Preface

Register of New Fruit and Nut Cultivars List 51

David Karp and Ksenija Gasic, Co-editors

About the Register

Special thanks to the crop contributors for compiling this information. Individuals with cultivars to describe should contact the crop editors directly via the links at https://www.americanpomological.org/?page_id=25.

Disclaimer of liability and accuracy

This information is provided as a courtesy of the American Society for Horticultural Science (ASHS) and is presented with the explicit understanding that ASHS and its authors are not rendering any professional service or advice. While ASHS does its best to present current, accurate, and complete information, the information provided herein may be changed at any time by its owners, or become outdated. Readers are encouraged to inquire further for confirmation of all information on cultivar description and intellectual property protection. ASHS strictly disclaims the accuracy or completeness of the information contained herein. ASHS and its authors strictly disclaim any liability whatsoever, direct or indirect, for any damages of any kind resulting from the use of this material.

Nomenclature

The first name in each full entry is usually the official cultivar denomination listed in the U.S. plant patent, in foreign plant variety gazettes, or in release notes. Names given in parentheses after the primary name, without ™ or ® marks, may be considered synonyms. Names followed by ™ are common law trademarks, and names followed by ® are registered trademarks; neither are official cultivar names, but they are listed because they are often the most familiar names for cultivars. Trade names are also listed separately, with a referral to the official name (e.g., “Frostberry Delight®. See T-460.”). The links between cultivar names and trade names can be fluid and complex; the trade names listed in the Register most commonly are used to market a single cultivar, but occasionally more than one cultivar is linked to a trade name.

Following the International Code of Nomenclature for Cultivated Plants, 9th ed. (2016), the primary names for Asian cultivars consist of transliterations into Roman script of the original names in Asian characters. The Register also seeks to provide, whenever possible, the original name in Asian script, and a translation of the meaning, when this is relevant.

Intellectual property document links

A Word version of List 51 containing links to intellectual property documents is included as Supplemental Material. For U.S. Plant Patents the link is usually to the USPTO master page for each cultivar, which includes patent texts and PDFs, color photographs (under “supplemental content”), and other useful information. In addition to the numbers and dates for U.S. Plant Patents and Plant Variety Protection certificates, the editors have tried to include information about Plant Breeders’ Rights for cultivars that are of foreign origin; these listings also include embedded links to original sources, insofar as they are available.

Abbreviations

Chinese MARA = Chinese Ministry of Agriculture and Rural Affairs
Chinese NFGA = Chinese National Forestry and Grassland Administration
CPVO = European Union Community Plant Variety Office
PBR = Plant Breeders’ Rights
USPP = United States Plant Patent
USPVP = United States Plant Variety Protection

Complementary resources

The Register’s descriptions from List 1 (1944) to the present, searchable by crop and cultivar, are available online at https://www.fruitandnutlist.org

A spreadsheet listing all fruit and nut cultivars that have applied for plant patents, PBR, or PVP in North America since 1 Jan. 2016, with links to their descriptions in recent Registers, is available at https://drive.google.com/file/d/1LtCeTo13PDFsO6AqFSw_1Pg0vP0VWR/view?usp=sharing. The editors endeavor to update it weekly.
Register of New Fruit and Nut Cultivars List 51

David Karp, Co-editor
Department of Botany and Plant Sciences
University of California, Riverside
900 University Avenue
Riverside, CA 92521

Ksenija Gasic, Co-editor
Department of Plant and Environmental Sciences
Clemson University
105 Collings Street
Clemson, SC 29634


ALMOND

Thomas M. Gradziel, Dept. of Plant Sciences, University of California, Davis, CA

Booth. Self-incompatible, kernel-to-shell ratio 60%. Origin: parentage unknown, seedling found in a Nonpareil and Ne Plus Ultra orchard in Orland, CA, by R.D. Booth and F.R. Booth. USPP 34,044; 3 Mar. 2022. Nut: ovate; paper shell; kernel midsize, 1.3 g, slightly wider and darker than Sonora and easily blanched; possible high doubles early in orchard production; shell exhibits slight to prominently cuspidate apex; harvest ~12 d after Nonpareil. Tree: growth habit upright to spreading; productive, crops heavily on spurs; blooms with Nonpareil; chill requirement 450 h.


Matan. Self-fertile, S-genotype (SS or S7 and S’/), kernel to shell ratio 47%. Origin: Newe Ya’ar Research Center, Israel, by D. Holland, I. Bar-Ya’akov, and K. Hatib. Lauranne × Um ElFahem; crossed 2002; selected 2006; introd. 2012. Israeli PBR 3150; 14 Feb. 2012. USPP 22,458; 17 Jan. 2012. USPV applied for. Nut: large; elongated and ovate; shells well-sealed, semi-hard; kernels large, 1.48 g; <5% doubles; harvest time 2-3 weeks before Lauranne. Tree: vigorous, upright, moderately spreading; blooms 10-14 d before Lauranne; chilling requirement ~100 h.

Penta. See Pentacebas Csic.


APPLE

Sarah Kostick, Dept. of Horticultural Science, University of Minnesota, Saint Paul, MN

Kate Evans, Tree Fruit Research and Extension Center, Washington State University, Wenatchee, WA

Babyloue. Small, flat, orange-red apple with good eating quality. Origin: Agro Selections Fruits, Eline, France, by L. Maillard and A. Maillard, Regalyou O.P. CPVO PBR applied for. USPP 32,964; 13 Apr. 2021. Fruit: very small to small; round flat; 95% luminous orange-red to red with yellow-orange ground color; flesh firm, crunchy, melting, juicy; flavor semi-sweet, aromatic; acidity moderate; 12.0-12.8 °Brix; ripens very late, first 2

Published online 25 August 2022.
This is an open access article distributed under the CC BY-NC-ND license (https://creativecommons.org/licenses/by-nc-nd/4.0/).
weeks of October in Elne; storability good, 3-4 months in cold storage. **Tree**: vigor moderate; growth habit upright; blooms early April in Elne; possibly resistant to apple scab (*Venturia inaequalis*).

**Bay 4029 (Rubinella®)**. Red apple with good eating quality and storability. **Origin**: Hallbergmoos, Germany, by M. Neumaller. Rubinette × Pomona. CPVO PBR 59052; 19 July 2021. USPP 31,933; 7 July 2020. **Fruit**: midsize, diameter 7.4 cm; ovoid globose; 70% dark red; flesh firm; 14-17 °Brix; acidity low, 3.5-5.3 g/L; highly aromatic with mango flavor; ripens with Braeburn; storability good. **Tree**: vigor moderate; growth habit upright, slightly spreading; blooms end of April in Hallbergmoos; highly productive; moderately susceptible to apple scab, similar to Elstar.

**Bella Rosa** (BellaRosa). Early season, full pink-red Cripps Pink apple. **Origin**: Fruit Varieties International, Grove, Tasmania, Australia, by F. Francis. Cripps Pink whole tree mutation; discovered 2013; propagated 2014. Australian PBR 6576; 14 Feb. 2021. USPP 32,850; 2 Mar. 2021. **Fruit**: diameter 6.8 cm; cylindrical; 85% dark red-purple with yellow-green ground color; flesh firm, crisp; 15.5 °Brix; 0.6% titratable acidity; ripens late, mid-April in Tasmania. **Tree**: vigorous moderate; growth habit drooping; blooms mid- to late October in Tasmania; winter hardness, cold, drought, and heat tolerance similar to Cripps Pink.

**BellaRosa**. See Bella Rosa.

**Bingo Gala**. Gala apple with attractive red-purple overcolor. **Origin**: Golden Joy Bingo, Grabouw, Western Cape, South Africa, by J.D. Weigman. Tenroy Gala limb mutation; discovered 2012. South African PBR applied for. USPP 33,385; 24 Aug. 2021. **Fruit**: diameter 7.2 cm; globose; 80% red-purple with yellow ground color; flesh juicy, moderately firm, pressure 7.5 kg; 15 °Brix; ripens early to mid-February in South Africa; storability similar to other Gala cultivars. **Tree**: strong vigor; growth habit semi-upright; blooms mid-October in South Africa; disease and pest resistance/susceptibility similar to other Gala cultivars.

**Chunmei Donghong**. Rose-red flowered ornamental crabapple. **Origin**: Beijing University of Agriculture, Beijing, China, by X. Wang, Y. Huang, J. Tian, J. Zhang, Y. Lu, X. Qin, Y. Hu, and Y. Yao. Mutation of Radiant; mutations introduced 2006; introd. 2019. **Fruit**: small; ellipsoid-conical; 85% orange-red. **Tree**: vigorous; growth habit spreading; blooms late April in Beijing; flowers bright red-petal; petals single, slightly overlapping.

**CIVM49 (RedPop®)**. Precocious apple with brilliant red fruit and resistance to apple scab. **Origin**: Consorzio Italiano Vivaisti, Ferrara, Italy, by M. Leis and A. Martinelli. Co-op 39 × Mitchgala crossed 2000; propagated 2006. CPVO PBR applied for. USPP 32,391; 27 Oct. 2020. **Fruit**: diameter 7.0 cm; conic; 80% dark purple-red with yellow ground color; flesh fine; flavor aromatic, good, with high sugar, 14.5-15.0 °Brix; 4.9 g/L malic acid; ripens 10-15 d after Gala, late August to early September in S. Giuseppe di Comacchio, Italy; storability good, up to 6 months under controlled atmosphere; shelf life up to 2 weeks. **Tree**: vigorous moderate; growth habit spreading; blooms early April in S. Giuseppe di Comacchio; precocious; biennial bearing absent; resistant to apple scab.

**Civpeak** (Rubens®). Purple-red apple with very firm, crunchy, and juicy texture. **Origin**: Consorzio Italiano Vivaisti, Comacchio, Italy, by M. Leis and A. Martinelli. Civi bud mutation; discovered and selected 2009; propagated 2011. CPVO PBR applied for. USPP 32,417; 3 Nov. 2020. **Fruit**: diameter 7.6 cm; conic; 70-90% purple red with yellow ground color; flesh firm, crunchy, and juicy; flavor aromatic, balanced sweetness/acidity, 14.0-14.5 °Brix, acidity 7.0-7.5 g/L; ripens early to mid-August in S. Giuseppe di Comacchio; storability good, up to 7 months at 1 °C; 2% O2, and 2% CO2. **Tree**: vigorous moderate; growth habit spreading; blooms mid-April in S. Giuseppe di Comacchio; biennial bearing absent; tolerant to temperatures down to -10 °C or up to 35 °C.

**Dai Long**. Ornamental crabapple with unique white flat flowers. **Origin**: Shandong Agricultural University, Shandong, China, by Y. Yin, X. Cui, L. Zhang, Y. Mao, X. Su, Y. Liu, H. Pang, and X. Shen. *Malus baccata* O.P.; selected 2018. USPP 31,271; 20 July 2021. **Fruit**: small, diameter 1.3-1.5 cm; obloid; dark purple, glossy; persists on tree. **Tree**: vigorous moderate; growth habit upright, spreading; blooms early, late March in Tai’an, Shandong; flowers single, white, flat.

**DS 102**. Yellow apple with good eating quality and storability. **Origin**: Holman, WI, by D. Shefelbine. Honeycrisp O.P.; selected 2007; propagated 2009. USPP 32,271; 20 July 2021. **Fruit**: midsize, diameter 7.5-8.4 cm; round conical; moderate yellow; flesh crisp, juicy, melting; flesh firmness 7.7-11.8 kg; 17.0-19.2 °Brix; 0.215% malic acid; ripens mid-September in Brewster, WA; storability good, up to 9 months in common storage. **Tree**: vigorous moderate; growth habit upright, spreading; blooms mid- to late April in Brewster.

**Double-flowered Prince**. Double-flowered ornamental crabapple with purple flowers, leaves, and fruits. **Origin**: Beijing University of Agriculture, Beijing, China, by W. Li, Z. Zhang, J. Tian, J. Zhang, Y. Lu, X. Qin, Y. Hu, and Y. Yao. Mutation of Royalty; mutations induced 2006; evaluated 2010-2012; released 2019. USPP 33,385; 24 Aug. 2021. **Fruit**: diameter 1.41 cm; obloid; deep purple-red; flesh purple-red; fruit persists on tree 185-190 d. **Tree**: vigorous; growth habit spreading; leaves deep purple; blooms mid- to late April in Beijing; flowers double, purple-red.

**Duojiao** (多娇®). Ornamental crabapple with yellow leaves. **Origin**: Tai’an Zhendong Nursery, Tai’an, Shandong, China, by L. Zhang, Y. Mao, Y. Wang, L. Yang, Y. Yin, X. Cui, L. Zhang, and D. Zhang. *M. spectabilis* Riversii bud mutation; discovered 2014; introduced 2018. USPP 32,220; 22 Sept. 2020. **Fruit**: diameter 2.5 cm; conical; yellow; crop load low. **Tree**: growth habit V-shaped; blooms early April in Jiangsu, China; flowers light purple, large, highly double with deep cup shape; flower petals elliptic, overlapping.

**Fen Balei**. Ornamental crabapple with large, light purple flowers and yellow fruit. **Origin**: Nanjing Forestry University, China, by T. Zhou, H. Jiang, D. Zhang, J. Fan, L. Zhang, G. Wang, W. Zhang, and F. Cao. *Malus micromalus* O.P.; seed collected 2007; selected 2011. **Fruit**: diameter 2.5 cm; conical; yellow; crop load low. **Tree**: growth habit spreading; leaves mid- to late April in Beijing; flowers pink, semidouble, large.

**Fengapi** (Tessa®). Vivid red apple with good eating quality. **Origin**: Feno GmbH, Neumarkt, Italy, by R. Kameppelle. Gala × Pink Rose. CPVO PBR 52779; 20 May 2019. USPP 30,863; 3 Sept. 2019. **Fruit**: elongated; diameter 7.5-8.5 cm; vivid red; flesh crunchy; flavor aromatic, very sweet; storability very good; ripens late September in Italy. **Tree**: vigorous moderate; growth habit ramified, spreading; blooms early to midseason.

**Firecracker**. See NY109.

**FR1063**. Red apple with subtle stripes and good storability. **Origin**: Conklin, MI, by F.A. Rasch. Parentage unknown; discovered 1998; propagated 2007. USPP 32,220; 22 Sept. 2020. **Fruit**: diameter 9.5 cm; 40-50% blush red with subtle red stripes over yellow ground color; flesh firm, tender, fine, crisp, very juicy; pressure ~8.2 kg;
flavor aromatic, sweet, 16.5 °Brix; ripens early October in Conklin; storability good, 6-10 months in controlled atmosphere. **Tree:** vigorous; growth habit flat to slightly upright; blooms mid-May in Michigan; susceptible to fire blight (*Erwinia amylovora*); moderately susceptible to apple scab and powdery mildew (*Podosphaera leucotricha*).

**Fräulein**. See GS-66.

**Giga**. See Ipador.

**GS-66 (GS 66; Fräulein**). Shiny red apple with crisp, juicy, non-browning flesh. **Origin:** Deutsches Obstsortenkonsortium, Hollen-Twienlenfeth, Germany, by G. Sundermeyer. Parentage unknown; selected 2012; propagated 2013. CPVO PBR 54081; 20 Jan. 2020. **USPP 30,862; 3 Sept. 2019. **Fruit:** diameter 7.0-8.0 cm; globose; 70-80% dark red overcolor; lenticels prominent, abundant; flesh very crisp, juicy, non-browning; 13.7 °Brix; ripens with Braeburn; storability very good, >4 months in cold storage, >7 months in controlled atmosphere. **Tree:** vigorous moderate; growth habit spreading; blooms 3 d after Golden Delicious; susceptible to powdery mildew.

**HOT84A1.** Attractive, dark red apple with long storability. **Origin:** New Zealand Institute for Plant and Food Research, Auckland, New Zealand, Institut de Recerca i Tecnologia Agroaliment. **Parentage:** Waihau × Heihe, New Zealand, Institut de Recerca i Tecnologia Agroalimentaria, Barcelona, Spain, and FruitFutur, Lileida, Catalonia, Spain, by J. Bonany and R. Bolz. Scired × Scilate; crossed 2002; selected 2007. CPVO PBR applied for. USPP 32,720; 5 Jan. 2021. **Fruit:** large to very large, diameter 7.5 cm; oblong; 70% dark red purple with yellow ground color, moderate russet; flesh firm, very juicy; flavor sweet wine; aroma sweet apple; 17.0 °Brix; less sensitive to cracking and sunburn than Fuji; ripens late September to early October in Lleida; storability excellent, up to 8 months at 0.5 °C plus 1 week shelf life. **Tree:** vigorous moderate on M.9 rootstock; growth habit spreading; blooms early to mid-April in Lleida; adapted to hot growing conditions.

**Ipador (Giga**). Scab-resistant apple with long storability. **Origin:** Better3Fruit, Heverlee, Belgium, by I. De Wit and A. Auwerkerken. Goldruth × Nicoter; crossed 2002; selected 2008; propagated 2008-2009. CPVO PBR applied for. USPP 32,392; 27 Oct. 2020. **Fruit:** diameter 8.0 cm; oblong/conic; 75% dark red overcolor with greenish yellow ground color; flesh firm, crisp, juicy; aroma moderate to strong; 16.1 °Brix; 8.2 g/L malic acid; ripens late October in Belgium; storability excellent, at least 7 months cold storage. **Tree:** vigorous moderate; blooms early, withidered; highly productive; biennial bearing absent; resistant to apple scab, monogenic *Rvi6* (i.e., *Vf*) resistance; susceptible to fire blight.

**Joya**. See RDS.

**Lilac (UEB 42723).** Columnar ornamental apple tree with red-purple flowers, resistant to apple scab. **Origin:** Institute of Experimental Botany, Prague, Czech Republic, by R. Cerny, J. Zima, O. Louda, and J. Tupy. Evereste × Maypole; crossed 2003; selected 2009; propagated 2014. CPVO PBR 51497; 25 Feb. 2019. USPP 30,861; 3 Sept. 2019. **Fruit:** small; globose to obloid; 95-100% red-purple. **Tree:** vigor weak to moderate; growth habit erect, compact, columnar; flowers red-purple; blooms with Golden Delicious; very precocious; *Rvi6* (i.e., *Vf*) resistant to apple scab.

**NY73 (Pink Luster**). Unique pink blush apple with firm, crisp, juicy, flavorful fruit. **Origin:** Cornell University, by S.K. Brown and K. Maloney. Imperial Gala × Honeycrisp; crossed 1997; propagated 2002; tested as NY97733-73. USPP 32,702; 29 Dec. 2020. **Fruit:** large, diameter 6.9-8.9 cm; globose-conical; pink blush with light green ground color; flesh crisp, juicy; flavor good, 11.0-16.5 °Brix; acidity 0.49% malic acid, 3.5-3.9 pH; ripens mid-September in Geneva, NY. **Tree:** vigorous moderate; growth habit standard upright; blooms early May in Geneva, NY.

**NY109 (Firecracker**). Firm, juicy, flavorful apple with an heirloom-like appearance. **Origin:** Cornell University, by S. Brown and K. Maloney. Golden Glory × NY752; crossed 1997; propagated 2004; tested as NY97729-109. USPP 31,145; 3 Dec. 2019. **Fruit:** midsize, diameter 5.5-7.7 cm; mostly conic; light red blush with yellow ground color; fine russet; flesh firm; flavor balanced sweetness/ acidity, 13.1-17.4 °Brix; 0.82% malic acid, 3.3-3.7 pH; ripens early to mid-October in Geneva, NY. **Tree:** vigorous moderate; growth habit standard upright; blooms early to mid-May in Geneva, NY.

**Pink Luster**. See NY73.

**RDS (Joya**). Cripps Red with early color development. **Origin:** Fruit Varieties International, Grove, Tasmania, Australia, by A. Green and B. Green. Cripps Red limb mutation; discovered 2013; propagated 2014. Australian PBR 6045; 12 Mar. 2019. USPP 32,618; 15 Dec. 2020. **Fruit:** diameter 7.7 cm; globose; dark red-purple with yellow-green ground color; bloom moderate to strong; flesh firm, crisp; ripens mid- to late season in Tasmania. **Tree:** vigorous moderate; growth habit spreading; blooms late September in Tasmania; winter hardiness, drought, and heat tolerance similar to Cripps Red.

**Red Summer.** See Rumba.

**RedPop**. See CIVM49.

**Regal D17-121.** Bi-colored apple with dense, crisp flesh. **Origin:** Regal Fruit International, Ephrata, WA, by N. Manly and K. Adams. Honeycrisp × Co-op 39; crossed 2008. USPP 32,877; 9 Mar. 2021. **Fruit:** olate to flat round; red with yellow ground color; flesh very firm, crisp, melting; flavor honey-like, 15.4 °Brix; 6.14 g/L malic acid, pH 3.84; ripens early September in Ephrata; keeps up to 6 months in storage. **Tree:** vigorous moderate; growth habit inverted cone; susceptible to all insects and diseases in Central Washington.

**RoselandRed™.** See SO 7.

**Rubens**. See CIVpeak.

**Rubinella**. See Bay 4029.

**RubyS (Ruby-S**). Small, flavorful, attractive apple with excellent storability. **Origin:** Apple Research Institute, Rural Development Administration, Gunwi, South Korea, by S. Kwon, J. Kim, S. Kim, Y. Kwon, and J. Lee. Alpsotome × Sansa; crossed 2004; selected 2014. South Korean PBR 6585; 30 Mar. 2017. **Fruit:** small, diameter 5.94 cm; conic; 80-100% red with yellow-green ground color;
flushed blush; flesh creamy, crunchy, juicy, firm; aroma delicate; 14.5° Brix; 0.53% titratable acidity as malic acid; ripens 5 d before Gala; stores at least 6 months at 1°C. Tree: vigor moderate; growth habit slender spindle; blooms mid-April in South Korea; strong relative resistance to Alternaria blotch (Alternaria mali), white rot (Botryosphaeria dothidea), bitter rot (Colletotrichum gloeosporioides, C. acutatum and Glomerella cingulata), and powdery mildew.

