliguy Jonagold, apple  
 Pending Darlene, grape  
 Pending Dulcet, apple  
 Pending Earlichief, apple  
 Pending Empress, apple  
 Pending Fiesta, apple  
 Pending Flameburst™, apricot  
 Pending Goldbar, apricot  
 Pending Goldstrike, apricot  
 Pending Hillwell, apple  
 Pending Honeycrisp, apple  
 Pending Illini Hardy, blackberry  
 Pending Janebell, grape  
 Pending Janet, grape  
 Pending Jon Boy, peach  
 Pending Jored, apple  
 Pending Karmijn, apple  
 Pending Nicobel™ Jonagold  
 Pending October Sun, plum  
 Pending Pam, grape  
 Pending Pineapple, grape  
 Pending Pink Lady, apple  
 Pending Red Fuji, apple  
 Pending Rosa, grape  
 Pending Royal Empire™, apple  
 Pending Rubinstar Jonagold, apple  
 Pending Shizuka, apple  
 Pending Sugar Lady, peach  
 Pending Sugar Pop, grape  
 Pending Supreme, grape  
 Pending Tomcot, apricot

**INDEX OF VARIETIES DESCRIBED**  
 (Synonyms in italics)

AU-Amber, plum  
 AU-Cherry, plum  
 AU-Rosa, plum  
 AU-Rubrum, plum  
 Ace® Spur Delicious, apple  
 Acey Mac, apple  
 Adina, apple  
 African Queen, grape  
 Alachua, grape  
 Alderman, plum  
 Algonquin, raspberry  
 Allgold, peach  
 Amity, raspberry  
 Amparo, peach  
 Anna Sun, plum  
 Anna's Favorite, apple  
*Applethorpe Earlidel*, apple  
*Applethorpe Summerdel*, apple  
 Arctic Gem, peach  
*Arlet*, apple  
 August Sun, peach

Autumn Giant, plum  
*Avimag*, peach rootstock  
 BY69-1637-P, plum  
 Baldwin, blueberry  
 Beaufort, grape  
 Beaumont, grape  
*Belchard®*, apple  
 Bellaire, peach  
 Bemali, apple rootstock  
 Berenda Sun, peach  
 Big Red, mayhaw  
 Black Beauty, grape  
 Black Diamond™, plum  
 Black Flame™, plum  
 Black Fry, grape  
 Black Imperial™, grape  
 Black Jewel, plum  
 Black Torch™, plum  
 Blanc Du Bois, grape  
 Blue Ridge, blueberry  
 Bluegold, blueberry  
 Bonita, blueberry  
 Bountiful, apple  
 Bounty, blueberry  
 Bounty, peach  
 Brandis, grape  
 Brendavilha, nectarine  
 Britegold, apple  
 Broken Heart, plum  
 Brooks, cherry  
*Budagovsky 9*, apple rootstock  
*Budagovsky 57-490*, apple rootstock  
*Budagovsky 57-491*, apple rootstock  
*Bud. 9*, apple rootstock  
*Bud.490*, apple rootstock  
*Bud.491*, apple rootstock  
 Byrongold, plum  
 C6, apple rootstock  
 Cadaman®, peach rootstock  
 Camil, cherry rootstock  
 Cape Fear, blueberry  
 Cascade, pear  
 Cassie, peach  
 Catalina, plum  
 Cavendish, strawberry  
 Celebration, plum  
 Centennial, raspberry  
 Centennial Seedless, grape (addendum)  
 Centurion, blueberry  
 Century I, grape  
 Challenger, grape  
 Chan, peach  
 Chantecler, apple  
 Charger, cherry rootstock  
 Chaucer, blueberry  
 Chester Thornless, blackberry  
 Chick-A-Dee McIntosh, apple  
 Chilliwack, raspberry  
 Choctaw, blackberry  
 Choice, blueberry  
 Christmas Rose, grape (addendum)  
 Cisco, walnut  
 Citation, peach rootstock  
*Clendining*, peach  
 Cob, cherry rootstock  
 Columбина, nectarine  
 Comox, raspberry  
 Cooper, blueberry  
*Cooper Granny Smith*, apple