Rumba (US plant patent denomination UEB 43054; US trademark Tasty Red™). Columnar apple tree with bright red, long-storing fruit. Origin: Institute of Experimental Botany, Prague, Czech Republic, by R. Cerny, J. Zima, O. Louda, and J. Tupy. Topaz × Rondo; crossed 2004; selected 2009. CPVO PBR applied for. USPP 33,113; 8 Sept. 2020. Fruit: ovoid; bright red with light greenish yellow ground color; flesh finely grained, moderately firm; flavor slightly sour; ripens late, October in Czech Republic; storability good, 5-6 months in cold storage. Tree: vigor moderate; growth habit erect and columnar; blooms end of April in Czech Republic; Rvi6 (i.e., Vf) resistant to apple scab.

SO 7 (RoselandRed™). Bright cherry red Honeycrisp apple. Origin: International Plant Management, Roseland, VA, by A.R. Alton. Honeycrisp whole tree mutation; discovered 2009; propagated 2012; USPP 33,113; 1 June 2021. Fruit: diameter 7.5 cm; round to slightly flattened; 80-90% bright cherry red with yellow-orange ground color; flesh very crisp, juicy; aroma fragrant, sweet; storability similar to Honeycrisp. Tree: vigor moderate; growth habit spreading; blooms early to mid-May in northeastern Virginia; winter hardiness, drought tolerance, and disease resistance similar to Honeycrisp.

Takano 7go (高野 7号). Orange-red apple with firm flesh and balanced flavor. Origin: Oshu-shi, Iwate, Japan, by T. Takano. Shinano Gold × Takano 1go (Beni Roman™). Japanese PBR 27390; 19 Mar. 2019. USPP 32,159; 8 Sept. 2020. Fruit: ovoid conic; orange-red with whitish green ground color; flesh firm, ~6.9 kg; sweetness/acidity balanced, 14.5-15.0° Brix; 0.33 g/100 ml malic acid; ripens late August to early September in Iwate. Tree: vigor moderate; blooms early May in Iwate; resistant to Alternaria blotch.

Tasty Red™. See Rumba.

Tessa™. See Fengapi.

UEB 6581. Late ripening, dark red apple resistant to apple scab. Origin: Institute of Experimental Botany, Prague, Czech Republic, by R. Cerny, J. Zima, O. Louda, and J. Tupy. Fuji × UEB 3265/2; crossed 2000; selected 2009. CPVO PBR 48317; 5 Feb. 2018. USPP 30,848; 27 Aug. 2019. Fruit: conical; dark red; flesh finely grained, firm; aroma moderate, similar to tropical fruits; sugar/acid ratio high, 40:1; ripens late; storability good, 5-6 months. Tree: vigor moderate; growth habit spreading; blooms late April to early May in Czech Republic, similar to Golden Delicious; precocious; Rvi6 (i.e., Vf) resistant to apple scab.

UEB 4272. See Magenta.

UEB 42723. See Lilac.

UEB 43054. See Rumba.

Xiang He. Ornamental crabapple with double, red-purple flowers. Origin: Changyi Crabapple Seedling Cultivation Professional Cooperatives, Changyi, Shandong, China, by D. Hu, J. Xu, Y. Han, X. Dun, L. Wang, and S. Zhu. Parentage unknown; introduced 2017. Fruit: small; diameter 0.9-1.1 cm; flat oblong; moderate red; flesh yellow. Tree: vigor moderate; growth habit upright; flowers red-purple, double petaled; blooms late April in Shandong Province, China.

Y103 (Kissabe™ Orange [multiple cultivars may be marketed under this trade name]). Dark pink, white-fleshed apple. Origin: International Fruit Obtention, Seiches sur le Loir, France, by V. Foullet. Golden Delicious × SJ109; crossed 2006; propagated 2011. CPVO PBR applied for. USPP 32,234; 29 Sept. 2020. Fruit: diameter 8.4 cm; conical; brown orange with yellow ground color; flesh dark pink and white, firmness low to moderate, juiciness moderate to high; 13° Brix; ripens 10-15 d before Golden Delicious. Tree: vigor moderate to high; growth habit spreading, drooping; blooms 4 d before Golden Delicious.


APRICOT

Craig A. Ledbetter, USDA-ARS San Joaquin Valley Agricultural Sciences Center, Parlier, CA


Suapril5. Productive bearer of medium-sized midseason fruit with firm, dark orange flesh and abundant aroma. Origin: Sun World International, Bakersfield, CA, by T. Bacon. Robada O.P.; crossed 2008; tested as AP13141. USPP 33,562; 19 Oct. 2021. Fruit: oblong; ~90 g; blush 15% in sunlight; texture medium-fine, firm; flavor sweet, mild; aroma abundant; freestone; kernel medium bitter; ripens midseason. Tree: vigor medium-strong; growth habit semi-upright; canopy density medium; bearing very productive; self-infertile; chilling requirement 600 h.

AVOCADO

Eric Focht, Dept. of Botany and Plant Sciences, University of California, Riverside, CA

Alejandro F. Barrientos-Priego, Departamento de Fitotecnia, Universidad Autónoma Chapingo, Texcoco, México


1178 HORTSCIENCE VOL. 57(9) SEPTEMBER 2022
rough, dark purple or black, similar to Hass; ripens with Hass; off-bloom fruit smaller, smoother skinned, rounder than Hass. Tree: growth habit spreading, flat topped; branching less apically dominant than Hass; flowers regularly September through March in Irvine; flowers occasionally at other times of year; flowering type A.

AVOCADO ROOTSTOCK

**Eric Focht**, Dept. of Botany and Plant Sciences, University of California, Riverside, CA

**Alejandro F. Barrientos-Priego**, Departamento de Fitotecnia, Universidad Autónoma Chapingo, Texcoco, Mexico

**Borys.** Avocado rootstock highly tolerant to salinity. *Origin:* INIFAP-Nayarit, México, by S. Salazar-García, R. Medina-Torres, S. Ochoa-Ascencio, and J. Antonio Herrera-González. West Indian race O.P. from Zempoala, Veracruz, tested under salinity conditions. Mexican PBR 2709; 18 June 2021. **Plant:** vigor medium; growth habit spreading; internode length short; stems thin; leaves narrow, anise aroma medium, undulation of leaf margin medium. **Rootstock performance:** vigorous; stimulates earlier and highly tolerant to salinity and drought.

**Bravo.** Avocado rootstock highly resistant to *Phytophthora cinnamomi* and highly tolerant to salinity and drought. *Origin:* Nayarit, México, by S. Salazar-García. Mexican race O.P., from Puebla State, México, tested under *P. cinnamomi*, salinity and drought conditions. Mexican PBR 2718; 18 June 2021. **Plant:** vigor medium; growth habit upright; internode length medium; stems thick; leaves broad, anise essence absent, undulation of leaf margin weak. **Rootstock performance:** vigorous; 15% more than local rootstocks; performs very well with Hass and Méndez No. 1; *P. cinnamomi* resistance very high; salinity tolerance high; drought tolerant.

**Campeón.** Avocado rootstock very strongly tolerant to drought and strongly resistant to *Phytophthora cinnamomi*. *Origin:* Nayarit, México, by S. Salazar-García. West Indian race O.P. from Veracruz State, México, tested under drought conditions. Mexican PBR 2717; 21 June 2021. **Plant:** vigorous; growth habit spreading; internode length long; stems thick; leaves broad, anise essence absent, undulation of leaf margin weak. **Rootstock performance:** generates vigorous trees; yield very high, 60% more than local rootstocks; adapted to heavy soils; performs very well with Hass and Méndez No. 1; drought tolerance high; highly resistant to *P. cinnamomi*.

**Dusa.** See Merensky 2.

**Galindo.** Avocado rootstock with very high resistance to *Phytophthora cinnamomi* and high tolerance to salinity and drought. *Origin:* INIFAP-Nayarit, México, by S. Salazar-García, R. Medina-Torres, and S. Ochoa-Ascencio. Mexican race rootstock, recovered from an escape tree in an orchard devastated by *P. cinnamomi*, México State, tested under *P. cinnamomi* conditions. Mexican PBR 2710; 18 June 2021. **Plant:** vigor medium; growth habit spreading; internode length medium; stem thickness medium; leaves of medium width, anise essence absent, undulation of leaf margin medium. **Rootstock performance:** vigorous; yield high; performs very well with Hass; resistance to *P. cinnamomi* very high.

**Jefè.** Avocado rootstock with high tolerance to salinity and drought. *Origin:* Nayarit, México, by S. Salazar-García. West Indian race O.P., probably from Veracruz State, México, tested under salinity and drought conditions. Mexican PBR 2719; 18 June 2021. **Plant:** vigorous; growth habit spreading; internode length long; stems thick; leaves broad, anise essence absent, undulation of leaf margin strong. **Rootstock performance:** generates vigorous trees; yield high, 27% more than local rootstocks; performs very well with Hass and Méndez No. 1; salinity tolerance high; drought tolerance high.

**Latas.** See Merensky 1.

**Leola.** See Merensky 6.

**Merensky 1 (Dusa).** Avocado rootstock resistant to salinity and *Phytophthora cinnamomi*. *Origin:* Westfalia Technological Services, Tzaneen, Limpopo Province, South Africa, by J. Darvas. Discovered late 1970s or early 1980s as a seedling rootstock at Westfalia Estate for resistance to *P. cinnamomi* pressure. USPP 15,309; 13 Mar. 2003. **Plant:** vigorous; growth habit spreading; young leaves grayed-orange with weak anthocyanin pigmentation, anise aroma absent. **Rootstock performance:** yield higher than Duke 7 with Hass; more resistant to *P. cinnamomi* than Duke 7.

**Merensky 2 (Dusa).** Avocado rootstock with strong resistance to *Phytophthora cinnamomi* and good yield when grafted to Hass. *Origin:* Westfalia Technological Services, Tzaneen, Limpopo Province, South Africa, by J.S. Köhne. Discovered 2003 as a seedling rootstock at Westfalia Estate in an orchard with high *P. cinnamomi* pressure. USPP 32,464; 17 Nov. 2020. **Plant:** vigorous; growth habit spreading; young leaves orange-brown, anise aroma present. **Rootstock performance:** yield higher than Duke 7 with Hass; more resistant to *P. cinnamomi* than Duke 7.

**Merensky 5 (Zerála).** Avocado rootstock highly resistant to salinity and *Phytophthora cinnamomi*. *Origin:* Westfalia Frut Estate, Tzaneen, Limpopo Province, South Africa; South African Avocado Growers Association, Tzaneen, by D.G. Smith, S. Kremer-Köhne, Z. van Rooyen, and J.S. Köhne. Discovered late 1980s as high-performing seedling rootstock in Fuerte orchard; clonal cuttings were then screened for resistance to *P. cinnamomi* in a mistbed. USPP 32,465; 17 Nov. 2020. **Plant:** vigorous; growth habit spreading; young leaves grayed-orange with medium anthocyanin pigmentation. **Rootstock performance:** cumulative yield greater than Merensky 2 with Hass scion; very *P. cinnamomi* resistant; salinity resistant.

**Merensky 6 (Leola).** Avocado rootstock with high bearing quality and vigor, highly tolerant to *Phytophthora cinnamomi*. *Origin:* Westfalia Fruit Estate, Tzaneen, Limpopo Province, South Africa; South African Avocado Growers Association, Tzaneen, by S. Kremer-Köhne and Z. van Rooyen. O.P. from a breeding block, screened for resistance to *P. cinnamomi* in a mistbed. USPP 32,465; 17 Nov. 2020. **Plant:** vigorous; growth habit upright; young leaves yellow-green with weak anthocyanin pigmentation. **Rootstock performance:** yield high with Hass scion; highly tolerant to *P. cinnamomi*.

**Rudo.** Avocado rootstock with very high resistance to *Phytophthora cinnamomi* and moderate tolerance to drought. *Origin:* Nayarit, México, by S. Salazar-García. Mexican race O.P., México State, tested under *P. cinnamomi* and drought conditions. Mexican PBR 2716; 18 June 2021. **Plant:** vigorous; growth habit spreading; young leaves grayed-orange with medium anthocyanin pigmentation. **Rootstock performance:** yield high with Hass scion; highly resistant to *P. cinnamomi*.

**Salazar.** Avocado rootstock with strong tolerance to drought. *Origin:* INIFAP-Nayarit, by S. Salazar-García and R. Medina-Torres. West Indian race O.P., Zempoala, Veracruz, México, tested under drought conditions. Mexican PBR 2708; 18 June 2021. **Plant:** vigorous; growth habit upright; internode length long; stems thick; leaf width medium, anise aroma absent, undulation of leaf margin...
weak. **Rootstock performance:** generates vigorous trees; performs very well with Hass; yield high, 26.5% more than local rootstocks; drought tolerance high.

**SHSR-04.** Avocado rootstock with very strong resistance to *Phytophthora cinnamomi*. **Origin:** South Kolan, Queensland, Australia, by G.H. Green and W.H. Whitley. Discovered 2003 as a seedling rootstock of likely Guatemalan heritage in a grafted Hass orchard with high *P. cinnamomi* pressure. Australian PBR 6672; 7 June 2022. USPP 33,355; 17 Aug. 2021. **Plant:** fruit ovoid, rounded at stalk end; young leaves grayed-purple. **Rootstock performance:** yield high with Hass scion; very *P. cinnamomi* resistant.

**Zeralta®.** See Merensky 5.

---

### BLACKBERRY

Lacy D. Nelson and Margaret L. Worthington, Department of Horticulture, University of Arkansas, Fayetteville, AR

**16TP4 (Midnight™).** Thornless, semi-erect, floricanes-fruiting, late ripening. **Origin:** Beekers Berries Breeding, Breda, The Netherlands, by J.A.P. de Jongh. Parentage unknown; discovered 2016. CPVO 16TP4; 28 Sept. 2021. **Fruit:** large, 10-20 g; oblong; glossy; flavor pleasant, moderately sweet, with acidic aftertaste, 9.0-10.5 °Brix; ripens late, late summer; keeps 7 d; fresh fruit market potential good. **Plant:** thornless; vigorous; growth habit semi-erect.

**A-2454T (Big Daddy™).** Thornless, erect, floricanes-fruiting, with early production. **Origin:** University of Arkansas, Fayetteville, by J. Clark. Ark. Gen. 2252T × Ark. 2255; crossed 2004; selected 2008. USPP 32,965; 13 Apr. 2021. **Fruit:** midsize, 5.8 g; round; glossy; firm, texture near crisp; fruit fertility excellent, with full drupelet set; flavor very sweet, consistent, low-acid, 11.1 °Brix; 0.60% titratable acidity expressed as citric acid; ripens early; postharvest performance excellent; red drupelet reversion very low. **Plant:** thornless; growth habit erect; plant health excellent; secondary buds have been observed on canes that had bud injury from midwinter low temperatures; cold hardy to -8 °C; for commercial shipping, local markets, and home gardens.

**A-2491T.** Thornless, erect, floricanes-fruiting, with large, high-quality fruit. **Origin:** University of Arkansas, Fayetteville, by J.R. Clark. APF-46 × Natchez; selected 2009. USPP 33,140; 8 June 2021. **Fruit:** large, 9.0 g for primary floricanes fruit, but smaller later in season, with secondary and tertiary fruit 4.0-5.7 g; overall seasonal fruit size 6.1 g; long conical, with a uniform black finish; consistently firm; fruit fertility excellent, with full drupelet set; flavor consistently excellent; 9.2 °Brix; 0.89% titratable acidity expressed as citric acid; ripens early; postharvest performance excellent. **Plant:** thornless; growth habit erect; yield consistently high; resistant to anthracnose (*Elsinoe veneta*); cold hardy to -17 °C; for commercial shipping, local markets, and home gardens.

**A-2524T.** Thornless, erect, floricanes-fruiting, with large, sweet fruit. **Origin:** University of Arkansas, Fayetteville, by J.R. Clark. Ark. Gen. 2271T × Ark. 2252T; crossed 2009; selected 2012. USPP 33,701; 30 Nov. 2021. **Fruit:** large, 7.9 g; elongated; glossy; fruit fertility excellent, with full drupelet set; flavor good, 8.7 °Brix; 1.10% titratable acidity expressed as citric acid; storage potential shorter than for Osage and Natchez due to softer fruit with more leakage. **Plant:** thornless; vigorous; growth habit erect; yield high; plant health excellent; cold hardy to -17 °C; for home gardens.

**Aketzali.** Thorny, erect to semi-erect, floricanes-fruiting, with midsize fruit. **Origin:** Black Venture Farm, Los Reyes, Michoacán, Mexico, by M.N. Hewstone Oliger and F.J. Morales Chavez. 1004-Z × H2P8 (both proprietary breeding selections); tested as 2000-182. Mexican PBR 2136; 27 Mar. 2019. USPPV 202000246; 4 June 2021. **Fruit:** midsize, length 36 mm, diameter 20 mm; oblong; reddish black; ripens midseason. **Plant:** thorns large; erect to semi-erect; leaf bud burst early; bears on floricanes.

**Amelali.** Thorny, semi-erect, floricanes-fruiting, with early-ripening fruit. **Origin:** Black Venture Farm, Los Reyes, Michoacán, Mexico, by M.N. Hewstone Oliger and F.J. Morales Chavez. Parentage undetermined; tested as 601-67. Mexican PBR 2138; 27 Mar. 2019. USPPV 20200247; 28 Sept. 2021. **Fruit:** midsize, length 27 mm, diameter 18 mm; long conical; bluish-black; ripens early. **Plant:** thorny; growth habit semi-erect; leaf bud burst early; bears on floricanes.

**AFP-238T.** Thornless, erect, primocanes-fruiting, with sweet fruit. **Origin:** University of Arkansas, Fayetteville, by J.R. Clark. AFP-27 × AFF-77; selected 2009; crossed 2006. USPP 33,329; 10 Aug. 2021. **Fruit:** midsize, 6.0 g for primocane fruit, 6.5 g for floricanes fruit; round with a glossy black finish; fruit fertility excellent, with full drupelet set; flavor sweet, 13.2 °Brix (floricanes) and 12.8 °Brix (primocane); 1.16% titratable acidity expressed as citric acid; ripens early. **Plant:** thornless; growth habit erect; plant health excellent; resistant to anthracnose; cold hardy to -17 °C; for local markets and home gardens.

**AFP-268T (Prime-Ark® Horizon).** Thorny, erect, primocanes-fruiting, with large, flavorful, mid-late-season fruit. **Origin:** University of Arkansas, Fayetteville, by J.R. Clark. Prime-Ark 45 × AFP-158; crossed 2008; selected 2010; tested as AFP-268; introd. 2020. USPP applied for. **Fruit:** large, 7.8 g overall, but can be >10 g for floricanes fruit; average 7.2 g for primocane fruit; oblong; bright glossy black; flavor consistent, 9.6 °Brix; 0.99% titratable acidity expressed as citric acid in primocane fruit and 0.79% in floricanes fruit; ripens midseason; postharvest performance good. **Plant:** thorny; growth habit erect; primocane fruit and flowers are borne on the cane terminus or on lateral branches if primocanes are tipped, and fruiting continues down the primocane during the season; cold hardy to -17 °C.

**Big Daddy™.** See A-2454T.

**Black Sultana®.** See Plablack 15157.

**BWP FNZ6VB.** See FNZ-6VB.

**BWP FNZ8VB.** See FNZ-8VB.

**Delaney™.** See DrisBlackTwentyThree.

**DrisBlackEighteen (Letizia®).** Thornless, semi-erect, floricanes-fruiting, with flavorful midsize fruit. **Origin:** Driscoll’s, Watsonville, CA, by G.R. Sills, M.F. Crusha, and A.M. Pabon. DrisBlackTwo × BWP FNZ6VB. 7 selected 2007. USPP 31,110; 26 Nov. 2019. **Fruit:** midsize, 5.6 g; elliptic; ripens early; 1 Feb. to 5 Aug.; keeps 7 d. **Plant:** thorny; growth habit semi-erect; breaks dormancy earlier than similar cultivars; resistant to fusarium wilt (*Fusarium oxysporum*), moderately resistant to powdery mildew (*Podosphaera macularia*); susceptible to redberry mite (*Acalliptes essigi* and *Verticillium sp*); winter hardiness, drought tolerance, and heat tolerance moderate.

**DrisBlackNineteen (Paulina®).** Thorny, semi-erect, floricanes-fruiting, vigorous, productive, bearing flavorful fruit with good fruit shelf life. **Origin:** Driscoll’s, Watsonville, CA, by G.R. Sills, M.F. Crusha, and M.B. Romero Escobedo. DrisBlackFive × BL4813; selected 2011 in Los Reyes, Michoacán, Mexico. USPP 31,825; 2 June 2020. **Fruit:** midsize, length 29.2 mm, diameter 21.1 mm, 9.1 g; ovate; 14.7 °Brix;
DrisBlackSeventeen (Rebeca™). Thorny, semi-erect, florican-fruited, with high vigor and yield. **Origin:** Driscoll’s, Watsonville, CA, by G.R. Sills, M.F. Crusha, and M.B. Romero Escobedo. BN843.2 × BL4813; selected 2011 in Los Reyes, Michoacán, Mexico. USPP 31,826; 31 Dec. 2019. **Fruit:** midsize, length 30.9 mm, diameter 27.7 mm; ovate; 11.7 °Brix; 1.37% titratable acidity expressed as citric acid; ripens early, 24 Sept to 31 Dec. in Central Mexico; plant: thorny; vigorous; growth habit semi-erect; yield high; moderately susceptible to fusarium wilt and redberry mite; resistant to heat and waterlogging; moderately resistant to drought; adapted to Central Mexico.

DrisBlackTwenty (Laurita™). Thorny, semi-erect, florican-fruited, vigorous, and productive. **Origin:** Driscoll’s, Watsonville, CA, by G.R. Sills, M.F. Crusha, and M.B. Romero Escobedo. BN843.2 × BL4813; selected 2011 in Los Reyes, Michoacán, Mexico. USPP 31,826; 2 June 2020. **Fruit:** midsize, length 33.4 mm, diameter 26.1 mm, 9.2 g; ovate; 16.2 °Brix; 0.93% titratable acidity expressed as citric acid; ripens early, 24 Sept to 31 Dec. in Central Mexico; fresh market potential good. **Plant:** thornless, spineless absent on dormant canes; glandular hairs on young shoots absent or few; vigor high; growth habit erect to semi-erect; yield high; moderately susceptible to spotted-wing drosophila (Drosophila suzukii) and powdery mildew; resistant to fusarium wilt.

DrisBlackTwentyFour (Varleria™). Thorny, erect, primocane-fruited, with flavorful midsize fruit. **Origin:** Driscoll’s, Watsonville, CA, by G.R. Sills, Y. Wang, M.F. Crusha, and J. Fangarry. BQ948.1 × DrisBlack-Thirteen; selected 2013 in Santa Cruz, CA. USPP 33,067; 31 Dec. 2019. **Fruit:** midsize, length 35.7 mm, diameter 24.6 mm, 9.5 g; ovate; 15.2 °Brix; 0.92% titratable acidity expressed as citric acid; ripens early, harvest early October to mid-June in Ciudad Guzman, Jalisco, Mexico; shelf life good, keeps 8 d; fresh market potential good. **Plant:** thorny; growth habit semi-erect; resistant to fusarium wilt; very sweet, acidity low; ripens early; postharvest handling excellent, keeps 7-8 d. **Plant:** thornless; growth habit erect to semi-erect; yield high due to long harvest season; internodes shorter than in Loch Ness; no susceptibility to downy mildew observed.

DrisBlackTwentyOne. Thorny, semi-erect, florican-fruited, with high vigor and yield. **Origin:** Driscoll’s, Watsonville, CA, by G.R. Sills, M.F. Crusha, and M.B. Romero Escobedo. DrisBlackFive × BM656.4; selected 2011 in Los Reyes, Michoacán, Mexico. USPP 32,268; 6 Oct. 2020. **Fruit:** midsize, length 35.7 mm, diameter 24.6 mm, 9.5 g; ovate; 15.2 °Brix; 0.92% titratable acidity expressed as citric acid; ripens early, harvest early October to mid-June in Ciudad Guzman, Jalisco, Mexico; shelf life good, keeps 8 d; fresh market potential good. **Plant:** thorny; growth habit semi-erect; anthocyanin coloration on dormant canes absent or very weak; glandular hairs on young shoots absent or few; resistant to fusarium wilt. Not currently being commercialized.

DrisBlackTwentyThree (Delaney™). Thornless, florican-fruited, with high vigor and yield. **Origin:** Driscoll’s, Watsonville, CA, by G.R. Sills, Y. Wang, M.F. Crusha, and J. Fangarry. DrisBlackSix × BN809.2; selected 2012 in Santa Cruz, CA. USPP 33,068; 18 May 2021. **Fruit:** length 30.9 mm, diameter 25.4 mm; elliptic; ripens June to August on Central California coast; fresh market potential good. **Plant:** thornless; growth habit erect; anthocyanin coloration on young shoots during rapid growth absent or very weak; glandular hairs on young shoots absent or few; resistant to fusarium wilt.

DrisBlackTwentyTwo (Nigel™). Thornless, primocane-fruited, vigorous, bearing flavorful fruit. **Origin:** Driscoll’s, Watsonville, CA, by G.R. Sills, Y. Wang, M.F. Crusha, and J. Fangarry. DrisBlackSix × BN809.2; selected 2012 in Santa Cruz, CA. USPP 33,068; 18 May 2021. **Fruit:** length 30.9 mm, diameter 25.4 mm; elliptic; ripens June to August on Central California coast; fresh market potential good. **Plant:** thornless; growth habit erect; anthocyanin coloration during rapid growth absent or very weak; glandular hairs on young shoots absent or few; resistant to fusarium wilt.

**EXPB3181** (Sweet Karoline®). Primocane-fruited, with early-riping, excellent fruit. **Origin:** Expoberris, Los Reyes, Michoacán, Mexico, by J.M. Rodriguez Mesa. Kiowa × SF709; crossed 2013; selected 2014. Mexican PBR 2089; 17 Dec. 2018. USPP 32,907; 23 Mar. 2021. **Fruit:** midsize, 8.0 g; ovate; very glossy; very firm; 18.0 °Brix; ripens early, November to January in Michoacán; fresh market potential good. **Plant:** thorns minimal; vigor medium; growth habit semi-erect; productivity medium; resistant to leaf rust.

**Fenomenal.** See PBB 1616T.

**FNZ-6VB** (BWP FNZ6VB). Thorny, florican-fruited, with flavorful, early-riping fruit. **Origin:** Berry World Plus, Faversham, Kent, United Kingdom, by P. Vinson. Waldo × Karaka Black; selected 2013. CPVO PBR 58709; 7 June 2021. USPP 31,446; 18 Feb. 2020. **Fruit:** medium-large, 7.4 g; oblong; flavor consistent, 14.0 °Brix; 1.09% titratable acidity expressed as citric acid; ripens early; fresh fruit market potential good. **Plant:** thorny; growth habit spreading; blooms early.

**FNZ-8VB** (BWP FNZ8VB). Thornless, florican-fruited, with firm, flavorful midseason fruit. **Origin:** Berry World Plus, Faversham, Kent, United Kingdom, by P. Vinson. Waldo × Karaka Black; selected 2013. CPVO PBR 58710; 7 June 2021. USPP 31,446; 25 Feb. 2020. **Fruit:** medium-large, 8.1 g; oblong; glossiness medium; flavor consistent, 13.0 °Brix; 1.02% titratable acidity expressed as citric acid; ripens midseason; keeps 7 d; fresh fruit market potential good. **Plant:** thornless; growth habit spreading.

**Jandrie.** Thornless, erect to semi-erect, florican-fruited, with large, early-riping fruit. **Origin:** Royakkers Explore, Kinrooi, Belgium, by J. Royakkers. Parentage unknown; selected 2017. CPVO PBR applied for. USPP 33,838; 11 Jan. 2022. USVP applied for. **Fruit:** large, 12.0 g; long conical; glossy; firm; very sweet, acidity low; ripens very early; postharvest handling excellent, keeps 7-8 d. **Plant:** thornless; growth habit erect to semi-erect; yield high due to long harvest season; internodes shorter than in Loch Ness; no susceptibility to downy mildew observed.

**Laurita™.** See DrisBlackTwenty.

**Letizia™.** See DrisBlackEighteen.

**MM01.** Slightly thorny, erect, primocane-fruited blackberry with flavorful, medium-large fruit. **Origin:** Freedom, CA, by M. Aguas-Alvarado. APF-45 × Valhalo; tested as MA10-05. USPP 31,291; 31 Dec. 2019. **Fruit:** midsize, 8.2 g; round; glossy black; flavor very good, sweet and mildly acidic; with a distinct blackberry aroma; 9.9 °Brix; postharvest reddening moderate; ripens early. **Plant:** slightly thorny; vigorous; growth habit erect; productivity high; produces heavy primocane crop and economically viable florican crop; adaptable to multiple microclimates.

**Midnight™.** See 16TP4.

**Nigel™.** See DrisBlackTwentyTwo.

**Paulina™.** See DrisBlackNineteen.

**PBB 1616T** (marketed as **Fenomenal**, but distinct from Phenomenal hybrid blackberry bred by Luther Burbank). Thornless, erect,
primocane-fruiting, with midsize, early-ripening fruit. **Origin:** Pacific Berry Breeding, Salinas, CA, by E. Thompson. Parentage unknown; selected 2016. USPP 33,721; 7 Dec. 2021. **Fruit:** midsize, 6.3 g; shape blocky; skin and flesh very firm; color reversion low; 11.3 °Brix; 0.6% titratable acidity expressed as citric acid; ripens early, 25 May on floricanes, 15 Aug. on primocanes; keeping and shipping quality excellent. **Plant:** thornless; growth habit erect; tolerant to **Agrobacterium tumefaciens**, powdery mildew, and Botrytis; susceptible to downy mildew (*Peronospora sparsa*) under cool, wet springtime conditions; for fresh market shipping.

**Plablack 1401.** Thorny, erect, primocane-fruiting, with midsize fruit that ripens early. **Origin:** Plantas de Navarra (Planasa), Valtierra, Navarra, Spain, by A. Pierron-Darbonne. 13.0IR.153 × 10.04.05; tested as 14.01R.28 in Segovia, Spain. CPVO PBR application withdrawn. USPP 33,195; 10 Dec. 2019. **Fruit:** midsize, length 37-43 mm, diameter 27-31 mm; oblong; glossy black; firmness medium; ripens early; shelf life medium. **Plant:** thorny; growth habit erect; vigor high; bears on both floricanes in autumn and primocanes in spring; production on primocanes consistent; anthocyanin coloration of dormant canes weak.

**Plablack 15157 (Black Sultana).** Thorny, primocane-fruiting, with pinkish flower petals. **Origin:** Plantas de Navarra (Planasa), Valtierra, Navarra, Spain, by A. Pierron-Darbonne. 14.10IR × 13-135R (both proprietary breeding selections). CPVO PBR 60448; 7 Mar. 2022. USPP 33,226; 6 July 2021. **Fruit:** midsize, 11.0 g; elliptic to narrow oblate; firm; 12.0 °Brix; shelf life medium-high. **Plant:** thorny; vigor high; growth habit upright; yield high; flower petals pinkish; anthocyanin coloration of dormant canes absent or very weak; for fresh markets or processing.

**Ponca.** Thornless, semi-erect, florican-fruiting with flavorful, early-ripening fruit. **Origin:** University of Arkansas, Fayetteville, AR. A-2253T × A-2406; crossed 2008; selected 2012; tested as A-2538T; introd. 2019. USPP 33,330; 10 Aug. 2021. **Fruit:** midsize, 6.2-6.8 g; round; glossy, even coloration; fertility high, resulting in uniform drupelet set; flavor consistent, 13.4 °Brix; 0.54% titratable acidity expressed as citric acid; postharvest performance good; ripens early. **Plant:** thornless; growth habit semi-erect; secondary buds in upper portion of canopy extend harvest, as secondary fruits ripen 2-3 weeks after first harvest of primary fruit; cold hardy to -17 °C.

**Prime-Ark™ Horizon.** See APF268-T.

**Rebecca™.** See DrisBlackSeventeen.

**Sweet Karoline™.** See EXPB3181.

**Valentina.** Thornless, semi-erect, primocane-fruiting with sweet, midsize fruit. **Origin:** Hortifrut, Santiago, Chile, by M.P. Banados and N. Torres. A-2445 × APF-186T; crossed 2010; selected 2013. CPVO PBR 57359; granted and terminated 15 Feb. 2021. USPP application abandoned. **Fruit:** midsize, 8.0-11.0 g; consistently firm with a soft receptacle, giving a melting sensation in the mouth; pleasant, aromatic, sweet, 13.7 °Brix; 0.90% titratable acidity expressed as citric acid; red drupelet reversion very low. **Plant:** vigor medium; yield high on both primocanes and floricanes; chilling requirement low, primocanes can flower and fruit without any chill hours; for fresh markets; cold hardy to -3 °C.

**Valeria™.** See DrisBlackTwentyFour.

**Willamette Thornless Marion.** Thornless mutation of Marion. **Origin:** Woodburn, OR, by E. Kimlinger. Natural mutation of Marion discovered on a single primocane in 2005. USPP 28,309; 22 Aug. 2017. **Fruit:** small, 3.75 g; oblong; bright glossy black; soft when ripe; flavor tart-sweet, same as Marion; 12.3 °Brix; titratable acidity expressed as citric acid 1.47%; ripens midsummer. **Plant:** thornless; growth habit trailing; primocane fruiting; nearly identical to Marion in all ways except for its thornlessness; main use for IQF, puree for ice cream, and juice products.

**Boreal Beauty.** Late-ripening fruit suitable for mechanical harvesting. **Origin:** University of Saskatchewan, Saskatoon, Saskatchewan, by R.H. Bors. 6-16-30 × 6-25-52 (37.5% Japanese, 37.5% Russian, 25% Kurile), crossed 2010. Canadian PBR applied for. Tested as 21-12-11.5; introd. 2016. **Fruit:** average 2.6 g (maximum 3.7 g); thick heart or thick oval; firm; bloom heavy; 16.9 °Brix; total acidity 1.98. **Plant:** growth habit upright, sturdy, vigorous; pollinizer for Boreal Blizzard and Boreal Beauty; resistance to powdery mildew (*Sphaerotheca spp.*) excellent.

**Boreal Blizzard.** Large fruit suitable for fresh market. **Origin:** University of Saskatchewan, Saskatoon, Saskatchewan, by R.H. Bors. Solovey × MT (50% Russian, 50% Japanese); crossed 2007; selected 2012; tested as 22-06-25.5. Canadian PBR 5749; 4 June 2018. **Fruit:** average 2.8 g (max 3.9 g); narrow elliptic in cross section, obturate in lateral view, calyx end rounded; bloom medium; 13.3 °Brix; pH 3.3; total acidity 1.08% malic equivalent. **Plant:** vigor medium to strong, growth habit semi-upright, branching medium; bud burst midseason; resistance to sunscald and powdery mildew excellent.

**Dolce Vita (Sugar Mountain™ Blue).** Flowers very early, strong, vigorous plants with large, sweet fruit and good characteristics for mechanical harvesting. **Origin:** Vílckov, Czech Republic, by F. Krejci. Selected 2001 from seedlings from a cross between unnamed seedlings made 1998. Canadian PBR application withdrawn. **Fruit:** width 8.3 cm; broad elliptic in cross section, narrow oblong in lateral view, calyx end rounded; bloom strong. **Plant:** vigorous, growth habit semi-upright, shape rounded, branching strong, bud burst very early; no noticeable disease or pest issues.

**Honey Bee:** Pollinizer for Borealis, Tundra, and Indigo haskaps, with excellent mildew resistance. **Origin:** University of Saskatchewan, Saskatoon, Saskatchewan, by R.H. Bors. Suvenir × Blue Pacific (F1-9-58); crossed 2006; selected 2009. Canadian PBR 5750; 4 June 2018. **Fruit:** broad elliptic to circular in cross section, ovate in lateral view, tip present, calyx end rounded to truncate; length 2.3 cm; bloom medium. **Plant:** vigorous, growth habit semi-upright, branching weak; bud burst early to midseason; mildew resistance excellent.

**Maxines Opus.** Japanese haskaps with wide, vigorous growth, large, elliptical-shaped fruits with sweet/tart taste, ripening midseason. **Origin:** M.M. Thompson, Corvallis, OR. MT 84-105 × MT 65-18; selected 2012. USPP 30,550; 4 June 2019. **Fruit:** length 2.3 cm, width 1.5 cm, 2.2 g; elliptical; surface smooth with white bloom; firmness medium; 15.2 °Brix; ripens midseason, 27 May to June 5 in Corvallis. **Plant:** wide, vigorous, spreading.
Sugar Mountain® Blue. See Dolce Vita.

Taka. Japanese haskap with upright and spreading habit, high yield, and excellent pest and disease resistance. Origin: M.M. Thompson, Corvallis, OR. Keiko × MT 20-04; crossed 2004; selected as MT 91-95 in 2007. USPP 26,707; 10 May 2016. Fruit: length 2.1 cm, width 1.3 cm, 1.6 g; cylindrical; bloom heavy; firmness medium; 14.3 °Brix; ripens 16 June in Corvallis; shelf life long. Plant: growth habit upright spreading, vigor moderate, yield high; flowers frost tolerant; no noticeable disease or pest issues.

Tana. Japanese haskap with upright and spreading habit, high yield, and excellent pest and disease resistance. Origin: M.M. Thompson, Corvallis, OR. MT 20-27 × MT 21-17; crossed 2004; selected as MT 67-95 in 2007. USPP 26,706; 10 May 2016. Fruit: length 2.1 cm, width 1.5 cm, 1.6 g; oval; bloom heavy; firmness medium; juiciness low; 13 °Brix; ripens 25 June in Corvallis; shelf life long. Plant: growth habit upright spreading, vigorous, yield high; flowers frost tolerant; no noticeable disease or pest issues.

BLUEBERRY

Mark K. Ehlenfeldt, USDA-ARS, P.E. Marucci Center for Blueberry & Cranberry Research and Extension, Chatsworth, NJ

Alpha. See BB05-35FL-10.

Apolo. See BB06-126VC-4.

ArabellaBlue®. See FC14-062.

Ava®, See TH-1797.

AzraBlue®, See FCM14-031.


BB05-35FL-10 (Alpha). Productive low-chill, early season southern highbush. Origin: Berry Blue, Grand Junction, MI, by E.J. Wheeler and J.F. Hancock. Star × Emeral; crossed 2005; selected 2008. USPP 31,231; 17 Dec. 2019. Fruit: firm; texture medium crunchy; flavor has pleasing balance of sweetness and acidity; ripens early; storability 2-3 weeks. Plant: very vigorous; medium upright; number of upright canes and lateral branches medium; crown size medium; leafing and growth excellent; productivity outstanding in Florida, Georgia (USA), and Chile.


BB06-343MI-16. High-chill northern highbush suitable for mechanical harvest. Origin: Berry Blue, Grand Junction, MI, by E.J. Wheeler and J.F. Hancock. Draper × Cara’s Choice; crossed 2006; selected 2011. USPP 31,524; 10 Mar. 2020. Fruit: large; medium blue; very firm; very juicy; texture crunchy; flavor very good, with a good balance of sweetness and acidity; fruit clusters loose; ripening concentrated; easily detachable. Plant: vigorous; medium upright; crown small; fruit well exposed; suitable for mechanical harvest.

BB06-426MI-84. High-chill northern highbush suitable for mechanical harvest. Origin: Berry Blue, Grand Junction, MI, by E.J. Wheeler and J.F. Hancock. Draper × Bluecrop; crossed 2006; selected 2012. USPP 31,257; 24 Dec. 2019. Fruit: large; oblate; medium blue; bloom medium waxy; moderately persistent following handling; firm; very juicy; medium crunchy; flavor very good, with a good balance of sweetness and acidity; fruit cluster loose; ripening concentrated; easily detachable. Plant: vigorous; upright; midsize; crown small; fruit well exposed; suitable for mechanical harvest.


BB15-214PO-3. High-quality no-chill highbush selected in tropical area of Peru. Origin: Berry Blue, Grand Junction, MI, by E.J. Wheeler, J.F. Hancock, and M.P Banados. BB07-249GA-3 (Candy Crunch) × BB06-538MX-2; crossed 2015; selected 2017. USPP 33,111; 1 June 2021. Fruit: midsize; medium blue; firm; very juicy; crunchy; eating quality excellent; very low-acid; sugar/acidity balance 40-50; time of fruit production can be regulated by pruning date and environment conditions. Plant: upright; no chilling needed for either budbreak or fruit production.

Beijue (北爵 = “Northern Duke”). Northern highbush with good flavor, suitable for fresh market. Origin: Jilin Agricultural University, Changchun, Jilin Province, China, by H. Sun, Y. Li, and L. Chen. Duke × Bluecrop; crossed 2009; selected 2015; tested 2017 as F32. Chinese NFGA PBR applied for. Fruit: large; 3.3 g; oblate; light blue; picking scar small, dry; firm; stores very well; sweet; 9.6 °Brix; ripens mid-early. Plant: vigorous; round to open; high yielding; ripening concentrated; recommended for machine or hand harvest; requires cross-pollination for maximum yield; propagated by vegetative cuttings or tissue culture.

Biyu (碧玉 = “Jade”). Early-season northern highbush for fresh market. Origin: Dalian Senmao Modern Agriculture Co., Dalian, Liaoning Province, China, by H. Wang, G. Xu, Y Chen, and Y. Wang. Patriot O.P.; sown 2010; selected 2015; tested as Senmao 339. Chinese NFGA PBR 20200184. Fruit: very large, 3.2 g; oblate; light blue; firm; flavor good, sweetness high, acidity low; ripens mid-June; stores well. Plant: vigorous; round to upright; bloom time medium; cluster density medium; productivity high; chilling requirement 800-1000 h.

Blucille™. See TH-906.

Blue Duchess™. See TH-1876.

Blue Madeira®. See Plablue 1502.

Blue Maldiva®. See Plablue 1542.

Blue Malibu®. See Plablue 15122.
Blue Manila®. See Plablue 1545.

Blue Marina®. See Plablue 1549.

Blue Masirah®. See Plablue 1525.

Candy Crunch. See BB07-249GA-3.

Carlotta. See DrisBlueSeventeen.

Corrina. See DrisBlueNineteen.

Dongjue (東爵 = “Eastern Duke”). Northern highbush with good flavor, suitable for fresh markets. Origin: Jilin Agricultural University, Changchun, Jilin Province, China, by H. Sun, Y. Li, and L. Chen. Duke × Bluecrop; crossed 2009; selected 2015; tested 2017 as F24. Chinese NFGA PBR applied for. Fruit: large, 2.7 g; oblate; light blue; picking scar dry; firm; sweet, 13.7 °Brix; ripens very early; stores very well. Plant: vigorous; round to open; flowers early; high yield; harvest concentrated; recommended for machine or hand harvest; requires cross-pollination for maximum yields; propagated by vegetative cuttings or tissue culture.


Duru (都瑞 = “Auspicious City”). Northern highbush with good flavor, suitable for fresh markets. Origin: Jilin Agricultural University, Changchun, Jilin Province, China, by Y. Li, H. Sun, and L. Chen. Duke × Bluecrop; crossed 2009; selected 2015; tested 2017 as F17. Chinese NFGA PBR applied for. Fruit: midsize, 2.03 g; oblate; light blue; picking scar very small; firm; ripening concentrated, early; stores very well. Plant: vigorous; round to open; blooms early; high yield; recommended for machine or hand harvest; requires cross-pollination for maximum yields; propagated by vegetative cuttings or tissue culture.

Early Duchess™. See TH-1334.

Eureka Gold. See Ridley1702.

FC11-18 (LoretoBlue®). Mid-late-season northern highbush for hand or machine harvest for fresh market; mid/high chill. Origin: Fall Creek Farm and Nursery, Lowell, OR, by P.S. Boches. ZF05-086 × Cargo; crossed 2007; selected 2011. USPP 33,897; 25 Jan. 2022. Fruit: 16–18 mm; medium blue; firm; sweet/acid balance good; harvest concentrated. Plant: vigor medium; semi-upright; leafy; yield competitive with Cargo and ZF08-070 (Valor®).