Corabel, filbert  
 Coromandel Red, apple  
 Crimson Star™, nectarine  
 Crown Princess, peach  
 Daliguy Jonagold, apple  
 Damas GF 1869, peach rootstock  
 Damil cherry rootstock  
*Daniel*, apple (addendum)  
 Darlene, grape  
*Darling*, grape  
 Dave's Delight, pear  
 David Sun, peach  
 Dawn Seedless, grape (addendum)  
*Daygon*, pear rootstock  
*Daynir*, pear rootstock  
 Dayre, pear rootstock  
 Dayton, apple  
*Daytor*, pear rootstock  
 Desertred, peach  
 Diamond Princess, peach  
 Double Jewel, peach  
 Double X French Prune, plum  
 Douglas, strawberry (addendum)  
 Duke, blueberry  
 Dulcet, apple  
 Earlee Grannee™, apple  
 Earlichief™, apple  
 Earlidel, apple  
 Earlisscarlet, nectarine  
*Early Granny*, apple  
*Early Granny*, apple  
 Early Maycrest, peach  
 Early Spur Rome, apple  
 Early Sun, nectarine  
 Early Superior Seedless™, grape  
 Ebano, blackberry  
 Ebony Sun, plum  
 Edelweiss, grape  
 Einset Seedless, grape  
 Elan, apple  
 Elbee, apple  
 Eldorado, peach (addendum)  
 Elstar, apple  
 Empress, apple  
 Esprit, grape  
*Extra, Extra Fancy*, peach  
 Fall Red, apple  
 Falstaff, apple  
 Farris Bellhusk, filbert  
*Ferciana*, plum rootstock  
*Fereley*, plum rootstock  
*Ferdor*, peach rootstock  
 Fern, strawberry (addendum)  
 Fiesta™, apple  
 Fire Diamond, nectarine  
 Fireprince, peach  
 Flameburst™, apricot  
*Flanagan Delicious*, apple  
 Flavor Delight, plumcot  
 Flavor Giant, apricot  
 Flavor Supreme, plumcot  
 Flordabeauty, peach  
 Flordacrest, peach  
 Flordadawn, peach  
 Flordaguard, peach rootstock  
 Flordaglo, peach  
 Flordaglobe, peach  
 Flordastar, peach  
 Florina, apple  
 Fortune, plum  
*Frankad*, apple  
 Freedom, apple (addendum)  
 Fresno Sun, nectarine  
*Fulford Gala*™, apple  
 GF 31, apricot rootstock  
 GF 53.7, peach rootstock  
 GF 305, peach rootstock  
 GF 557, peach rootstock  
 GF 677, peach rootstock  
*GM.9*, cherry rootstock  
*GM.61/1*, cherry rootstock  
*GM.79*, cherry rootstock  
*Gala Must*, apple  
*Galagolden*, apple  
 Galaxy, apple  
 Gar Jumbo, plum  
 Garden Delight, nectarine  
 Gavin, apple  
 Georgiagem, blueberry  
 Ginger Gold™, apple  
 Gloster, apple  
*Gold-N-Rose*, apple  
 Goldbar, apricot  
 Golden Isles, grape  
 Golden Nectar, plum  
 Golden Russet Bosc, pear  
 Golden Supreme™, apple  
 Goldenir apple  
 Goldilocks, peach  
 Goldprince, peach  
 Goldsmith, apple  
 Goldstrike, apricot  
 Grand Traverse, filbert  
 Granite Supreme, peach  
 Greensleeves, apple  
*Griffith*, apple (addendum)  
*Griffith Gold*, apple (addendum)  
 Gulfcoast, blueberry  
 Haig Arakelian, Sr., peach  
 Hansen 536, almond rootstock  
 Hansen 2168, almond rootstock  
 Haralred™, apple  
 Harblaze, nectarine  
*Harmon*, peach  
 Harogem, apricot  
 Harrow Diamond, peach  
 Harval, apricot  
 Harvest Sun, nectarine  
 Hatsuaki, apple  
 Haut, raspberry  
 Hawthorne, peach  
 Hecker, strawberry (addendum)  
 Heritage, chestnut  
 Hermosillo, peach  
 Hi-Red™, nectarine  
*Hidala*, apple  
 Higama, peach rootstock  
 Hillwell, apple  
*Hillwell Braeburn*, apple  
 Himekami, apple  
 Himbo-Queen, raspberry  
 Hokuto, apple  
 Honeycrisp, apple  
 Honey Bee, peach  
 Howard Sun, plum  
 Illini Hardy, blackberry  
*Imperial Gala*™, apple  
*Improved Red Jonathan*, apple (addendum)