FC12-205 (LunaBlue®). Late-season northern highbush for fresh markets. Origin: Fall Creek Farm and Nursery, Lowell, OR, by P.S. Boches. ZF06-103 × ZF06-264; crossed 2008; selected 2012. USPP
FC14-062 (ArabellaBlue®). Early-midseason northern highbush for hand or machine harvest for fresh markets; mid/high chill. Origin: Fall Creek Farm and Nursery, Lowell, OR, by P.S. Boches. Blue Ribbon × FC10-069; crossed 2011; selected 2014. USPP 33,871; 18 Jan. 2022. Fruit: 18-21 mm; light blue; firm; highly aromatic and sweet; long-term storage superior. Plant: vigorous; semi-upright; yield superior to Duke and Draper.

FCM14-031 (AzraBlue®). Early-season southern highbush for fresh markets, using no-chill evergreen production. Origin: Fall Creek Farm and Nursery, Lowell, OR, by A.A. Bermudo and P.S. Boches. FL00-180 × FL01-06; crossed 2012; selected 2014. USPP applied for. Fruit: 21-24 mm; medium blue; firm; mildly aromatic; long-term storage superior. Plant: vigorous medium-high; round; yield superior to FCM12-131 (JupiterBlue®).


Flamingo. See Hoogi045.


Frostberry Delight®. See T-460.

Gladiator™. See TH-1872.

Hewo No. 1 (禾沃1号). Northern highbush with good flavor, suitable for fresh market. Origin: Rizhao Hewo Agriculture Developing Co., Rizhao, Shandong Province, China, by Y. Li and C. Li. Duke × Bluecrop; crossed 2009; selected 2015; tested 2017 as F35. Chinese NFGA PBR applied for. Fruit: large, 2.8 g; oblate; light blue; picking scar very deep and dry; sweet, 9.8 °Brix; harvest concentrated, medium-early. Plant: vigorous; round to open; yield high; recommended for machine or hand harvest; requires cross-pollination for maximum yields; propagated by vegetative cuttings or tissue culture.

Hewo No. 2 (禾沃2号). Northern highbush with good flavor, suitable for fresh market. Origin: Rizhao Hewo Agriculture Developing Co., Rizhao, Shandong Province, China, by Y. Li and C. Li. Bluecrop × Duke; crossed 2009; selected 2015; tested 2017 as F35. Chinese NFGA PBR applied for. Fruit: large, 2.8 g; oblate; light blue; picking scar very deep and dry; sweet, 9.8 °Brix; harvest concentrated, medium-early. Plant: vigorous; round to open; yield high; recommended for machine or hand harvest; requires cross-pollination for maximum yields; propagated by vegetative cuttings or tissue culture.

Hewo No. 3 (禾沃3号). Northern highbush with good flavor, suitable for fresh market. Origin: Rizhao Hewo Agriculture Developing Co., Rizhao, Shandong Province, China, by Y. Li and C. Li. Duke × Bluecrop; crossed 2009; selected 2015; tested 2017 as F26. Chinese NFGA PBR applied for. Fruit: large, 3.20 g; oblate; light blue; picking scar very deep and dry; sweet, 9.2 °Brix; harvest concentrated, medium-early. Plant: vigorous; upright; yield high; recommended for machine or hand harvest; requires cross-pollination for maximum yields; propagated by vegetative cuttings or tissue culture.

Hoogi045 (Flamigo). Ornamental variegated northern highbush. Origin: M.S. Hoogenraad, Edeveren, the Netherlands. Chance seedling in a nursery bed, likely Bluecrop O.P.; discovered 2011. CPVO PBR applied for. USPP 31,768; 19 May 2020. Fruit: small; round; waxy; sweet. Plant: upright, height ~1 m; spreading; foliage variegated bright pink, salmon pink and green when young; variegated with creamy white and green when mature.

Jesse®. See TH-931.

Kalinda. See MG11543-23-004.


Lanjing (蓝鲸 = “Blue Whale”). Early-season northern highbush for fresh market. Origin: Dalian Senmiao Modern Agriculture Co., Dalian, Liaoning Province, China, by L. Zhao, H. Wang, G. Xu, and G. Liu. Bluegold O.P.; sown 2010; selected 2015; tested as Senmiao 437. Chinese NFGA PBR 20200272. Fruit: 2.0 g; oblate; light blue; picking scar small; firm; medium sweet; flavor good; moderately aromatic; ripening concentrated in late June; fruit can be picked in bunches. Plant: vigorous; round to upright; blooms early; clusters dense; productivity high; recommended for machine or hand harvest; requires cross-pollination; chilling requirement 800-1000 h.

Lanmanao (蓝玛瑙 = “Blue Onyx”). Early-season northern highbush for fresh markets. Origin: Dalian Senmiao Modern Agriculture Co., Dalian, Liaoning Province, China, by H. Wang, G. Xu, Y. Wang, and Y Chen. Bluzyay O.P.; sown 2010; selected 2015; tested as Senmiao 580. Chinese NFGA PBR 20200257; 21 Dec. 2020. Fruit: 1.5 g; round; light blue; picking scar small; firm; flavor good; sweetness high, acidity low; ripening concentrated, mid-June; stores well. Plant: vigorous; round to upright; blooms early; cluster density medium; recommended for machine or hand harvest; requires cross-pollination; chilling requirement 800-1000 h.

Liandazhi （蓝大者 = “DLU Ocean”). Early-midseason northern highbush for fresh markets. Origin: Dalian University and Dalian Senmiao Modern Agriculture Co., Dalian, Liaoning Province, China, by G. Xu, L. Lei, Q. An, D. Wang, H. Peng, X. Wu, and H. Wang. Nui O.P.; sown 2010; selected 2015; tested as Senmiao 565. Chinese NFGA PBR 20200258; 21 Dec. 2020. Fruit: very large, 3.5 g; oblate; dark blue; picking scar small, dry; very firm; very crunchy; flavor good; ripens ~1st week July; stores well. Plant: vigorous; round; blooms early; cluster...
density loose; productivity high; recommended for machine or hand harvest; chilling requirement 800-1000 h.

Liandazhichun (连大之春 = “DLU Spring”). Early-season northern highbush for fresh markets. **Origin**: Dalian University and Dalian Senmiao Modern Agriculture Co., Dalian, Liaoioning Province, China, by G. Xu, L. Lei, X. Fu, X. Lou, H. Peng, and H. Wang. **Plant**: Vigorous; round; blooms midseason; cluster density loose; productivity high; recommended for machine or hand harvest; chilling requirement 800-1000 h.

Liandazhixia (连大之夏 = “DLU Summer”). Midseason northern highbush for fresh markets. **Origin**: Dalian University and Dalian Senmiao Modern Agriculture Co., Dalian, Liaoioning Province, China, by G. Xu, L. Luo, L. Lei, X. Lou, Q. An, H. Peng, and H. Wang. **Plant**: Vigorous; round to upright; blooms early; cluster density medium; productivity high; recommended for machine or hand harvest; chilling requirement 800-1000 h.

Liyan (猎艳 = “Flame”). Very early-season ornamental highbush for home gardens and landscapes. **Origin**: Dalian Senmiao Modern Agriculture Co., Dalian, Liaoning Province, China, by H. Wang and G. Xu. **Fruit**: Large; 2.7 g; oblate; light blue; firmness medium; flavor good; sweetness high; acidity medium; ripens late June in Liaoning Province. **Plant**: Vigorous; round to upright; blooms early; cluster density medium; productivity high; requires cross-pollination; chilling requirement 800-1000 h.

Lingnanjiabao (岭南嘉宝 = “CLS Garbo”). Early-season southern highbush for fresh markets. **Origin**: Dalian Senmiao Modern Agriculture Co., Dalian, Liaoning Province, China, by G. Liu. **Fruit**: Medium; 1.7 g; oblate; light blue; firm; flavor mild; acidity medium; ripens mid-May in Liaoning Province. **Plant**: Vigorous; round; flowers midseason; cluster density medium; productivity medium; recommended for machine harvest; requires cross-pollination.

Lingnanzhixuan (岭南智选 = “CLS Wisdom”). Early-season southern highbush for fresh markets. **Origin**: Dalian University and Dalian Senmiao Modern Agriculture Co., Dalian, Liaoning Province, China, by G. Xu, L. Lei, L. Gao, H. Wang, X. Wu, and K. Zhou. **Fruit**: Medium; 2.0 g; oblate; light blue; firm; flavor good; acidity medium. **Plant**: Vigorous; round to upright; blooms midseason; cluster density loose; productivity medium; recommended for machine or hand harvest.

Lingshu (岭舒 = “CLS Mist”). Midseason northern highbush for fresh markets. **Origin**: Dalian Senmiao Modern Agriculture Co., Dalian, Liaoning Province, China, by H. Wang, G. Xu, C. Jiang, G. Liu, L. Zhao, R. Gao, and Y. Gu. **Fruit**: Large; 3.0 g; oblate; medium blue; firm; sweetness high; acidity medium; ripens late June in Liaoning Province. **Plant**: Vigorous; round to upright; blooms early; cluster density medium; productivity high; recommended for machine or hand harvest; chilling requirement 800-1000 h.

Lingwu (岭雾 = “CLS Snow”). Midseason northern highbush for fresh markets. **Origin**: Dalian Senmiao Modern Agriculture Co., Dalian, Liaoning Province, China, by H. Wang, G. Xu, R. Gao, and G. Liu. **Fruit**: Large; 3.0 g; oblate; light blue; firm; sweetness high; acidity medium; ripens early July in Liaoning Province. **Plant**: Vigorous; round to upright; blooms early; cluster density medium; productivity high; recommended for machine or hand harvest; chilling requirement 800-1000 h.

LoretoBlue™. See FC11-118.

LunaBlue™. See FC12-205.

Madeira. See Plablue 1525.

Maldiva. See Plablue 1542.

Malibu. See Plablue 15122.

Manila. See Plablue 1545.

Marina. See Plablue 1549.

Masirah. See Plablue 1525.

Maverick™. See THI-1493.

MG09768-05-002. Midseason hybrid of northern and southern highbush cultivars with large berries of excellent flavor. **Origin**: Mountain Blue High Chill, Victoria, Australia, by R. Bell and J. Deveson. **Fruit**: Medium; 4.0 g; oblate; medium blue; firm; sweetness moderate; acidity low; ripens late June in Liaoning Province. **Plant**: Vigorous; round to upright; blooms early; cluster density medium; productivity high; recommended for machine or hand harvest; chilling requirement 800-1000 h.

MG07876-15-003 (Midnight). Late-season northern highbush with midsized, firm, aromatic berries. **Origin**: Mountain Blue High Chill, Victoria, Australia, by R. Bell and J. Deveson. **Fruit**: Medium; 4.0 g; oblate; medium blue; firm; sweetness high; acidity medium; ripens late June in Liaoning Province. **Plant**: Vigorous; round to upright; blooms early; cluster density medium; productivity high; recommended for machine or hand harvest; chilling requirement 800-1000 h.

MG07877-15-003 (Mountain Blue High Chill). Late-season northern highbush with midsized, firm, aromatic berries. **Origin**: Mountain Blue High Chill, Victoria, Australia, by R. Bell and J. Deveson. **Fruit**: Medium; 4.0 g; oblate; medium blue; firm; sweetness high; acidity medium; ripens late June in Liaoning Province. **Plant**: Vigorous; round to upright; blooms early; cluster density medium; productivity high; recommended for machine or hand harvest; chilling requirement 800-1000 h.
MG11543-23-004 (Kalinda). Early-midseason hybrid of northern and southern highbush with medium to large, firm berries of good flavor. **Origin:** Mountain Blue High Chill, Victoria, Australia, by R. Bell and J. Deveson. Brigitta Blue × Ridley1403; crossed 2011; selected 2015; tested as MG11543-23-004. USPP 32,216; 22 Sept. 2020. **Fruit:** 3.2 g; bloom very good; picking scar small; firm; sweetness medium, 16 °Brix; acidity medium; ripens late; suited to fresh markets. **Plant:** vigorous; upright; whippy; leaves large; yield high, 7.6 kg/bush on 3 harvests; blooms early; self-fertile; propagated by softwood cuttings and tissue culture.

MG11654-24-001 (Merliah). Very early to midseason hybrid of northern and southern highbush varieties with large, sweet berries. **Origin:** Mountain Blue High Chill, Victoria, Australia, by R. Bell and J. Deveson. Duke × Ridley1403; crossed 2011; selected 2014; tested as M11654-24-001. USPP 32,187; 15 Sept. 2020. **Fruit:** 3.3 g; bloom good; picking scar small; firm; crunchy; sweet, 13.5 °Brix; acidity medium to high; ripens very early; suited to fruit markets. **Plant:** vigorous; upright; whippy; leaves large; yield high, 7.1 kg/bush on 3 harvests; blooms early; self-fertile; propagated by softwood cuttings and tissue culture.

Merliah. See MG11654-24-001.

**Midnight.** See MG07876-15-003.

NS 13-4. Early-season highbush with very large fruit, suitable for Western Australia. **Origin:** Yanchep, Western Australia, Australia by V.D.A. Mazzardis. 7-26 × 8-10; crossed 2012; selected 2013. USPP 33,087; 25 May 2021. **Fruit:** very large, 2.4 g; firm; sweetness medium to high; acidity medium to high. **Plant:** vigorous; semi-upright; yield very high.

NS 13-5. Very early-season highbush with large to very large fruit, suitable for Western Australia. **Origin:** Yanchep, Western Australia, Australia by V.D.A. Mazzardis. 7-26 × 8-10; crossed 2012; selected 2013. USPP 32,745; 12 Jan. 2021. **Fruit:** large to very large, 3 g; firm; sweetness high; acidity high. **Plant:** vigorous; semi-upright; yield extremely high.

NS 14-1. Early-season highbush with large fruit, suitable for Western Australia. **Origin:** Yanchep, Western Australia, Australia by V.D.A. Mazzardis. 7-26 × 8-30; crossed 2012; selected 2014. USPP 32,781; 2 Feb. 2021. **Fruit:** very large, 2.5 g; calyx depicting a strong star shape; firmness medium; sweetness high; acidity high. **Plant:** vigorous; upright; blooms early.

**NS 14-7.** Very early- to early-season highbush with large fruit, suitable for Western Australia. **Origin:** Yanchep, Western Australia, Australia by V.D.A. Mazzardis. 8-10 × EB 8-30; crossed 2012; selected 2014. USPP 32,823; 23 Feb. 2021. **Fruit:** large, 2.5 g; picking scar small, dry; sweetness medium; firmness medium; acidity medium to high. **Plant:** grow; upright to semi-upright; blooms early; yield high.

NS 15-13. Very early-season highbush with large fruit, suitable for Western Australia. **Origin:** Yanchep, Western Australia, Australia by V.D.A. Mazzardis. EB 9-4 × EB 8-46; crossed 2013; selected 2015. USPP 33,138; 8 June 2021. **Fruit:** large, 3.37 g; picking scar small, dry; firmness medium; sweetness medium to high; acidity low to medium; ripens early. **Plant:** very large, 3.8 g; picking scar small, dry; firmness medium; sweetness medium to high; acidity low to medium; ripens early. **Plant:** vigorous; semi-upright; blooms early; yield very high.

NS 16-15. Early-season highbush with very large fruit, suitable for Western Australia. **Origin:** Yanchep, Western Australia, Australia by V.D.A. Mazzardis. EB 9-4 × EB 8-46; crossed 2013; selected 2015. USPP 33,112; 1 June 2021. **Fruit:** large, 2.6 g; firm; sweetness medium; acidity low to medium. **Plant:** very vigorous; semi-upright; blooms early; ripens on one-year-old shoots only.

NS 16-18. Early-season highbush with large to very large fruit, suitable for Western Australia. **Origin:** Yanchep, Western Australia, Australia by V.D.A. Mazzardis. EB 9-4 × EB 8-50; crossed 2013; selected 2015. USPP 33,494; 21 Sept. 2021. **Fruit:** very large, 3.33 g; firm to very firm; sweetness medium; acidity medium to high. **Plant:** very weak to medium; upright; yield high.

NS 16-2. (OZblu Olivia™). Early-, early-season highbush with very large fruit, suitable for Western Australia. **Origin:** Yanchep, Western Australia; Australia by V.D.A. Mazzardis. EB 9-4 × EB 8-50; crossed 2013; selected 2015. USPP 32,897; 16 Mar. 2021. **Fruit:** very large, 3.8 g; picking scar small, dry; extremely firm; very sweet; acidity low. **Plant:** very vigorous; yield high.

OlympusBlue™. See TH-1008.

OZblu Olivia™. See NS 16-2.

Plablue 1502 (Blue Madeira®). Early ripening, low-chill southern highbush. **Origin:** Plantes de Navarra, Valtierra, Spain, by A. Pierron-Darbonne. 14.012.001 × 14.09.001. USPP 31,346; 10 Mar. 2020. **Fruit:** large; obtlate; very firm. **Plant:** upright; production very abundant; self-fertile; chilling requirement <200 h.

Plablue15122 (Blue Malibu®). Very early ripening, low-chill southern highbush. **Origin:** Plantes de Navarra, Valtierra, Spain, by A. Pierron-Darbonne. 14.09.001 × 11.024.001. USPP 31,522; 16 Nov. 2021. **Fruit:** large; round; very firm. **Plant:** semi-upright; production very abundant; self-fertile; chilling requirement <200 h.

Plablue 1525 (Blue Masirah™). Midseason low-chill southern highbush. **Origin:** Plantes de Navarra, Valtierra, Spain, by A. Pierron-Darbonne.
Blue Orchards, New South Wales, Australia, by R. Bell. Ridley 1403 × Ridley 1702 (Eureka Gold). Large, crunchy, sweet fruit, suited to evergreen culture.


Silver Dollar®. See ZF06-089.


Talisman. Public domain, late-midseason northern highbush suitable for mechanical harvest. Origin: USDA-ARS, Beltsville, MD /Chatsworth, NJ, by M.K. Ehlenfeldt. Magnolia × Elizabeth; crossed 2000; selected 2005; released 2020; tested as ARS 05-171. Public domain. Fruit: medium-large; oblate; light blue; size very uniform; mild; acidity low; harvest concentrated, late-midseason; fruit removal force low. Plant: vigorous; stocky; upright to spreading; base narrow; productive; flowers very late (≈Elliot); self-fertile; good field resistance to both phases of mummy berry (Monilinia vaccini-corymbosi).

T-1125 (TH 1125; Salvador®). Early-season southern highbush suitable for temperate regions and for no-chill production in more tropical regions. Origin: University of Georgia, Griffin, GA, by D.S. NeSmith. TH-687 × Emerald; crossed 2003; selected 2006. USPP 32,219; 7 Nov. 2019. Fruit: 18-21 mm; very light blue; firm; balance of sweetness and acidity good. Plant: vigor high; semi-upright; yield superior to Star and Ventura.

Ruyue (瑞月 = “Auspicious Moon”). Northern highbush with good flavor, suitable for fresh markets. Origin: Jilin Agricultural University, Changchun, Jilin Province, China, by H. Sun, Y. Li, and L. Chen. Duke × Bluecrop; crossed 2000; selected 2017. Fruit: medium-large; firm; flavor and texture excellent; short bloom-to-ripe; ripens early April to early May in Florida. Plant: vigorous; round to open; high yielding; recommended for machine or hand harvest; requires cross-pollination for maximum yields; propagated by vegetative cuttings or tissue culture.

Sapphire Cascade®. See FC12-029.

Sentinel. Low-chill southern highbush. Origin: University of Florida, Gainesville, by J. Olmstead and P. Lyrene. FL01-25 × Scintilla; crossed 2008; selected 2011; tested as FL11-155. USPP 33,896; 25 Jan. 2022. Fruit: medium-large; firm; flavor and texture excellent; short bloom-to-ripe; ripens early April to early May in Florida. Plant: vigorous; semi-upright to spreading; yield very high; excellent survival and leaf disease resistance in the field; chilling requirement 100-150 h; propagates easily from softwood.

Shengmei (胜美 = “Bestmiddon®”). Early-season half-high for fresh markets. Origin: Dalian Senmao Modern Agriculture Co., Dalian, Liaoning Province, China, by H. Wang, G. Xu, Y. Wang, L. Zhao, and Y. Chen. Blomidon O.P.; sown 2010; selected 2015; tested as Senmao B-1, Chinese NFGA PBR 20200274; 21 Dec. 2020. Fruit: 1.7 g; round; dark blue; picking scar small, dry; firm; flavor good; sweetness medium; ripening concentrated in late June in Liaoning Province; fruit can be picked in bunches. Plant: vigorous; round to upright; blooms early; cluster dense; productivity high; recommended for machine harvest; chilling requirement 800-1000 h.

Ridley1702 (Eureka Gold). Midseason southern highbush with very large, crunchy, sweet fruit, suited to evergreen culture. Origin: Mountain Blue Orchards, New South Wales, Australia, by R. Bell. Ridley 1403 × Ridley 1812; crossed 2011; selected 2014; tested as M14-17-02. USPP 33,717; 7 Dec. 2021. Fruit: 3.75 g; picking scar small; very firm and crisp; flavor unique, sweet, 14.5 °Brix; aromatic; acidity medium to low; ripens mid- to late-season; shaker well for machine harvest; very fast hand harvest. Plant: medium to vigorous; upright/whippy; leaves large; yield high, 5.3 kg/plant on 2 harvests; blooms midseason; self-fertile; suited to fresh market; propagated by softwood cuttings or tissue culture.

Chinese NFGA PBR applied for. Fruit: medium; oblate; dark blue; picking scar very small, dry; firm; flavor good; ripens mid-season to early; shakes well for machine harvest; very fast for mechanical harvest; chilling requirement <200 h.

Shengmei (胜美 = “Bestmiddon®”). Early-season half-high for fresh markets. Origin: Dalian Senmao Modern Agriculture Co., Dalian, Liaoning Province, China, by H. Wang, G. Xu, Y. Wang, L. Zhao, and Y. Chen. Blomidon O.P.; sown 2010; selected 2015; tested as Senmao B-1, Chinese NFGA PBR 20200274; 21 Dec. 2020. Fruit: 1.7 g; round; dark blue; picking scar small, dry; firm; flavor good; sweetness medium; ripening concentrated in late June in Liaoning Province; fruit can be picked in bunches. Plant: vigorous; round to upright; blooms early; cluster dense; productivity high; recommended for machine harvest; chilling requirement 800-1000 h.

Sweet Duchess™. See TH-1321.

Talismen. Public domain, late-midseason northern highbush suitable for mechanical harvest. Origin: USDA-ARS, Beltsville, MD /Chatsworth, NJ, by M.K. Ehlenfeldt. Magnolia × Elizabeth; crossed 2000; selected 2005; released 2020; tested as ARS 05-171. Public domain. Fruit: medium-large; oblate; light blue; size very uniform; mild; acidity low; harvest concentrated, late-midseason; fruit removal force low. Plant: vigorous; stocky; upright to spreading; base narrow; productive; flowers very late (≈Elliot); self-fertile; good field resistance to both phases of mummy berry (Monilinia vaccini-corymbosi).

T-1125 (TH 1125; Salvador®). Early-season southern highbush suitable for temperate regions and for no-chill production in more tropical regions. Origin: University of Georgia, Griffin, GA, by D.S. NeSmith. TH-687 × Emerald; crossed 2003; selected 2006. USPP 32,219; 7 Nov. 2019. Fruit: 18-21 mm; very light blue; firm; balance of sweetness and acidity good. Plant: vigor high; semi-upright; yield superior to Star and Ventura.

T-1334 (Early Duchess™). Very-early-season southern highbush. Origin: University of Georgia, Griffin, by D.S. NeSmith. TH-639 × Rebel; crossed 2007; selected 2010; introd. 2020. USPP 31,316; 7 Jan. 2020. Fruit: large to very large, 2.5-3.5 g; medium to light blue; picking scar small to medium, dry; firmness very good; flavor good; ripens with Rebel in southern Georgia. Plant: vigorous; upright; crown narrow; flowers with Rebel in southern Georgia; exhibits no-chill everbearing habit in Peru; yields less than Rebel in southern Georgia, but very high yielding under no-chill production in Peru; chilling requirement in temperate climate ≈500-550 h, but also produces well under no-chill, more tropical environments; suitable for fresh market; propagation by softwood cuttings and in vitro; self-fertile.

T-1321 (Sweet Duchess™). Very-early-season southern highbush. Origin: University of Georgia, Griffin, by D.S. NeSmith. TH-639 × Rebel; crossed 2007; selected 2010; introd. 2020. USPP 31,316; 7 Jan. 2020. Fruit: large to very large, 3.0-3.5 g; medium to light blue; picking scar small to medium, dry; firmness very good; flavor good; ripens several days before Rebel and Georgia Dawn in southern Georgia. Plant: moderately vigorous; semi-spreading; crown medium; flowers 12-21 d before Rebel in southern Georgia; yield medium, but very early; leafing good; est. chilling requirement <100 h; suitable for fresh market; propagated by softwood cuttings and in vitro; self-fertile.
suitable for fresh market; propagated by softwood cuttings and in vitro; self-fertile.

**TH-1493 (Maverick™).** Early- to midseason southern highbush suitable for temperate regions and for no-chill production in more tropical regions. **Origin:** University of Georgia, Griffin, by D.S. NeSmith. TH-909 × TH-681; crossed 2009; selected 2012; introd. 2021. USPP 33,755; 21 Dec. 2021. **Fruit:** very large, 3.5-4.5 g; very light blue; picking scar small, dry; firmness and flavor good; generally ripens 7-10 days after Rebel in southern Georgia. **Plant:** moderately vigorous; upright; crown narrow; flowers a few days after Rebel in southern Georgia, but also has a no-chill everbearing habit in more tropical regions; yield medium to high in southern Georgia, and very high under no-chill production in more tropical regions; chilling requirement in temperate climate ≤350-450 h, but also produces well under no-chill conditions in more tropical environments; suitable for fresh market; propagated by softwood cuttings and in vitro; self-fertile.

**TH-1797 (Ava™).** Very-early-season southern highbush. **Origin:** University of Georgia, Griffin, by D.S. NeSmith. TH-1120 × Suziblue; crossed 2010; selected 2013; introd. 2020. USPP 33,754; 21 Dec. 2021. **Fruit:** very large, 3.5-4.2 g; light blue; picking scar very small, dry; firmness and flavor good to very good; ripens a few days before Rebel and Suziblue in southern Georgia. **Plant:** moderately vigorous; semi-upright, crown medium; flowers a few days ahead of Rebel and Suziblue in southern Georgia; yield medium to high, but very early; leafing good; chilling requirement 200-300 h; suitable for fresh market; propagated by softwood cuttings and in vitro; self-fertile.

**TH-1872 (Gladiator™).** Very-early-season southern highbush. **Origin:** University of Georgia, Griffin, by D.S. NeSmith. Sweetcresip O.P. 2011; selected 2013; introd. 2021. USPP 33,782; 28 Dec. 2021. **Fruit:** large to very large, 3.5-4.0 g; medium to light blue; picking scar very small, dry; firmness and flavor excellent; ripens before Rebel in southern Georgia. **Plant:** vigorous; compact; semi-spreading; flowers before Rebel; yield good, likely suitable for mechanical harvest; leafing good; est. chilling requirement ≤150-250 h; suitable for fresh market; propagated by softwood cuttings and in vitro; self-fertile.

**TH-1876 (Blue Duchess™).** Early-season southern highbush. **Origin:** University of Georgia, Griffin, by D.S. NeSmith. Sweetcresip O.P.; sown 2011; selected 2013; introd. 2020. USPP 31,684; 21 Apr. 2020. **Fruit:** large, 2.5-3.0 g; light blue; picking scar small, dry; firmness and flavor very good; generally ripens just after Rebel in southern Georgia. **Plant:** highly vigorous; strongly upright, crown very narrow; flowers a few days after Rebel; per plant yields medium, but suitable for high-density plantings; leafing good; chilling requirement ≤300-350 h; suitable for fresh market; propagated by softwood cuttings and in vitro; self-fertile.

**TH-906 (Blucille™).** Mid-chill southern highbush with quality fruit. **Origin:** University of Georgia, Griffin, GA, by D.S. NeSmith. TH-653 × Millennia; crossed 2002; selected in 2005. USPP 27,026; 9 Aug. 2016. **Fruit:** medium to large; scar good; firmness and flavor good. **Plant:** vigorous; chilling requirement ~550 h.; propagated vegetatively.

**TH-931 (Jesse).** Mid- to late-season southern highbush. **Origin:** University of Georgia, Griffin, by D.S. NeSmith. TH-622 × Millennia; crossed 2002; selected 2005; introd. 2020. USPP 32,218; 22 Sept. 2021. **Fruit:** very large, 3.0-4.0 g; very light blue; picking scar small, dry; firmness good; flavor mild sweet/acid; ripens with Camellia in southern and central Georgia. **Plant:** vigorous; upright; crown medium; flowers with Camellia; yield >Star and Camellia in southern and central Georgia; chilling requirement ≤400-500 h; suitable for fresh market; propagated by softwood cuttings and in vitro; self-fertile, but cross-pollination recommended.

**Vascid15.** High-chill, early- to midseason highbush. **Origin:** Sidhu and Sons Nursery, British Columbia, Canada, by G. Sidhu. Open-pollinated cross of Reka × Duke; crossed 2004; selected 2008. Canadian PBR 5321; 30 Aug. 2016. **Fruit:** medium to large; oblate; dark blue; bloom intensity medium; firm; sweetness low; acidity very high; fruit cluster density medium; ripens early. **Plant:** vigorous; upright; productive; blooms early to midseason; flowers and fruits on one-year-old shoots only.

**Vascid22.** High-chill, early-season highbush. **Origin:** Sidhu and Sons Nursery, British Columbia, Canada, by G. Sidhu. Open-pollinated cross of Reka × Duke; crossed 2004; selected 2008. Canadian PBR 5322; granted 30 Aug. 2016; revoked 30 Aug. 2021. **Fruit:** large; oblate; dark blue; bloom intensity medium; firm; sweetness low to medium; acidity medium to high; fruit cluster density medium; ripens early. **Plant:** vigorous; upright; productive; blooms early; flowers and fruits on one-year-old shoots only.

**Xinchao (新 潮 = “Fashion”).** Midseason northern highbush for fresh markets. **Origin:** Dalian University and Dalian Senmao Modern Agriculture Co., Dalian, Liaoning Province, China, by G. Xu, Y. Cui, Y. Ji, Z. Huang, C. Liao, L. Lu, Z. Sui, and H. Wang. Bluechip O.P.; sown 2016; selected 2015; tested as Semmao 492. Chinese NFGA PBR 20200300. **Fruit:** large, 2.6 g; round; light blue; picking scar small, dry; firm; flavor good, aromatic; acidity low; ripens early July in Liaoning Province. **Plant:** vigorous; round; blooms late; cluster density medium; productivity high; for machine or hand harvest; chilling requirement 800-1000 h.

**Xiangyi (香 淘 = “Fragrance”).** Early-season northern highbush for fresh markets. **Origin:** Dalian University and Dalian Senmao Modern Agriculture Co., Dalian, Liaoning Province, China, by H. Wang, G. Xu, Y. Xu, G. Liu, L. Zhao, and R. Gao. Patriot O.P.; sown 2010; selected 2015; tested as Semmao 68. Chinese NFGA PBR 20200691; 19 Aug. 2020. **Fruit:** 2.8 g; oblate; light blue; picking scar small; firmness medium; flavor good, strongly aromatic; ripens late June in Liaoning Province. **Plant:** vigorous; round to upright; blooms early; cluster density loose; productivity high; recommended for machine or hand harvest; requires cross-pollination; chilling requirement 800-1000 h.

**Yunduo (云 汝 = “Cloud”).** Early-season northern highbush for fresh markets. **Origin:** Dalian University and Dalian Senmao Modern Agriculture Co., Dalian, Liaoning Province, China, by H. Wang, H. Peng, Y. Li, G. Xu, L. Lei, Q. An, and W. Ding. Big Bluegold O.P.; sown 2010; selected 2015; tested as Semmao 287. Chinese NFGA PBR 20200299; 21 Dec. 2020. **Fruit:** 1.9 g; round; light blue; firmness medium; flavor good, lightly aromatic; very sweet; acidity low; ripening concentrated in late June; fruit can be picked in bunches. **Plant:** vigorous; round; blooms early; clusters dense; productivity high; recommended for machine or hand harvest; chilling requirement 800-1000 h.

**ZF06-089 (Silver Dollar®).** Ornamental cultivar with foliage resembling Eucalyptus, and fruit with pineapple overtones. **Origin:** Conrad-Pyle Company, West Grove, PA, by D.M. Brazelton and A.L. Wagner. Toro × FLX-2; crossed 2003; selected 2008. USPP 32,184; 15 Sept. 2020. **Fruit:** oblate; light blue; flavor has pineapple overtones. **Plant:** moderately vigorous; spreading to compact; foliage medium green; leaves ovate; inflorescence greenish-white.

**Zhiyuan (致远 = “Farsight”).** Early-season southern highbush for fresh markets. **Origin:** Dalian Senmao Modern Agriculture Co. and Dalian University, Dalian, Liaoning Province, China, by G. Xu, H. Wang, Y. Chen, and K. Zhou. BlueRain O.P.; sown 2010; selected 2015; tested as Semmao 035. Chinese NFGA PBR 20200069; 29 July 2020. **Fruit:** 2.6 g; round; dark blue; picking scar small, dry; firmness medium; flavor good, low-acid; stores well. **Plant:** vigorous;
round to upright; bloom time medium; cluster density medium; productivity high; recommended for machine or hand harvest.

Zhuneng (遥梦 = “Aspiration”). Early-season southern highbush for fresh markets. **Origin**: Dalian University and Dalian Semmao Modern Agriculture Co., Dalian, Liaoning Province, China, by G. Xu, H. Wang, Q. An, H. Peng, and K. Zhou. BlueRain O.P.; sown 2010; selected 2015; tested as Semmao 033. Chinese NFGA PBR 20200070; 19 Aug. 2020. **Fruit**: 2.2 g; oblate; medium blue; firmness medium; flavor good; sweetness medium; stores well. **Plant**: vigorous; round to upright; bloom time medium; cluster density loose; productivity high; recommended for machine or hand harvest; requires cross-pollination.

ZZO4082. Southern highbush ripening midseason. **Origin**: New Zealand Institute for Plant and Food Research, Hamilton, New Zealand, by N. Patel and J. Scalzo. O’Neal × Duke; crossed 2004; selected 2006. NZ PVR 34241; 9 Oct. 2020. USPP 32,416; 3 Nov. 2020. **Fruit**: large; oblate; blackish blue; firmness medium; ripens with Nui. **Plant**: vigorous; upright; flowers midseason; yield high; chilling requirement 700-1000 h.

ZZO4115. Southern highbush ripening midseason. **Origin**: New Zealand Institute for Plant and Food Research, Hamilton, New Zealand, by N. Patel and J. Scalzo. B7-8-1 × D110; crossed 2004; selected 2006. NZ PBR 34239; 9 Oct. 2020. USPP 32,701; 29 Dec. 2020. **Fruit**: very large; flat; dark blue; firm; ripens with Nui. **Plant**: vigorous; spreading; flowers mid- to late season; yield high; chilling requirement 1000+ h.

ZZO4120. Northern highbush ripening mid-late season. **Origin**: New Zealand Institute for Plant and Food Research, Hamilton, New Zealand, by N. Patel and J. Scalzo. Biggittia Blue × B7-8-1; crossed 2004; selected 2006. New Zealand PBR 34240; 8 Oct. 2020. USPP 31,894; 23 June 2020. **Fruit**: large; oblate; blackish blue; firm; ripens with Duke. **Plant**: vigor medium; semi-upright; flowers medium to late; yield high; chilling requirement 1000+ h.

CACHO

Ricardo Goejaga, USDA-ARS, Tropical Agriculture Research Station, Mayaguez, PR

Caeri 1. Tolerant to moniliasis, good yield. **Origin**: Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias, Campo Experimental Rosario Izapa, Tuxtla Chico, Chiapas, Mexico, by C.H. Avendán-Arzate, E. Hernández-Gómez, J.L. Solís-Bonilla, J. Cueto-Moreno, and A. Zamarripa-Colmenero. PA 169 × UF-273. Mexican PBR 201874; 27 July 2018. **Fruit**: oblong, apex acute; base strongly constricted; surface moderately rough, depth between furrows medium; length 21.74 cm, diameter 15.12 cm, shell thickness 10.47 mm; immature fruit color green, changing to yellow at maturity, with white pulp and medium sweetness. Seeds/fruit 35.24, elliptical; cotyledon dark red; length 24.8 mm, width 12.6 mm, thickness 8.37 mm; 53.39% fat; pod index 20. **Tree**: leaves large, length 39.9 cm, coriaceous, base obtuse, apex apiculate, dark red when young and medium green when mature; ligule yellow; staminode moderately partitioned with anthocyanin; sepal length 7.16 mm, width 2.02 mm; tolerant to moniliasis.

Caeri 2. Tolerant to moniliasis, good yield. **Origin**: Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias, Campo Experimental Rosario Izapa, Tuxtla Chico, Chiapas, Mexico, by C.H. Avendán-Arzate, E. Hernández-Gómez, J.L. Solís-Bonilla, J. Cueto-Moreno, and A. Zamarripa-Colmenero. H-31 × UF-273. Mexican PBR 1873; 27 July 2018. **Fruit**: obovate, apex acute; base moderately constricted; surface moderately rough, depth between furrows medium; length 19.05 cm, diameter 13.36 cm, shell thickness 10.4 mm; immature fruit color red, changing to medium red at maturity, with white pulp and medium sweetness. Seeds/fruit 43.4, elliptical; cotyledon dark purple; length 24.3 mm, width 12.6 mm, thickness 8.31 mm; 43.35% fat; pod index 20. **Tree**: leaves large, length 39.9 cm, coriaceous, base obtuse, apex apiculate, dark red when young and medium green when mature; ligule yellow; staminode moderately partitioned with anthocyanin; sepal length 7.16 mm, width 2.02 mm; tolerant to moniliasis.

CHERIMOYA

Ben Faber, University of California Cooperative Extension, Ventura, CA

Rincon. Large, white-fleshed, midseason cherimoya with outstanding flavor. **Origin**: Carpinteria, CA, by A.E. Brown, C.B. Brown, and J.K. Brown. McPherson O.P.; selected 2008. USPP 31,990; 21 July 2020. **Fruit**: large, height 140 mm, width 110 mm, 400-600 g; elliptic; carpels slightly raised; skin yellow-green (RHS 151A), pubescent, thickness medium; flesh grayed-yellow (RHS 162D), texture smooth; soluble solids high, 23 °Brix; flavor distinct, mango-like; eating quality excellent; seeds black, small, 25 × 12 mm; ripens December to May in Carpinteria; firmer than most other cultivars such as Lisa and McPherson, retaining firmness in cold storage, with less splitting and surface bronzing at maturity. **Tree**: midsize; vigor robust; growth habit spreading; drought tolerance above average; bearing regular and productive under artificial pollination.

CHERRY–SWEET

Per Mc Cord, Dept. of Horticulture, Washington State University Irrigated Agriculture Research and Extension Center, Prosser, WA

Areko. Red, midseason, large-fruited sweet cherry. **Origin**: Julius Kühn-Institut, Quedlinburg, Germany, by M. Schuster. Kordia × Regina; tested as Hamid; introd. 2013. CPVO PBR 48936; 23 Apr. 2018. USPP 27,811; 28 Mar. 2017. **Fruit**: large, diameter 29.4 mm; dark red (RHS 44B); texture firm; ripens 16 d after Burlat. **Tree**: vigorous medium, growth habit spreading; blooms late; self-in fertile (S1S3).


Cheery Blush®. See IFG Cher-four.

Cheery Burst®. See IFG Cher-two.

Cheery Crunch®. See IFG Cher-three.

Cheery Glow®. See IFG Cher-six.

Cheery Moon®. See IFG Cher-seven.

Cheery Treat®. See IFG Cher-five.


Irena (HL 13822). See Irena.

IFG Cher-five (Cheery Treat®). Dark red, early-ripening, medium-sized sweet cherry. *Origin:* International Fruit Genetics (IFG), Bakersfield, CA, by D. Cain. Flavor Giant O.P.; crossed 2001, selected 2005; introd. 2017. USPP 30,661; 9 July 2019. *Fruit:* midsize, diameter 28 mm; flat-round; grayed-purple (RHS 187B); texture firm; ripens 0-2 d before Brooks. *Tree:* vigorous medium, growth habit upright; blooms early; self-inferfite (S1S3); chilling requirement ~300-400 h.

IFG Cher-four (Cheery Blush®). Blush, early-ripening, medium-sized sweet cherry. *Origin:* International Fruit Genetics, Bakersfield, CA, by D. Cain. Parentage unknown; selected 2005; introd. 2017. USPP 30,704; 16 July 2019. *Fruit:* midsize, diameter 26 mm; flat-round; yellow-orange over red (RHS 15D, 45A); texture firm; ripens ~14-18 d before Rainier. *Tree:* vigorous low-medium; growth habit spreading; blooms very early; self-inferfite (S1S6); chilling requirement ~300-400 h.

IFG Cher-three (Cheery Crunch®). Dark red, early-ripening, small-medium sweet cherry. *Origin:* International Fruit Genetics, Bakersfield, CA, by D. Cain. Parentage unknown; selected 2005; introd. 2017. USPP 30,235; 600 h. *Fruit:* midsize, diameter 28 mm; flat-round; grayed-purple (RHS 187A); texture medium-firm; ripens 3-5 d before Brooks. *Tree:* vigorous high; growth habit upright; blooms early; self-inferfite (S9S-); chilling requirement ~300-500 h.

IFG Cher-two (Cheery Burst®). Dark red, early-ripening, medium-sized sweet cherry. *Origin:* International Fruit Genetics, Bakersfield, CA, by D. Cain. Parentage unknown; selected 2005; introd. 2017. USPP 29,988; 18 Dec. 2018. *Fruit:* midsize, diameter 28.4 mm; heart-shaped; red (RHS 46A); texture moderately firm; ripens with or slightly before Brooks. *Tree:* vigorous medium; growth habit spreading; blooms early; self-inferfite (S3S6); chilling requirement ~300-400 h.


Marysa*. See PA6Unibo.


PA7Unibo (Sweet Stephany*). Dark red, mid-late season, large sweet cherry. Origin: Università di Bologna, Bologna, Italy, by S. Lugli, R. Correale, and M. Grandi. Parentage unknown, tested as DCA BO B5 A8; selected 2004; introd. 2017. CPVO PBR 58806; 7 July 2021. USPP 29,765; 23 Oct. 2018. Fruit: large, diameter 28-31 mm; reniform; pinkish red on orange background; texture smooth; ripens 6-9 d after Bing. Tree: vigorous; growth habit open; blooms mid-late; self-fertile (S3S4).


SPC136 (Suite Note®). Dark red, midseason, large-fruited sweet cherry. Origin: Agriculture and Agri-Food Canada, Ottawa, by W.D. Lane and R. MacDonald. 2S-36-36 × Summit; crossed 1981; selected 1988; introd. 2014. Canadian PBR 2991; 19 Nov. 2007. USPP 26,680; 3 May 2016. Fruit: large, diameter 30.5 mm; kidney to cordate, dark purple red; texture fleshy; ripens with Summit. Tree: vigorous moderate; growth habit upright; blooms late; self-inferfite (S2S4).
SPC243. Blush, late-ripening, small-fruited sweet cherry. **Origin:** Agriculture and Agri-Food Canada, Ottawa, by W.D. Lane. Suntare O.P.; selected 1995; introd. 2015. Canadian PBR 3206; 21 May 2008. USPP 27,927; 25 Apr. 2017. **Fruit:** small, diameter 24.6 mm; kidney-shaped; bi-color (RHS 46B and 16D); texture firm; ripens up to 3 weeks after Rainier. **Tree:** vigorous; growth habit upright spreading; blooms midseason; self-fertile.

SPC342. Red, midseason, large-fruited sweet cherry. **Origin:** Agriculture and Agri-Food Canada, Ottawa, by W.D. Lane. Lapins O.P.; selected 2000; introd. 2016. Canadian PBR applied for. USPP 29,788; 6 Nov. 2018. **Fruit:** large, diameter 31 mm; kidney-heart shaped; red (RHS 53A); texture firm; stem pull force very high; ripens with Bing. **Tree:** vigorous; growth habit upright spreading; blooms midseason; self-fertile.