Inmil, cherry rootstock  
 Ishtara®, plum rootstock  
 Ison, grape  
 Iwakami, apple  
 Janebell, grape  
 Janet, grape  
 Jaspi, plum rootstock  
 Jayhaven, peach  
 Jerseycot, apricot  
 Jester, apple  
 Jewel, strawberry  
 Jon Boy, peach  
 Jonafree, apple  
 Jonagored, apple  
 Jored, apple  
 Jork 9, apple rootstock  
 Joyous, grape  
 Julior®, peach rootstock  
 July Sun, peach  
 June Glo, nectarine  
 June Pride, peach  
 June Sun, peach  
 Junecrest, peach  
 Juneprince, peach  
 Jupiter, apple  
 Karmijn, apple  
 Kay Gray, grape  
 Kee-Wah-Din, grape  
 Keepsake, apple  
*Kemp Delicious*, apple  
 Kent, apple  
 Kern Sun, peach  
 Kestrel, apple  
*King Jonagold*, apple  
 Kitakami, apple  
 Kiwigold, raspberry  
 Kogetsu, apple  
 Korona, apple  
 Kotata, blackberry  
 La Festival, peach  
 Lacrosse, grape  
 LaJewel, peach  
 Lady Lou, peach  
 Lady Nancy, peach  
 Lateglow, strawberry  
 Lester, strawberry  
 Lincoln Logan, hybrid berry  
 Lisa, filbert  
 Loomis, grape  
*Lustre Elstar*™, apple  
*Lysgolden*®, apple  
 Maigold, apple  
 McShay, apple  
*MAC-9*, apple rootstock  
 Malling Autumn Bliss, raspberry  
 Malling Sunberry, hybrid berry  
 Maravilma, peach  
 Mark, apple rootstock  
 Mars, grape  
 Marubakaïdo N-1, apple rootstock  
 May Sun, peach  
 Melody, grape  
 Michinoku, apple  
 Mid Glo, nectarine  
 Mid Red, plum  
 Midnite Sun, plum  
 Milton Early Italian Prune, plum  
 Mirabi®, plum rootstock  
 Moira, apple  
 Mont&r, peach rootstock  
 Mr.S.2/5, peach rootstock  
 Murray, apple  
 MxM2, cherry rootstock  
 MxM14, cherry rootstock  
 MxM39, cherry rootstock  
 MxM60, cherry rootstock  
 MxM97, cherry rootstock  
 Myran®, peach rootstock  
 Navaho, blackberry  
 Nebuta, apple  
 Necta Zee, nectarine  
 Nelson, blueberry  
 Nemared, peach rootstock  
 Nertschinsk, apple interstock  
 Nesbitt, grape  
 New Gold, apple  
 New Jonagold, apple  
 Newbelle, peach  
 Newhaven, peach  
 Nicobel® Jonagold, apple  
 Nittany, apple  
 Noran, apple  
 Norcue, apple  
 Norda, apple  
 Nordic, raspberry  
 Noret, apple  
 Norhey, apple  
 Norland, apple  
 Norson apple  
 Northcountry, blueberry  
*Northern Star*, apple  
 Novamac, apple  
 Novaspy, apple  
 Novole, apple trunkstock  
 Nured® Spur Delicious, apple  
 Nured® Winesap, apple  
 O'Neal, blueberry  
 O'Rourke, filbert  
 OHxF 18, pear rootstock  
 OHxF 40, pear rootstock  
 OHxF 51, pear rootstock  
 OHxF 69, pear rootstock  
 OHxF 87, pear rootstock  
 OHxF 97, pear rootstock  
 OHxF 217, pear rootstock  
 OHxF 266, pear rootstock  
 OHxF 267, pear rootstock  
 OHxF 282, pear rootstock  
 OHxF 288, pear rootstock  
 OHxF 333, pear rootstock  
 Oberle, apple  
 October Sun, plum  
 Orin, apple  
 Orlando Seedless, grape  
 Oro-A, peach  
 Ottawa 3, apple rootstock  
 P.1, apple rootstock  
 P.2, apple rootstock  
 P.22, apple rootstock  
 Pacific Star™, nectarine  
 Pajaro, strawberry (addendum)  
 Pam, grape  
 Par-Feet Spur Criterion, apple  
*Pearleaf Crab*, apple trunkstock  
 Perron's Black, blackberry  
 Perron's Red, raspberry  
 Pineapple, grape  
 Pink Lady, apple