Starlam. Blush, mid-late-ripening, large-fruited sweet cherry. **Origin:** Agro Selections Fruits, Elna, France, by L. Maillard and A. Maillard. Firelam O.P.; tested as 6N.18-2.30.14 and ASF1613; introd. 2018. CPVO PBR applied for. USPP 32,812; 16 Feb. 2021. **Fruit:** large, diameter 29-30 mm; reniform; red (RHS 42A to 42B) on yellow background (RHS 13B to 13C); texture crunchy; ripens 6-7 d after Firelam. **Tree:** vigorous; growth habit semi-upright; blooms midseason; self-fertile.

Sucherrone. Red, early, medium-sized sweet cherry. **Origin:** Sun World International, Bakersfield, CA, by T. Bacon. Brooks O.P.; crossed 2003; tested as CH282; introd. 2018. USPP 30,730; 23 July 2019. **Fruit:** midsize, diameter 26 mm; reniform; medium red to dark purple (RHS 46B to 79A); texture firm; ripens ~9 d before Brooks. **Tree:** vigorous; growth habit semi-upright; blooms midseason; self-infertile; chilling requirement 750 h.

**Suite Note**. See SPC136.

Sweet Stephany. See PA7Unibo.

Tardilam. Light red, late-ripening, large-fruited sweet cherry. **Origin:** Agro Selections Fruits, Elna, France, by L. Maillard and A. Maillard. Firelam × Sweetheart; introd. 2019. CPVO PBR applied for. USPP 32,811; 16 Feb. 2021. **Fruit:** large, diameter 29-30 mm; reniform to round; skin bright red (RHS 46A); flesh pink red (RHS N34A); texture firm, crunchy; ripens 10-13 d after Firelam. **Tree:** vigorous; growth habit semi-spreading; blooms midseason; self-fertile.

**TF 7142 (ZillaZeus; Zeus**). Dark red, early-ripening, medium-large-fruited sweet cherry. **Origin:** Zillah, WA, by T. Fewel. Parentage unknown; introd. 2018. USPP 30,629; 2 July 2019. USPPV applied for. **Fruit:** medium-large, diameter 28.6 mm; round oval; grayed-purple (RHS 187A); texture firm; ripens before PC 7146-23 (Chelan™). **Tree:** vigorous moderately high; growth habit spreading upright; blooms early; self-infertile (S1,S3).

**Vieyra.** Blush, early ripening, medium-large sweet cherry. **Origin:** Orondo, WA, by G. Vieyra. Whole-tree mutation of Rainier; introd. 2018. USPP 30,865; 3 Sept. 2019. **Fruit:** medium-large, diameter 25-30 mm; reniform; yellow (Munsell 7.5Y 8/12) with light to dark red blush (Munsell 5R 6/10 to 5R 4/14); texture firm; ripens 8-10 d before Rainier. **Tree:** vigorous high; growth habit columnar; blooms early-midseason; self-infertile.

**ZillaZeus**. See TF 7142.

**Zeus**. See TF 7142.
Wowza®. See Big Red.

CHERRY ROOTSTOCK

Amy Iezzoni, Dept. of Horticulture, Michigan State University, East Lansing, MI

Cass (Corette® 1). Dwarfing, precocity-inducing, clonal rootstock for cherry. Origin: Michigan State University, East Lansing, by A. Iezzoni. Hybrid of unknown complexity involving Prunus avium, P. cerasus, and P. fruticosa. USPP 30,553; 4 June 2019. Plant: vigorous; branching habit spreading. Rootstock performance: induces reduced vigor and increased precocity compared to trees budded on mazzard seedling rootstocks; vigor lower than Gisela® 5; grafted plants tend to produce root suckers; exhibits moderate sensitivity to high soil pH.


Corette® 2. See Clare.


Corette® 4. See Crawford.

Corette® 5. See Lake.


CHESTNUT

Michele R. Warmund, Division of Plant Sciences, University of Missouri, Columbia, MO


Amy. Primarily a Chinese chestnut, with good productivity in Ohio. Origin: Carrolton, OH, by G. Miller. Chinese chestnut O.P. with about one-eighth C. crenata parentage from a mother tree acquired from Ackerman Nursery, Bridgman, MI, 1957; selected 1972. Nut: small, ≤10 g; peels well; flavor excellent. Tree: growth habit semi-upright; early spring bud break; bears regularly; cold hardy; susceptible to blossom end rot (Colletotrichum gloeosporioides).


Benton Harbor. Chinese chestnut, precocious and productive. Origin: Michigan State University, Benton Harbor, MI, by D. Fulbright. Seedling selected 1992. Nut: pericarp dark red to purple, lacks double embryos, peels well; flavor average. Tree: vigorous in Michigan; canopy flat-topped; yield high, stable; resistant to chestnut blight (Cryphonectria parasitica); not recommended for planting within 0.3 km of Colossal.


Everfresh. Chinese chestnut well adapted to Michigan. Origin: Michigan State University, Benton Harbor, MI; seedling selection. Nut: nut midsize, 11-13 g; pellicle deep reddish-brown; storage life long. Tree: slow-growing; heavy pollen producer; regular bearing; cold-tolerant, relatively good spring frost survival; susceptible to chestnut blight.

Fife. See Boitano.

Gideon. Chinese chestnut ripening midseason. Origin: Carrolton, OH, by G. Miller; mother tree obtained from Ackerman Nursery,
Bridgman, MI, 1957; Chinese chestnut O.P. seedling, 1972. **Nut:** midsize, 12-18 g; ripens midseason, slightly later than Peach. **Tree:** growth habit semi-upright; grafts well on various rootstocks of same species.

**Gillet.** European-Japanese hybrid ripening midseason. **Origin:** Sierra Nevada foothills, CA, by B. Bergantz. Seedling selection. **Nut:** primary nuts very large, ≥28 g, with smaller secondary nuts in California; flavor sweet, typical of European chestnut; ripens midseason, 3 weeks after Colossal. **Tree:** produces 1 nut per bur; growth habit compact; midwinter hardiness good.

**Hong Kong.** Chinese chestnut ripening early to midseason. **Origin:** from Hong Kong, China seedlot; seedling grown and selected in Elverta, CA, by M. Nave. **Nut:** midsize; peel well; flavor very good, sweet. **Tree:** growth habit semi-upright; moderately productive; susceptible to blossom end rot.

**Jahong.** Japanese chestnut with bright red burs and unusual triangular-shaped nuts. **Origin:** Korea Forest Research Institute, South Korea. Seedling selected 2009. **Nut:** 11-17 g; pellicle glossy, brown, easily removed. **Tree:** vigorous; semi-erect; leaf base cordate.

**Jianding Youli.** Chinese chestnut ripening late season. **Origin:** Institute of Botany, Jiangsu Province and Chinese Academy of Science, Nanjing, China; preliminarily selected from a natural seedling tree in Shandong Province, 1963; introd. 2017. **Nut:** 10.8 g; pellicle glossy reddish-brown. **Tree:** semi-erect; precocious, productive; resistant to chestnut blight and chestnut weevil (Curculio sp.).

**Kintzel.** Chinese chestnut, perhaps introgressed by another species. **Origin:** Cincinnati, OH, by F. Kintzel. Parentage unknown. **Nut:** midsize, 13-14 g; flavor unusual but good. **Tree:** vigorous; semi-erect.

**Kohr.** Chinese chestnut ripening midseason. **Origin:** Pine Grove, PA, by C. Kohr; selected 1960s. **Nut:** medium to large. **Tree:** grafted trees may produce limited growth or delayed graft incompatibility; productivity moderate to low, inconsistent.

**Kyoung.** Chinese chestnut, rather unproductive. **Origin:** unknown; bud sport of Bess (O.P. seedling of Beth). **Nut:** consistently large; shape irregular; flavor good. **Tree:** very tall; vigorous; growth habit semi-erect.

**LaGrange.** See Lindstrom #43.

**Lindstrom #43 (LaGrange).** Chinese chestnut ripening midseason. **Origin:** USDA-ARS Southeastern Fruit and Tree Nut Research Laboratory, Byron, GA. **Nut:** nut size variable and often small with heavy cropping. **Tree:** growth habit semi-erect; productive.

**Luval's Monster.** Complex hybrid ripening early season. **Origin:** Dallas City, IL. [C. mollissima × (C. crenata × C. dentata)]. **Nut:** large, 16-17 g; may have a hollow heart, and has frequent double embryos and splits; pellicle often removes in one piece; storage life short. **Tree:** vigorous; open canopy; flowers pollen-sterile; highly productive.

**Marigoule.** European-Japanese hybrid. **Origin:** Corrèze, France, by French National Institute for Agronomic Research (INRA); crossed 1950s; tested as CA 15; introd. to the U.S. 1992. **Nut:** 18-22 g; pellicle attractive reddish-brown, hilum large, peels well; flavor good. **Tree:** growth habit spreading, open; productivity fair to low; resistant to *Phytophthora spp.*

**Marsol.** European-Japanese hybrid ripening midseason, used primarily as a vigorous rootstock in France. **Origin:** Corrèze, France, by French National Institute for Agronomic Research (INRA); crossed 1950s; tested as CA 07. **Nut:** yield low to medium; pellicle reddish-brown, hilum scar large; flavor inferior. **Tree:** growth habit semi-upright.

**Miller 72-76.** Chinese chestnut ripening midseason. **Origin:** Carrollton, OH, by G. Miller; mother tree obtained from Ackerman Nursery, Bridgman, MI, 1957; Chinese chestnut O.P., 1972. **Nut:** midsize, 10-12 g. **Tree:** growth habit semi-upright; bearing regular and consistent.

**Mipung.** Late-season Japanese chestnut. **Origin:** Korea Forest Research Institute, Seoul, South Korea, by M.J. Kim, U. Lee, K.O. Byun, M.H. Lee, M.S. Jung, and Y.H. Kwon; selected 2005. **Nut:** 26-28 g; shape triangular. **Tree:** vigorous; growth habit semi-erect; leaf base cordate; resistant to chestnut blight and Asian gall wasp.

**Nanjing Special.** Early-season Chinese chestnut. **Origin:** Nanjing Botanical Garden, China, by L. Liu, collector; seed procured and seedling selected in Elverta, CA, by M. Nave, 1993. **Nut:** pellicle dull brown, unattractive; flavor mildly sweet, exceptional, complex; ripens early. **Tree:** growth habit erect.

**NC-8.** Chinese chestnut ripening midseason. **Origin:** Ontario, Canada, by D. Campbell. Second-generation O.P. seedling of Skiloa. **Nut:** size variable (large in Canada to small in Missouri); ripens midseason, harvest compact. **Tree:** growth habit semi-erect; susceptible to chestnut blight.

**Oz Hunter.** Ozark chinquapin ripening early to late season. **Origin:** Hunter, MO, by S.H. Bost; C. ozarkensis R-20X × R-17. USPP 33,246; 13 July 2021. **Nut:** 1 to 6 small nuts per bur. **Tree:** tall, up to 20 m; growth habit semi-erect; compatible with *C. mollissima* rootstock; highly resistant to chestnut blight and ink disease (*Phytophthora cinnamomi*) in laboratory tests.

**Patterson.** Chinese chestnut. **Origin:** Nanjing Botanical Garden, China, seed provided by L. Liu; seed procured and seedling selected in Elverta, CA, by M. Nave, 1993. **Nut:** medium (large in Canada to small in Missouri); ripens midseason, harvest compact. **Tree:** growth habit semi-erect; leaves uncharacteristic, broadly obovate.

**Payne.** Mid- to late season Chinese chestnut. **Origin:** USDA-ARS Southeastern Fruit and Tree Nut Research Laboratory, Byron, GA. O.P. seedling, tested as Byron 3-3. **Nut:** midsize, 10-13 g; flavor good; ripens mid- to late season. **Tree:** growth habit semi-upright.
Précoce Migoule. Early-season European-Japanese hybrid. Origin: Corrèze, France, by National Institute for Agronomic Research (INRA); crossed 1950s; tested as CA 48. Nut: midsize, 14-17 g, but smaller during heavy cropping years; pellicle brown with dark stripes, peels easily; hilum large; flavor acceptable; ripens early, 2 weeks before Colossal. Tree: vigorous; growth habit upright; sheds pollen synchronously with Colossal; prone to biennial bearing; resistant to phytophthora root rot (Phytophthora spp.).

Qing. Early to midseason Chinese chestnut. Origin: Hickory, KY. Chance seedling planted late 1950s to early 1960s. Named by M. Nave, propagated by G. Miller. Nut: 15-17 g from young trees, decreasing with tree age; pellicle brown, attractive; flavor relatively sweeter than most C. mollissima nuts; yield high; stores well. Tree: somewhat smaller than most Chinese cultivars; growth habit semi-upright, canopy open; best grafted on own rootstock, improper tissue alignment during grafting results in delayed tree decline; spring frost avoidance good; blossom end rot minimal.


Szego. Late season complex hybrid. Origin: parentage uncertain; purported O.F. seedling of Linden (C. crenata × C. pumila) × Revival (C. mollissima hybrid). Nut: large, >20 g, peels easily; sweet and flavorful; stores well. Tree: vigorous; growth habit upright, with open canopy; resistant to phytophthora root rot, susceptible to chestnut blight; tolerates low midwinter temperatures; poor nut separation from bur in northern climates.


YGF. See Yixian Good Flavor.


Yixian Large Nut. Chinese chestnut with long harvest from early to late season. Origin: seed from Yixian, Anhui Province, China; procured and seedling selected in Elverta, CA, by M. Nave. Nut: size dependent on location, varying from 35 g in California to 20 g in Missouri; pellicle easily removed. Tree: growth habit semi-upright.


CITRUS

Fred Gmitter, Jr. and Jude Grosser, Citrus Research and Education Center, University of Florida, Lake Alfred, FL

Tracy L. Kahn and David Karp, Dept. of Botany and Plant Sciences, University of California, Riverside, CA

11C017R (Premier Murcott™). Low-seeded, easy-peeling tangor with low acidity. Origin: Bundaberg Research Station, Queensland Department of Agriculture and Fisheries, Queensland, Australia, by M.W. Smith. Ellendale tangor × Murcott (syn. Honey Murcott) tangor, crossed 2001, seed subjected to two rounds of gamma irradiation to create a stable mutation that maintained high fruit quality and production, and few seeds. USPP 34,166; 26 Apr. 2022. Fruit: oblate, height 55 mm, diameter 85 mm, 210 g, neck absent; firm; rind orange, smooth, thickness 3.3 mm, easy to peel; segments 10-12; flesh deep orange; 12.6 °Brix, TA 0.48% in mid-June; flavor suited to Asian markets that prefer non-acidic fruit; seeds 0-5, monoembryonic; ripens midseason, end of May to early July in central Queensland; suitable for long-distance shipping. Tree: medium to large; vigorous when young, but early and heavy cropping restrain subsequent vigor; growth habit elliptic to oblong, canopy density light to medium; very productive from an early age, with no sign of alternate bearing; susceptible to Alternaria (Alternaria alternata).

Aecol. Induced Clemenules mutation with fruit that ripens earlier, is deeper colored, and is virtually seedless even when cross-pollinated. Origin: Gestion Ecosistemas Agricolas, Valencia, Spain, by E. Garavilla Legarreta. Gamma irradiation–induced bud mutation of Clemenules clementine; field tested starting 2016 in Pego, Alicante, Spain. CPVO PBR applied for. USPP 34,136; 19 Apr. 2022. Fruit: midsize, height 38 mm, diameter 58 mm, 80 g; flattened sphere; navel opening occasionally present, areola absent; skin intense reddish orange (RHS 28A), smooth, glossy, thickness 3 mm, adherence to flesh weak; albedo light whitish yellow; axis hollow; segments 11-13; strength of segment walls medium; flesh dark orange (RHS 25A), texture fine, juicy; flavor rich and sweet, 13.6 °Brix, TA medium; seeds absent or few when self-pollinated, <1 when cross-pollinated, monoembryonic; ripens early October through late December in Alicante, starting ~1 week before parent; does not puff, resistant to high temperatures, more so than parent; stores well, ~30 d at 5 °C. Tree: crown globular, dense; vigor moderate; productive; pollen viability low.

African Sunset (Arcctic1519). Midseason, seedless or low-seeded mandarin hybrid. Origin: Agricultural Research Council—Tropical and Subtropical Crops, Mbombela, Mpumalanga Province, South Africa, by J.E. Miller, J.G.J. Maritz, and IJ Froneman. Ellendale tangor × Robin mandarin hybrid, crossed 1980; seeds extracted and irradiated 1981; tested as X83-2505/3 in Addo, Eastern Cape, South Africa; selected 1992. South African PBR ZA 20043212; 7 Nov. 2004. USPP 20,327; 22 Sept. 2009. Fruit: oblate, shape like Ellendale, length 50 mm, diameter 70 mm, 155.7 g; rind pebbled, dark orange to orange-red (RHS 28A, 30B, 25A); areola smooth, diameter 2.1 mm; internal navel occasionally present; segments 10.5; flesh dark orange (RHS 28A), texture coarse, juice content 58.6%, 13.1 °Brix, TSS/TA ratio 11.5; flavor rich, navel-like; generally seedless in solid blocks, seed count low in mixed blocks; ripens mid-late June, hangs well until late July in South Africa. Tree: vigor medium; moderately spreading and thorny; tends to alternate bearing.

orange when mature, smooth, thin, easy to peel; flesh yellow at start of ripening, orange when mature, juice content 42.8%, 10.4 °Brix, TA 0.70%; contains naringin, but very low levels of furanocoumarins; seedless; ripens November-February in Israel; shelf life long. **Tree:** high yielding.

**Alvarina.** Valencia orange mutation, lighter in color, larger, flatter, and easier to peel than Valencia. **Origin:** Canals, Valencia, Spain, by A. Sanchis Sisternes. Valencia orange branch mutation, disc. Valencia 1999. **Tree:** vigorous; compact; leaves larger, more rounded, and less elongated than those of parent; productive.

**Amakusa (天玄).** Attractive, moderately early ripening and easy peeling mandarin hybrid. **Origin:** Fruit Tree Research Station, Ministry of Agriculture, Forestry and Fisheries, Tsukuba, Japan, by R. Matsumoto, M. Yamamoto, Y. Yamada, N. Okudai, H. Ikemiyi, K. Asada, I. Oiyama, H. Murata, K. Yoshinaga, M. Koizumi, and T. Iwamni. **Tree:** moderately smooth and less rugose than Valencia; segments 10; flesh light orange (RHS 28C), juicy, flavor more delicate and generally sweeter than Valencia; ripens with Valencia. **Tree:** vigorous; compact; leaves larger, more rounded, and less elongated than those of parent; productive.

**ARC Nadocott LS.** See Arcict9.

**Arcict1614.** See Valley Gold.

**Arcict1519 and Arcict 1519.** See African Sunset.

**Arcict2007.** Cara Cara mutation with red-blushed rind. **Origin:** Agricultural Research Council—Tropical and Subtropical Crops, Addo Research Station, Addo, Eastern Cape, South Africa, by J.E. Miller, J.G.G. Maritz, and I.J. Froneman. Gamma irradiation-induced bud mutation of Cara Cara. **Fruit:** medium to large, diameter 68-82 g; rind deep orange, smooth, easily peeled; segments 10; flesh yellow-orange (RHS 25C), juicy, easy to peel; shelf life long. **Tree:** moderate vigor; spreading; tendency to alternate bearing.

**Autumn Honey.** See WGI7.

**Beck Early Navel.** Early-ripening navel orange with red-orange rind. **Origin:** J.W. Beck, Delano, CA. Washington mutation disc. **Tree:** vigorous; compact; leaves larger, more rounded, and less elongated than those of parent; productive.

**Belabela (Belalate).** Late-ripening satsuma. **Origin:** Frutas Beltrán, Guadassuar, Valencia, Spain, by J. Beltrán Ano. Owari satsuma mutation, disc. 2005. **Fruit:** oval to ovoid, size almost as Washington, diameter 77-84 mm; rind reddish-orange, smooth; flesh orange, quality similar to other early maturing cultivars; 10.0 °Brix; TA 0.89%; ripens very early, early October to mid-late December in San Joaquin Valley. **Tree:** ~1/3 smaller than Washington navel, precocious.

**Beni Madonna.** See Ehimekashi Dai28go.

**BRS Rubra Cara.** Pink-fleshed navel orange with variegated foliage. **Origin:** Empresa Brasileira de Pesquisa Agropecuária, Brazil, by O. Sampaio Passos, R. Pedroso De Oliveira, and W.D.S. Souza Filho. Natural mutation of Cara Cara. **Fruit:** medium; growth habit spreading; shoot density medium; leaf blade length 75.4 mm. **Tree:** vigorous; growth habit drooping; thornless; resistant to citrus leafminer; parthenocarpic, self-incompatible.

**Bruce (Pink Frost).** Cold tolerant red grapefruit with low seed count and good flavor for backyard gardening. **Origin:** University of Georgia, Tifton, by W.W. Hanna and B. Tucker. In 2007 Bruce Tucker informed W.W. Hanna of a desirable red grapefruit tree, ~25 years old, that appeared to have established as a seedling in a backyard; it was increased by budding and grafting beginning in 2010 and was tested as Tift C1 at four locations from 2012-2015; introduced 2017. **Fruit:** red; rind medium orange, not variegated; flesh pigmented pinkish red by lycopene; seedless, ornamental, suitable for containers. **Tree:** foliage variegated green and white; leaf blade length 75.4 mm.

**C 66 75.** See Code 66-75.

**Citricom 001.** Early-ripening navel orange with good fruit quality. **Origin:** Citricom IP, Stellenbosch, Western Cape, South Africa, by Research Organization, Ibaraki, Japan, by T. Yoshioka, H. Nesumi, T. Yoshihoka, M. Kita, T. Kuniga, N. Nakajima, M. Nonomura, S. Ota, H. Hamada, and F. Takahata. Okiutsu 46 (Sweet Spring tangelo × Trovita sweet orange) × Harumi mandarin hybrid, crossed 1992 at the Okiutsu Citrus Research Station in Shizuoka City; selected 2002. **Fruit:** oval to ovoid, size almost as Washington, diameter 77-84 mm; rind reddish-orange, smooth; flesh orange, very sweet, acidity low; seeds few, monoembryonic; ripens early to midseason. **Tree:** growth habit spreading; shoot density medium; leaf blade length medium, narrow.
H.J. Breedt. Palmer navel orange mutation. South African PBR applied for. **Fruit**: spheroid; uniform; medium large, diameter 70-85 mm; navel closed externally, small internally; rind deep orange at maturity, peelability similar to other navels; flesh deep orange, tender; flavor very good with high sugars, good acids, SS/TA ratio 10; seedless; ripens 3-4 weeks before Palmer, mid-April to mid-May in the Southern Hemisphere, mid-October to mid-November in the Northern Hemisphere; has higher quality with better fruit size than competing navel selections (e.g., Fukumoto, Newhall, and Navelina). **Tree**: similar in growth, shape and yield to other navel selections; self-incompatible, pollen nonviable; mature trees produce 50-60 t/ha.

Clemen Pons. See Clemenpons.

**Clemenpons (Clemen Pons)**. Large-fruited clementine ripening 3 weeks before Clemenules. **Origin**: J. Pons Bolta, Castellon, Spain. Clemenules mutation disc. 1964 in Pego, Aligante, Spain. CPVO PBR 7987; 6 Aug. 2001. USPP application abandoned. **Fruit**: oblate, larger than Fina, height 40-50 mm, diameter 55-65 mm, 70-120 g; rind red-orange (RHS 28A-28B), smooth / slightly pebbly, thickness 2 mm, easy to peel when mature; flesh orange (RHS 28C), juice content 46-50%, 10-13 °Brix, TA 0.8-1.1%; seedless when grown in isolation; ripens up to 3 weeks before Clemenules, a few days after Marisol; hangs well on tree; shipping quality good. **Tree**: vigorous medium; spreading; similar to Clemenules; productive.

**Code 66 75 and Code 6675.** See Code 66-75.

**Code 66-75 (Code 66 75, Code 6675, C 6 675; Phoenix®)**. Low-seeded tangor. **Origin**: 2PH Farms, Emerald, Queensland, Australia, by C.R. Pressler. Gamma irradiation-induced bud mutation of Murcott (syn. Honey Murcott) tangor; irradiated 1996; selected 1998-2000. Australian PBR 2923; 8 Nov. 2005. Canadian PBR 60203; 26 Aug. 2019. **Fruit**: oblate, similar to larger than standard Murcott, length 58 mm, diameter 68 mm; rind yellow-orange (RHS 21A), smooth, thin (3.3 mm), dry, adherency to flesh medium; flesh medium orange (RHS 23A), juicy, 11.6 °Brix, TSS/TA ratio 16.3; seeds 3.9, polyembryonic; ripens late, with standard Murcott, late July to August in Queensland. **Tree**: similar to standard Murcott; growth habit upright; density of thorns intermediate; leaves small to medium.

**Colima 02 (Lise)**. High yielding true lime. **Origin**: Inifap-Campo Experimental Tecoman, Colima, Mexico, by M. Robles-González and S. Becerra Rodriguez. Clonal selection of Mexican lime. Mexican PBR 169; 21 Apr. 2005. **Fruit**: large, diameter up to 35 mm; rind smooth, thin; segments 9-12; flesh yellowish-green, soft, juice content 44-48%; seeds 3-5; ripens most plentifully May-September. **Tree**: thornless; blooms several times a year, with greater intensity January-March; flower buds few; yield high, >35 t/ha, pack-out high; well adapted to major Mexican lime production areas in Colima and Michoacán.

**Cookie.** Seedless grapefruit-like hybrid, low in furanocoumarins. **Origin**: Agricultural Research Organization, Volcani Center, Bet Dagan, Israel, by N. Carmi, Y. Yaniv, and J. Kanonitz. Induced mutation of Cocktail grapefruit-like hybrid (Siameste Sweet pummelo × Frua mandarin). Israeli PBR 3604; 11 Nov. 2018. **Fruit**: spheroid to slightly oblate, 486 g; rind light greenish during autumn harvest, dark yellow when fully mature, smooth, thin, easy to peel; flesh dark yellow or yellow-orange, juicy; juice content 38.5%, 11 °Brix; TA 0.5%; naringin content 13,865 ppb; low in furanocoumarins; seedless; ripens October-November in Israel. **Tree**: large; vigorous.

**Cuimi** (猕猴蜜柑 = Cui Mi Jin Gan = “Crispy Honey Kumquat”). Meiwa-type kumquat with large, sweet, juicy fruit and few or no seeds. **Origin**: Guangxi University, Liuzhou Fruit Production Office, and Guangxi Rongan Fruit Production Station, Guangxi, China, by H.G. Lan, Z.E. Tang, et al. Huapi kumquat (Fortunella margarita) bud mutation, initially selected 2007, finally selected 2014. Chinese MARA PBR CNA20150497.9; 1 Sept. 2017. **Fruit**: obovate to spheroid, fruit shape index 1.1; large, length 44 mm, diameter 40 mm, 20.5 g on average, largest 35.6 g; rind golden yellow to orange-red, smooth, with very few oil cells, thickness 1.25 mm; texture crisp, juicy; juice content 56.9%; flavor strong, sweet, 16.46 °Brix, TA 0.18%, TSS/TA 131.4; vitamin C content 21.05 mg/100 g; no pungent spicy taste; quality excellent; seeds 0.2, nearly seedless; ripens late November to mid-December in Guangxi; stores well. **Tree**: height 3.5 m; leaves obovate, dark green; yield high, stable, precocious; highly resistant to Huanglongbing, citrus canker (Xanthomonas axonopodis), and drought.

**Cui Zhi (翠指 = “Green Fingers”).** Fingered citron with variegated fruit and leaves. **Origin**: Zhejiang Normal University, Jinhua, Zhejiang, China, by F. Liao, Y. Zong, W. Shao, Y. Li, W. Chen, and W. Guo. Qingpi fingered citron natural bud mutation, selected 2012. Chinese MARA PBR CNA20181330.5; 1 Nov. 2018. **Fruit**: fingered, small, 100 g; rind of immature fruit variegated, covered by yellow-green stripes, becoming yellow when fully ripe; flesh absent; seedless; suitable for bonsai cultivation. **Tree**: vigorous and upright when young, becoming more spreading with age; foliage variegated, young leaves green, yellow or mottled, mature leaves yellow-green, moderately thick; top branches striped green and yellow.

**Dity.** Mid-late season mandarin hybrid with few seeds. **Origin**: Agricultural Research Organization, Volcani Center, Bet Dagan, Israel, by A. Vardi, P. Spiegel-Roy, A. Frydman-Shani, A. Elchanati, and H. Neumann. Gamma irradiation-induced bud mutation of Edith mandarin hybrid, obtained 1989. Israeli PBR 2392; 10 Mar. 2003. USPP 13,457; 7 Jan. 2003. **Fruit**: oblate; midsize, height 44.7 mm, diameter 65 mm, 94.6 g; rind orange (RHS 30B), thin, smooth, peels easily, oil glands moderately conspicuous; segments 9-11; flesh orange (RHS 28B), very juicy; 12.8 °Brix, TA 1.57%, TSS/TA ratio 8.16 on 20 Jan. 1997; seeds 0-3; monoembryonic; ripens December-January in Israel. **Tree**: vigorous; canopy moderately dense; productive; pollen fertility 2%; can become alternate bearing; susceptible to Alternaria.

**Early Esbal.** Early-ripening clementine. **Origin**: Patysberg Citrus, Citrusdal, Western Cape, South Africa, by S. Mouton. Estbal clementine bud sport, disc. 2008/2009 in Citrusdal; grafted 2011. South African PBR ZA 20127442; 1 Oct. 2021. USPP 33,535; 5 Oct. 2021. **Fruit**: spheroid to slightly oblate; height 45 mm, diameter 52 mm, 60-65 g, navel present; rind orange, smooth to somewhat pebbly, thickness 2 mm, easy to peel; segments 10, membrane soft; flesh orange. 10.1 °Brix; seedless if netted during flowering; ripens mid-to late October in Visalia, CA, 3 weeks before parent, and 3 weeks before Nules; for fresh markets domestic and export, keeping quality good. **Tree**: vigorous medium; density of canopy medium; growth habit upright; tendency to alternate bearing none, parthenocarpy absent; yield 35-50 mt/ha.

**Ehimekashi Dai28go (愛媛県果第28号 = “Ehime Fruit Trial No. 28”); Beni Madonna®**. Mandarin hybrid with very thin rind and jelly-textured flesh. **Origin**: Ehime Fruit Tree Experiment Station, Matsuyama, Ehime Prefecture, Japan, by K. Kita, Y. Shigematsu, and H. Yakuishi. Anakusa tangor × Nanko mandarin hybrid, crossed 1990. Japanese PBR 15522; 10 Mar. 2003. **Fruit**: oblate, 250 g; rind deep orange, medium-smooth, thin, very peely, medium-difficult, puffing rare; flesh yellow orange, texture jelly-like, juicy and sweet, 13.1 °Brix, TA 1.1%, aromatic; usually seedless, but when cross-pollinated may contain a few seeds; ripens mid-December in Matsuyama; rind cracks at stem end may occur and cause rot, but this can be controlled using greenhouse production, plastic mulching and paper bagging; storability somewhat low. **Tree**: rather large, vigorous; growth habit primarily upright until onset of fruiting;
thorns initially robust but become smaller; branches bearing fruit thornless.

**Gleave.** Virtually acidless lemon. **Origin:** Citromax Group, Monteros, Tucumán Province, Argentina, by F.J. María Carrera, R.E.T. Jun Roldán, and C. Viruel. Virtually acidless sport of unnamed lemon, disc. Finca Los Pocitos grove, Tucumán. USPP 31,769; 19 May 2020. **Fruit:** elliptic oval with a blip, length 30 mm, diameter 16 mm; rind yellow (RHS 6A), greenish yellow (RHS 149A) at end of nipple, thickness 3.5 mm; segments 9.3; flesh yellow (RHS 12A), 8.22° Brix, TA 0.054%; TSS/TA ratio 150:1; pH 5.51; aroma lemonlike; seeds 9.45; present in all fruit; segments 13-14; juice deep orange, similar to Valencia in late season, can regreen in July-August; navel small, tight, orange, medium coarse to slightly dimpled, thickness similar to Valencia; Dundee. USPP 9,241; 15 Aug. 1995.

**Greamari.** Valencia sport producing late ripening navel oranges. **Origin:** S.E. Green, Dundee, FL. Valencia mutation, disc. Dundee. USPP 9,241; 15 Aug. 1995. **Fruit:** oblong to oval, similar to Valencia; length 80-90 mm, diameter 64-70 mm; rind yellowish orange, medium coarse to slightly dimpled, thickness similar to Valencia, 3 mm, easy to peel; aroma similar to navel orange, does not puff in late season, can regreen in July-August; navel small, tight, present in all fruit; segments 13-14; juice deep orange, similar to Valencia, darker than navel orange; juice content 56.6%, 14.26° Brix, TA 0.98%; TSS/TA ratio 14.55 on 6 June 1994; flavor mild, sweet to slightly tart, similar to navel; limonin content low; virtually seedless, 2 seeds in 24 fruit; ripens late May to July, peak maturity late May to early June; holds on tree through late July to mid-August. **Tree:** very vigorous; shape similar to Valencia; moderately thorny.

**Gremoy47 (Orange Frost™).** Cold hardy mandarin hybrid with few seeds, peelable skin. **Origin:** Greenleaf Nursery, Park Hill, OK, by Y.D. Moy and L. Stein, in San Antonio, TX. Changsha mandarin × unnamed satsuma seedling; crossed 1998, selected 2005. USPP 23,496; 26 Mar. 2013. **Fruit:** oblate; height 50 mm, diameter 75 mm, 160 g; rind medium orange (RHS 25A), slightly glossy, rugulose, thickness 5.5 mm; segments 10; flesh medium orange (RHS N24A), juicy, sweet, and tart, 12° Brix; seeds 0-2; ripens mid-November to late December; keeps 6-8 weeks in controlled atmosphere. **Tree:** vigorous moderate; upright; fruit set medium, heavily dependent on early spring weather during bloom; cold hardy USDA Zone 8b.

**Hadass.** Late ripening tangor with high internal quality. **Origin:** Agricultural Research Organization, Volcani Center, Bet Dagan, Israel, by A. Shaked, M. Harnoi, and D. Hesdat. Ellendale tangor O.P. 1971; selected 1975. Israeli PBR 1107; 3 Jan. 1984. USPP 24,948; 7 Oct. 2014. **Fruit:** slightly oblate; height 50-60 mm, diameter 60-70 g, 130 g; navel opening sometimes present; stylar scar present; rind dark orange (RHS 24A), slightly rough, thin, 1-2 mm, strongly adherent, oiliness low; segments 11; flesh dark orange (RHS 25A), 13° Brix, TA 1.14%; TSS/TA ratio 11.48 on 11 Apr.; ripens very late, April in Israel; seeds none or few when grown in isolation, polyembryonic. **Tree:** vigorous strong; shape transverse elliptic; surface of bark nearly smooth; parthenocarpic.

**IRM1.** Low-seeded mutation of Murcott tangor. **Origin:** Bundaberg Research Station, Bundaberg, Queensland, Australia, by M.W. Smith. Gamma irradiation–induced bud mutation of Murcott (syn. Honey Murcott) tangor. 1991. Australian PBR 25258; 27 July 2004. **Fruit:** oblate; diameter 70.4 mm, 152 g, firm; rind yellow orange, darker than Murcott, very thin to thin, 3.6 mm, with slight ribbing, may crease when left on tree too long, adherence to flesh medium; flesh orange, semi-hollow, 13-15° Brix, TA 1.0-1.3%; TSS/TA ratio 10-14, juice content 52-67%; seeds 6.3 when cross-pollinated; ripens late, with Murcott, mid-August to early October in Sunraysia, Australia. **Tree:** vigorous, upright, with long branches; pollen viability 41.2%; moderately susceptible to Alternaria.

**IRM2.** Low-seeded mutation of Murcott tangor. **Origin:** Bundaberg Research Station, Bundaberg, Queensland, Australia, by M.W. Smith. Gamma irradiation–induced bud mutation of Murcott (syn. Honey Murcott) tangor. 1991. Australian PBR 32940; 1 June 2007. **Fruit:** oblate; length 57 mm, diameter 71 mm, 155 g, firm; rind medium orange, thin, 3.4 mm, with slight ribbing, may crease when left on tree too long, adherence to flesh medium; flesh dark orange with a closed core, 12-15° Brix, TA 0.8-1.1%; TSS/TA ratio 11-15, juice content 50-65%; seeds 7.8 when cross-pollinated, polyembryonic; ripens late, 5 weeks after Nadarcot, 4 weeks before IRM1, early July through August in South Africa. **Tree:** tall; vigorous; thorny; thorns few; pollen viability 32%; moderately susceptible to Alternaria.

**Jade (제 레 운주).** Early-ripening satsuma mutation with variegated, corrugated rind and increased flavonoid content. **Origin:** Jeju University, Jeju, South Korea, by I.J. Kim and J.M. Heo. Gamma irradiation–induced bud mutation of Miyagawa satsuma, 2006. International patent application WO2017/003183A3; 5 Jan. 2017 (for “methods or apparatus for hybridisation”). South Korean utility patent 10-1922110; 20 Nov. 2018 (for “processes for modifying phenotypes”). USPP applied for. **Fruit:** oblate; height 35-65 mm, diameter 46-78 mm, 41-156 g, similar to or slightly greater than parent; rind texture rough, corrugated, color variegated red and orange when mature, not easily peeled; rind thickness 2.1-4.2 mm, similar to or slightly greater than parent; flesh orange, 7.4-11.8° Brix, TA 0.69-1.25%; flavonoid content increased, incl. hesperidin and narirutin; ripens late November to mid-December, same as parent. **Tree:** vigor moderate.

**Kedem.** Early ripening, easy peeling, low-seeded mandarin hybrid. **Origin:** Agricultural Research Organization, Volcani Center, Bet Dagan, Israel, by A. Vardi, P. Spiegel-Roy, A. Friedman-Shani, A. Elchanati, and H. Neumann. Gamma irradiation–induced bud mutation of Rishon mandarin hybrid, obtained 1989; tested as 13/5/82. USPP 13,612; 4 Mar. 2003. **Fruit:** oblate, small to medium, height 51 mm, diameter 56.5 mm, 79 g; rind orange (RHS 25A), smooth, thin, easy to peel; number of conspicuous oil glands average; segments 9-11; flesh yellow-orange; 14.9° Brix, TA 1.02%; TSS/TA ratio 14.55 on 15 Oct.; seeds 0-5 (vs. 5-11 for Rishon), polyembryonic; ripens late September to October in Israel. **Tree:** vigorous; upright; canopy moderately dense; thorns small; bearing regular; can become alternate bearing; Alternaria resistant.

**Lise.** See Colima 02.

**Liuyuezao (六月早柚 = “June Early pummelo”).** Very early-ripening yellow-fleshed pummelo. **Origin:** Fujian Agriculture and Forestry University, Fuzhou, Fujian, China, by T. Pan, P. Huang, J. Ye, D. Pan, Z. Fu, H. Pan, Z. Guo, W. She, G. Chen, and Y. Yu. Guanxi pummelo bud sport, disc. 2000 in Xiaoxi, Pinghe, Fujian. Chinese MARA PBR applied for. **Fruit:** pyriform with a slightly flattened bottom; height 153 mm, diameter 140 mm, 1,213-1,229 g; rind light yellow, smooth, moderately thick, tightly adherent; segments 12-15, medium size, moderately thick, moderately corrugated; flesh pale yellow, tender, juicy; 10.86° Brix, TA 1.09%; flavor sweet and mildly acidic, without bitterness; seeds many, monoembryonic; ripens late July to early August in Fujian, 40-60 d before Guanxi. **Tree:** moderately large, vigorous; spreading; average yield 68.23-70.88 kg/plant; suited for planting in Fujian, Guangdong, Guanxi, Hainan, and at low altitudes in southern Yunnan.

**Mandalate (Late Seedless Mandarin).** Triploid, late-season, seedless mandarin hybrid. **Origin:** G. Reforgiato Recupero, G. Russo, and S. Recupero, Acireale, Italy. Fortune mandarin diploid × Avana mandarin tetraploid, crossed 1989, selected 1998, tested as D8811. CPVO PBR 32940; 18 June 2012. USPP 18,520; 26 Feb. 2008. **Fruit:** oblate; midsize, height 55 mm, diameter 63 mm, 100 g; rind yellow orange, smooth, thin to medium, thickness 4 mm, peels easily; flesh medium orange, low rag, very juicy; juice content 42%, 13.9° Brix, TA
1.38%, TSS/TA ratio 10.07 on 24 Jan.; aroma of Mediterranean mandarin; seeds absent or very few; ripens late, February to April in Sicily, end February to end March in Central California; holds well on tree, maintains acidity. **Tree:** triploid; a bit on the small side; spreading; productivity high, bears consistently from year three, bears inside canopy.

**Matiz.** Seedless triploid mandarin hybrid. **Origin:** Instituto Valenciano de Investigaciones Agrarias, Moncada, Valencia, Spain, by L. Navarro Lucas, J. Cuenca Ibanez, P. Aleza Gil, J. Juarez Roldan, J.A. Pina Loeza, C. Ortega Calabuig, and A. Navarro Lucas. Fortune mandarin × Commune mandarin (syn. Willowleaf, Mediterranean mandarin), crossed 1995, fruit tested 2002-3; tested as IVIA-Tri5, IVIA Tri-5. Spanish PBR 2745; 17 Jan. 2017. **Fruit:** oblate; diameter 60-70 mm, 120 g; rind deep orange, slightly pebbly, thickness 2.7 mm, easy peeling; flesh orange, melting, rag-free; juice content 46%, sweet-tart, 14 °Brix; TA 1.6%; TSS/TA ratio 9 in late January; flavor excellent, with characteristic aroma of Mediterranean mandarin; seeds 0.07, virtually seedless; ripens end January to end February in Valencia. **Tree:** triploid, vigorous intermediate; open growth and spherical shape; leaves lanceolate, with Mediterranean mandarin aroma; does not pollinate other cultivars; susceptible to **Alternaria.**

**Merav.** Low-seeded midseason mandarin hybrid with high TSS. **Origin:** Agricultural Research Organization, Volcani Center, Bet Dagan, Israel, by A. Vardi, P. Spiegel-Roy, A. Frydman-Shani, A. Elchanati, and H. Neumann. Wilking mandarin hybrid × Michal Dagan, Israel, by A. Vardi, P. Spiegel-Roy, A. Frydman-Shani, A. Dagan, Israel, by A. Vardi, P. Spiegel-Roy, A. Frydman-Shani, A. Elchanati, and H. Neumann. Gamma irradiation mandarin hybrid, crossed 1978, first fruited 1984, tested as k/32/79. Israeli PBR 1995; 3 Feb. 2000. USPP 13,661; 18 Mar. 2003. **Fruit:** oblate, midsize, height 53 mm, diameter 60.5 mm, 110 g; rind dark orange (RHS 28A), thin, 2 mm, easy to peel; albedo white; segments oblate, midsize, height 53 mm, diameter 60-70 mm, 120 g; rind dark orange, slightly pebbly, thickness 2.7 mm, easy peeling; flesh orange (RHS 28A), flavor excellent; 17.5 °Brix, TA 1.34%, TSS/TA ratio 13 on 10 Jan.; seeds 0-9, monoembryonic; ripens December to end January in Israel. **Tree:** midsize, vigorous; growth habit upright; canopy moderately dense; productivity high, slightly tendency to alternate bearing, pollen fertility 55%.