Pioneer Mac™, apple  
 PreCal™, grape  
 Primicia, apple  
 Princesa, apple  
 Puget Gold, apricot  
 Queencrest, peach  
 Queensland Bellerosa, plum  
 Queensland Earlisweet, cherry plum  
*Querina*, apple  
 Rayon, peach  
 Razor Golden Delicious, apple  
 Red Fuji, apple  
*Red Braeburn*, apple  
 Red-Leaved Paradise, apple rootstock  
 Redglobe, grape (addendum)  
 Redsleeves, apple  
 Redwing, raspberry  
 Regal Gala™, apple  
 Reveille, blueberry  
 Reverend Morgan, apple  
 Revival, chestnut  
 Richelieu, apple  
 Rosa, grape  
 Roseprincess, nectarine  
 Rouville, apple  
 Royal Empire™, apple  
 Royal Zee, plum  
 Royalty, raspberry (addendum)  
 Rubinstar, apple  
*Rubinstar Jonagold*, apple  
 Rubira, peach rootstock  
 Ruby, raspberry  
 Rubysweet, plum  
 Ryan Sun, peach  
 Saint Croix, grape  
 Saint Pipin, grape  
 San Pedro, peach  
 Sansa, apple  
 Santa Rosa-Two, plum  
 Santana, strawberry (addendum)  
 Saturn, grape  
 Sayaka, apple  
 Scarlet, apple  
 Scarlet Sun, plum  
 Scarlet Gala, apple  
 Scarletpearl, peach  
 Scioto, grape  
 Segundo, plum  
 Sekai-ichi, apple  
 Selva, strawberry (addendum)  
*Sensation*, peach  
 Senshu, apple  
 September Ruby, apple  
 September Sun, peach  
 Shamrock, apple  
 Shawnee, blackberry  
 Shermans Early, peach  
 Shermans Red, peach  
 Shizuka, apple  
 Sierra, blueberry  
 Sierra Lady, peach  
 Sierra Star™, nectarine  
 Silvan, blackberry  
 Simone, grape  
 Som-Mor, peach  
 Soquel, strawberry (addendum)  
 Southerner, apricot  
 Sovereign Opal, grape  
 Sovereign Tiara, grape  
*Spur Criterion*, apple  
 St. Julien GF 655-2, peach rootstock  
 St. Julien No. 1, peach rootstock  
 St. Julien No. 2, peach rootstock  
 Star Bright™, nectarine  
*Stark® Adina™*, apple  
 Stark® Double Delight, apricot (addendum)  
 Stark® Finale, peach (addendum)  
 Stark® GulfPride, nectarine (addendum)  
 Stark® Gulf Queen, peach (addendum)  
 Stark® HoneyGlo, nectarine (addendum)  
 Stark® Sensation, peach  
 Starkspur® Compact Red Delicious, apple (addendum)  
 Starkspur® Dixired Delicious, apple (addendum)  
 Starkspur® Law Rome, apple (addendum)  
 Starkspur® UltraRed Delicious, apple  
 Starkspur® UltraStripe Delicious, apple (addendum)  
 Starkspur® Winter Banana, apple (addendum)  
 State Fair, apple  
 Stonehurst, raspberry  
 Sugar Lady, peach  
 Sugar Pop, grape  
 Sumac, apple  
 Sumas, strawberry  
 Summer Bright, nectarine  
 Summer Diamond, nectarine  
 Summer Mac, apple (addendum)  
 Summer Star™, nectarine  
 Summer Sun, peach  
 Summerdel, apple  
 Summit, raspberry  
 Sundollar, nectarine  
 Sundowner, apple  
 Sundowner, nectarine  
 Sungem, nectarine  
 Sunhome, nectarine  
 Sunrise, blueberry  
 Suntan, apple  
 Super Chief™ Delicious, apple  
 Superstar™, nectarine  
 Supreme, grape  
 Sweet Jenny, grape  
 Sweet Rosa™, plum  
 Sweet Sixteen, apple  
 Sweet Sue, peach  
 Sweetbriar, raspberry  
 Sweethaven, peach  
 Sweetheart, plum  
 Swenson Red, grape  
 Swiss Gourmet™, apple  
 Symphony, grape (addendum)  
 TAMU Denman, peach  
 Tasty Zee, peach  
 Tasty-Gold, nectarine  
*Teeples Red Empire*, apple  
 Telamon, apple  
 Texstar, peach  
 Thome Empire, apple  
 Tift Spur Rome, apple  
 Titan, raspberry  
 Tom MacLean, apple  
 Tomcot, apricot  
 Topcrest, peach  
 Topspur Delicious, apple  
 Toro, blueberry  
 Trajan, apple  
 Trent, apple  
 Tri-Gems, apricot  
 Tropic Beauty, peach

TropicSnow, peach  
TropicSweet, peach  
Tsugaru, apple  
Tulare, cherry  
Tummelberry, hybrid berry  
Tuscan apple  
Tustin, strawberry (addendum)  
ValleGrande, peach  
Vallee Spur<sup>TM</sup> Delicious, apple  
Valley Gem, peach  
Valley Red, peach  
Valley Sun, peach  
Velvaglo, apricot  
Vivagold, apricot

Voyageur, plum  
Waldo, blackberry  
Warren, pear  
*Watson*, raspberry  
Westcot, apricot  
White Lady, peach  
Willamette, filbert  
Williams' Pride, apple  
Yataka, apple  
Yoko, apple  
YP, apple rootstock  
*Yumir*, peach rootstock  
Zee Lady, peach  
Zee Red, peach