**Merbeingold 233.** See Merbeingold 2336.

**Merbeingold 2336 (Merbeingold 2333).** Early- to midseason mandarin hybrid, virtually seedless, easy peeling. **Origin:** Commonwealth Scientific and Industrial Research Organisation, Australia, by S.R. Sykes. Imperial mandarin hybrid × Ellendale tangor, crossed 1984. Australian PBR 3847; 21 Sept. 2009. USPP 23,068; 29 Sept. 2012. **Fruit:** oblate; diameter 61-68 mm, 104-146 g; rind medium orange, smooth to very slightly pitted, glossy, thickness medium, 3-5 mm, dry, easy to peel; rind strength not high, better suited to domestic than international shipment; oil glands weakly conspicuous, small and of low density; large fruits tend to puff; segments 7-12, readily separated, segment walls thin, soft; flesh medium orange, soft, sweet, 9-11 °Brix, TA <1%; virtually seedless (0-3 seeds, mostly 0) even when cross-pollinated, monoembryonic; ripens early to midseason, with Imperial, June-July in Murray Valley, Australia. **Tree:** growth habit spreading to upright; shape spheroid; density of branches medium; thorns short.

**Merbeingold 235.** See Merbeingold 2350.

**Merbeingold 2350 (Merbeingold 235).** Midseason mandarin hybrid, facultatively virtually seedless, easy peeling. **Origin:** Commonwealth Scientific and Industrial Research Organisation, Australia, by S.R. Sykes. Imperial mandarin hybrid × Ellendale tangor, crossed 1984. Australian PBR 3917; 21 Sept. 2009. USPP 23,092; 2 Oct. 2012. **Fruit:** oblate; diameter 57-65 mm, 120-140 g; rind orange to orange-red, smooth to slightly pitted, glossy, thin, 2-3 mm, strong, easy to peel; rind oiliness medium, oil glands conspicuous, small, of medium density; segments 9.1, adherence of segment walls to each other medium, strength of segment walls medium; flesh medium-to-dark orange, fleshly, juicy, 9-15 °Brix, acidity medium; seeds 0-4 when self-polinated, 0 to 15 when cross-polli-nated, monoembryonic; ripens late June through August in Murray Valley, Australia. **Tree:** growth habit spreading to upright; shape spheroid-ellipsoid, density of branches medium; thorns absent or very sparse on adult tree; fruits can be snap picked, eliminating the need to clip.

**Mihaya (美はや = “Beautiful Early”).** Early-ripening mandarin hybrid with good flavor and attractive appearance. **Origin:** National Agriculture and Food Research Organization, Ibaraki, Japan, by T. Yoshioka, T. Takahara, R. Matsumoto, H. Fukamachi, N. Hiehata, A. Imai, K. Nonaka, T. Kuniga, N. Mitani, and K. Yoshinaga. Tsunonozomi mandarin hybrid × No. 14088 mandarin hybrid. Japanese PBR 23722; 30 Sept. 2014. Canadian PBR 5968; 1 May 2019. **Fruit:** oblate to globose; 170 g; rind bright red-orange, texture smooth to medium, thin, moderately easy to peel; fruits exposed to sunlight fade after they are completely colored, so must be protected from direct sunlight; segment membrane soft; flesh dark orange; flavor excellent, 13.2 °Brix, TA 0.68%, TSS/TA ratio 19.5 on 20 Dec.; aroma similar to Encore; seeds absent or very few in solid blocks, but can be seedy if cross-pollinated, monoembryonic; ripens early December, peak maturity mid-December in Kumamoto Prefecture. **Tree:** intermediate between upright and spreading; vigor medium; foliage dense; thorns few; moderately resistant to citrus canker and citrus scab (Elsinoe fawcettii).

**Miyazakiyumemaru みはやまめ "Miyazaki Dream Round").** Triploid, seedless, large-fruited Meiya kumquat. **Origin:** Miyazaki Agricultural Experiment Station, Miyazaki, Miyazaki Prefecture, Japan, by H. Takeshima, R. Kodama, S. Kurogi, K. Yamaguchi, K. Tokumitsu, T. Aratake, T. Kuroki, T. Kinoshita, R. Hirata, and M. Sano. Diploid Meiya kumquat × tetraploid Meiya kumquat, crossed 1997. Japanese PBR 19999; 15 Nov. 2010. **Fruit:** shape elongated sphere; 15.5 g; rind dark orange, smooth, thickness medium, oil glands slightly small, density medium, percentage of rind maximum; juice low; sugar content high, 22.0 °Brix; acidity very low, TA 0.19%; aroma medium; seedless; ripens early, 20 days before Meiya; distinguished from Puchimaru by medium density of oil vesicles and extremely low acidity; for processing and fresh use. **Tree:** triploid; small; vigorous strong; thorny; length and thickness of branches similar to Meiya; leaves spindle-shaped, midsize, very narrow; yield slightly lower than Meiya; alternate bearing tendency low.

**Morgan Sunrise Navel.** Cara Cara navel orange mutation with variegated leaves. **Origin:** B.M. Morgan, Exeter, CA. Cara Cara navel orange whole tree mutation, disc. 1999 with variegated leaves, later maturity, pale yellow rather than pink flesh. USPP 21,568; 14 Dec. 2010. **Fruit:** spherical to slightly elongate; height 78 mm, diameter 75 mm, 227-425 g; rind orange (RHS N25C, 26A), thickness medium, 4 mm; rind variegated during fruit development, not at maturity; flesh pale yellow-orange (RHS 20D [photos in plant patent appear to show pink flesh]); firm; juicy; dense; sweet and mildly acidic, 13 °Brix; ripens ~10 Feb. to 15 Apr. in Exeter; keeps and ships well. **Tree:** midsize; somewhat upright, more so than Cara Cara; vigor moderate, slightly less vigorous than Cara Cara; canopy open, not dense; productive, more precocious than Cara Cara; leaves variegated, dark green, yellow green, and yellow.

**Moria.** Late ripening tangor bearing fruit with few or no seeds. **Origin:** Agricultural Research Organization, Volcani Center, Bet Dagan, Israel, by A. Vardi, P. Spiegel-Roy, A. Frydman-Shani, A. Elchanati, and H. Neumann. Gamma irradiation–induced bud mutation of Murcott (Honey Murcott) tangor, obtained 1986 or 1987; tested as 3/38/55. Israeli PBR 2393; 10 Mar. 2003. USPP 13,460; 7 Jan. 2003. **Fruit:** midsize, height 52 mm, diameter 110 mm, 115 g; rind yellow-orange (RHS 23B), thin, easy to peel; segments 9-11; flesh orange (RHS 25A), juicy; TA 1.3%, TSS/TA ratio 11.54 on Feb. 25; flavor
Nora. Late-ripening mandarin hybrid with few or no seeds. **Origin:** Agricultural Research Organization, Volcani Center, Bet Dagan, Israel, by A. Vardi, P. Spiegel-Roy, A. Frydman-Shani, and A. Elchanati. Self-pollinated cross of Wilking mandarin hybrid, obtained 1979; tested as 56/4. Israel PBR 1344; 24 Apr. 1995. USPP 13,624; 4 Mar. 2003. **Fruit:** slightly oblate; midsize; height 46 mm, diameter 68 mm, 98 g; rind orange (RHS 24A), smooth to pebbled, thin, easy to peel; oil glands conspicuous; segments 10-11; flesh orange (RHS 25A); juicy; flavor rich and sweet, 13 °Brix, TA 0.9%, TSS/TA ratio 14.4 on Jan. 16; seeds <1 in mixed blocks; ripens midseason, January in Israel. **Tree:** midsize; vigor medium; canopy moderately dense; quite productive with a slight tendency to alternate bearing; leaves resemble Wilking, blades firm and straight in cross section; pollen sterile.

Nectar. Midseason mandarin hybrid with few or no seeds. **Origin:** Agricultural Research Organization, Volcani Center, Bet Dagan, Israel, by A. Vardi, P. Spiegel-Roy, A. Frydman-Shani, and A. Elchanati. Self-pollinated cross of Wilking mandarin hybrid, obtained 1979; tested as 56/4. Israel PBR 1344; 24 Apr. 1995. USPP 13,624; 4 Mar. 2003. **Fruit:** slightly oblate; midsize; height 46 mm, diameter 68 mm, 98 g; rind orange (RHS 24A), smooth to pebbled, thin, easy to peel; oil glands conspicuous; segments 10-11; flesh orange (RHS 25A); juicy; flavor rich and sweet, 13 °Brix, TA 0.9%, TSS/TA ratio 14.4 on Jan. 16; seeds <1 in mixed blocks; ripens midseason, January in Israel. **Tree:** midsize; vigor medium; canopy moderately dense; quite productive with a slight tendency to alternate bearing; leaves resemble Wilking, blades firm and straight in cross section; pollen sterile.

Onix Blood. Mid- to late-season blood orange producing many sectorial chimeras. **Origin:** Agricultura Ruiz Valero, Brenes, Spain, by J.F. Ruiz Gilsan. Sanguinelli blood orange mutation disc. Carmona, Seville, Spain, 2012. CPVO PBR applied for. USPP 32,665; 22 Dec. 2020. **Fruit:** ovoid; length 77.6 mm, diameter 69.0 mm, 194.3 g in February (compare Sanguinelli, 150.2 g); rind dark red-purple, almost black on 60% of fruits, while the other 40% exhibit smooth sectorial chimeras, with orange stripes on a dark red background, without bumps or raised portions; rind thickness 5.1 mm; segments 11.5; flesh red; juice content 49.3%, 11.7 °Brix, TA 0.78%, TSS/TA ratio 15 in February; aromatic; seeds 0.9 when self-pollinated, polycarpic; ripens mid-January to late March in Seville; stores 60-75 days. **Tree:** vigorous similar to Sanguinelli; bark red-purple (Sanguinelli bark has red areas on an orange background); thorns absent or sparse; parthenocarpic; self-compatible; yield high.

Orange Frost™. See Gremyev 47.

Parga No. 2. Clementine ripening 9-10 days before standard clementine. **Origin:** A. Silvestre, Fresno, CA. Clementine tree mutation disc. 2007 near Fresno, CA. USPP 21,579; 21 Dec. 2010. **Fruit:** globose to oblong; small to medium, height 44.5-61.7 mm, diameter 44.2-64 mm, 110.9-113.4 g; rind cadmium, slightly pebbled to rough, thickness 2.4 mm; segments 12-14, membrane tender; flesh golden glow; moderately juicy, 11 °Brix, TSS/TA ratio 12.0; seedless; ripens 14-18 Oct. in San Joaquin Valley, CA, 9-10 d before parent; hangs well on tree; keeps and ships well. **Tree:** vigorous; upright with a spreading shape; productivity regular; leaves elliptic to oblong, large for mandarin.

Patensie Early (PE1). Early-ripening mutation of Nadorcott mandarin hybrid. **Origin:** Citigene, Humansdorp, Eastern Cape, South Africa, by G. Feerera. Spontaneous mutation of Nadorcott. South African PBR ZA 20186730; 2 Oct. 2017. USPP 33,038; 11 May 2021. **Fruit:** slightly oblate, less oblate and more spherical than Nadorcott; height 37.5-53 mm, diameter 42-62 mm, 90 g; rind deep orange (RHS 25B), less prone to radial grooves than Nadorcott, smooth, thickness 2.5-3.0 mm, slightly thinner than Nadorcott, easy peeling; segments 9-11, segment walls tender; after peeling, little albedo adheres to outer segment walls; flesh orange-red (RHS N30D); texture smooth; juice content 50%, 12 °Brix, TA 1.0-1.2%; seedless when not cross-pollinated by compatible pollen, seeds numerous when cross-pollinated, polycarpic; ripens 2-3 weeks before Nadorcott, June 6 to July 25 in South Africa. **Tree:** vigorous; density open to medium, similar to Nadorcott; self-incompatible; yield high, similar to Nadorcott.

Phoenix™. See Code 66-75.

Pink Frost™. See Bruce.

Pomelit. Pummelo hybrid with very thin rind and pink, tender, juicy flesh. **Origin:** Citrus and Subtropical Fruit Research Institute, Nelspruit (now Mbombela), Mpumalanga Province, South Africa; developed by Outspan Citrus Center, Nelspruit; by J.H. de Lange and S. Burdette. Djeeroek Delima Kajpor pumello O.P. (possibly male parent was a grapefruit), selected 1978. South African PBR ZA 93968; 20 Mar. 1993. **Fruit:** spheroid to slightly oval; diameter 120 mm, 620 g; rind light yellow to yellow-green, pink-blushed when grown in hot regions, smooth, extremely thin; as grown in Riverside, CA, flesh whitish with slight pink tinge around segment walls; as grown in hot regions of eastern South Africa, flesh more intensely so adjacent to segment walls, extremely tender, less coarse and ricer than pummelos; juicy; juice content 39-43.2%, 10.6-15.4 °Brix, TA 1.15%, segments 12-13, regular; seedless when grown in isolation; seedy when cross-pollinated; ripens early. **Tree:** vigorous, with weak...
and narrow crotch angle resulting in limb splitting under a typically heavy crop load if not supported; pollen germination percentage high, 29.7%-74.3%.

**Powell Late Navel (Powell Summer Navel).** Late-ripening navel orange. **Origin:** Currawa, New South Wales, Australia, by C.N. Powell and J. Powell. Washington navel orange mutation disc. 1979 in Currawa. Australian PBR 1517; 14 June 2000; terminated 18 Nov. 2008. USPP 6,733; 11 Apr. 1989. **Fruit:** oblate to ellipsoid or obovoid; midsize-large, diameter 75-85 mm, 230-260 g; navel open, large; rind orange to deep orange (RHS 26A), darker than Lane Late, pebbled, medium-thick, 4.8 mm, adherence to flesh moderate; oil glands conspicuous and moderately dense; segments 11-12, membranes thin, tough; flesh orange; juicy; flavor rich, with acid and sugar well blended, 13.4 Brix, TA 0.76%; limonin content similar to Washington, 7.3-11.6 ppm, but bitter taste usually associated with limonin after fruit is juiced is absent; seedless; ripens June-November in southwestern New South Wales, matures slightly later than other late navel such as Autumn Gold, Barnfield, and Chislett. **Tree:** vigor medium to strong; dense; spreading; thorns present on water sprouts; leaves large, lanceolate although somewhat variable; pollen inviable.

**Powell Summer Navel.** See Powell Late Navel.

**Premier Murcott ™**. See 11C017R.

**Queen (Th01-Queen).** Mid-late-ripening satsuma hybrid, large, easily peeled, virtually seedless in solid blocks. **Origin:** E. de Teresa Cortes, El Puig, Valencia, Spain. Satsuma O.P. disc. Pilar de la Horadada, Alicante, Spain 1987; fruit production and evaluation began 1995. CPVO PBR 33910; 17 Dec. 2012. USPP 22,062; 9 Aug. 2011. **Fruit:** oblate; height 45.2 mm, diameter 65.9 mm, 100-150 g; diameter of stylar scar very large; rind reddish orange (RHS 30A), smooth, glossy, thickness medium, dry, adherence to flesh medium; navel occasionally present as viewed internally; core open; flesh medium orange (RHS 30D); juicy; soft; sweet and lightly acidic, 13 Brix, TA 1.05%; aroma pleasant; seedless or virtually seedless in solid blocks, seed count medium when open pollinated; ripens mid- to late season, mid-January to end April in Alicante. **Tree:** shape oblate; growth habit drooping; thorns absent or sparse; leaves dark green; tolerant to citrus tristeza virus and *Alternaria.*

**Rinoka (蠍の香).** Lemon hybrid with moderate acidity, strongly resistant to citrus canker. **Origin:** National Agriculture and Food Research Organization, Ibaraki, Japan, by T. Yoshida, H. Nesumi, T. Yoshihiko, S. Ota, M. Kita, T. Kuniga, M. Nonomura, N. Nakajima, H. Hamada, F. Takishita, and S. Murase. Lisbon lemon × Hugyanatsu, crossed 1991, selected 2001. Japanese PBR 24081; 20 Mar. 2015. Canadian PBR 5966; 1 May 2019. **Fruit:** spheroid to pyriform to classic lemon shape, apex protruding, neck short; rind yellow, smooth, thickness medium; oil glands very few, midsize; albedo white; flesh yellow-white; not bitter; sweetness low to medium; acidity medium; flavor balance moderately acidic; seeds few, monoembryonic; ripens midseason. **Tree:** large; vigor strong; growth habit upright; shoot density sparse to medium, internode length medium, thorny; leaves long, wide medium, spindle-shaped, young leaves have no anthocyanin; petals slightly purple; strongly resistant to citrus canker and citrus scab.

**Roe ™.** See WG3.

**Rusty.** Early-season navel orange. **Origin:** RJ and DK Anderson Pty., Boundary Bend, Victoria, Australia, by R. Anderson. Fukumoto navel orange limb sport, disc. 2015. Australian PBR 6570; 18 Jan. 2022. **Fruit:** midsize, ratio of length to diameter medium to large; depression at stalk end shallow; radial grooves at stalk end short to medium; navel present, diameter medium, bulging absent or weak; rind medium orange, smooth to medium; oil glands medium, conspicuousness very weak; rind thickness medium; albedo light yellow; flesh medium orange; juiciness medium; TSS and TA medium; seedless; ripens early, before Fukumoto. **Tree:** growth habit spreading; thorns absent or sparse, very short; leaf blade length and width medium, medium green; parthenocarpic, self-incompatibility absent.

**Safor.** Mid-late-season triploid mandarin hybrid. **Origin:** Instituto Valenciano de Investigaciones Agrarias, Valencia, Spain, by L. Navarro, J. Juárez, P. Aleza, J. Cuenca, J. Manuel Julve, and J. Antonio Pina. Diploid Fortune mandarin hybrid × tetraploid Kara mandarin hybrid, crossed 1996, selected 2004, tested as IVIA Tri 2. CPVO PBR 33912; 17 Dec. 2012. USPP 21,581; 21 Dec. 2010. **Fruit:** oblate with a convex base; height 52 mm, diameter 56 mm, 98 g; rind dark orange (RHS 28B), similar to Nova, smooth, glossy, thickness 2.5 mm, adherence to flesh medium, easy to peel, oiliness medium; segments 9-10; flesh dark orange (RHS 28B); juice content 42%; flavor mildly acidic, 15.1 Brix, TA 1.9%; TSS/TA ratio 8.5-10; seedless; ripens medium-late, mid-February to early April at Moncada, Valencia; stores well. **Tree:** triploid; vigorous; growth habit erect-drooping; shape commonly obloid-ellipsoid; tolerant to CTV and *Alternaria*; leaves dark green.

**Shani.** Late-season mandarin hybrid with red-orange rind and few seeds. **Origin:** Agricultural Research Organization, Volcani Center, Bet Dagan, Israel, by A. Vardi, P. Spiegel-Roy, A. Frydman-Shani, and A. Elhanati. Wilking mandarin hybrid × Michal mandarin hybrid, crossed 1976. Israeli PBR 810; 22 Feb. 1991. USPP 13,634; 11 Mar. 2003. **Fruit:** oblate; midsize, height 49 mm, diameter 65 mm, 112 g; small navel attached to inner part of peel; rind red-orange (RHS 34A), smooth, thin, 2 mm; oil glands conspicuous; segments 10-12; flesh orange (RHS 25A); flavor and aroma excellent, 12.8 Brix, TA 1.09%, TSS/TA ratio 11.8 on Feb. 21; seeds 0-9, polyembryonic; ripens late, February to mid-March in Bet Dagan. **Tree:** upright and spreading, canopy moderately dense, moderately vigorous.

**Sigal.** Late-season, easy peeling, seedless mandarin hybrid with excellent flavor. **Origin:** Orah mandarin hybrid × Shani mandarin hybrid, crossed 1995, selected 2006. Agricultural Research Organization, Volcani Center, Bet Dagan, Israel, by N. Carmi, H. Neuman-Leshem, A. Frydman-Shani, A. Vardi, A. Elhanati, Y. Yaniv, Y. Kanonich, L. Fanberstein, and Y. Eyali. Israeli PBR 3070; 20 June 2011. USPP 33,872; 18 Jan. 2022. **Fruit:** oblate; height 45-54 mm, diameter 65-80 mm, 130-155 g; radial grooves at stalk end absent; navel opening sometimes present; rind dark orange (RHS 28B), medium rough, thin, oiliness weak, easy peeling; core open; albedo pale orange; segments 11-12, segment walls strong; flesh dark orange (RHS 25B); juice content 46%, 15.8 Brix; TA 1.2%; TSS/TA ratio 13.16; seeds absent or very few, undeveloped; ripens mid-January to mid-March in Israel; keeps well. **Tree:** vigorous; density of canopy medium; main branches nearly upright; *Alternaria* resistant; parthenocarpic.

**Southern Frost ™.** See Tift C26.

**Star Cott 1 (Super Cott 1; Starcott 1).** Low-seeded mutation of Nadorcott mandarin hybrid, ripening 6-7 weeks earlier. **Origin:** Quailagro, Casablanca, Morocco, by M. Zemzami. Gamma irradiation–induced bud mutation of Nadorcott, obtained 2013; grafted in Kenitra, Morocco; tested in Beni Mellal, Morocco. Moroccan PBR applied for. USPP 33,563; 19 Oct. 2021. **Fruit:** oblate; height 63 mm, diameter 65 mm; rind smooth, reddish orange, thickness 2.95 mm, peels easily, with medium albedo strands present; segments 9-11, membranes thin; flesh strong reddish orange, soft; juice content >50%, 10-13 Brix, TA 1.2% to 0.75%; seeds 1 under heavy open field cross-pollination, polyembryonic; ripens 6-7 weeks before Nadorcott, December in Beni Mellal; similar to parent in tolerance to spring heat and winter frost. **Tree:** shape ellipsoid; growth habit upright; vegetation dense; branches
thornless; trunk bark smooth; leaves lanceolate, long, narrow; pollen viability low, 6.5% vs. 60% for parent.

**Star Cott 3 (Super Cott 3; Starcott 3).** Low-seeded mutation of Nadorcott mandarin hybrid, ripening 2 weeks later. **Origin:** Qualiaogro, Casablanca, Morocco, by M. Zenzami. Gamma irradiation-induced bud mutation of selection of AS-2 (introduced from Saudi Arabia; aka Fun 2; similar to US Furr) mandarin hybrid, obtained 2013; grafted in Kénitra, Morocco; tested in Beni Mellal, Morocco. Moroccan PBR applied for. USPP 33,655; 23 Nov. 2021. **Fruit:** height 65 mm, diameter 65-67 mm; rind smooth, slightly reddish orange (RHS 32C), thickness 3.12 mm, peels easily, albedo pinkish white; segments 9-11, membrane thin; flesh slightly reddish orange (RHS N25B); soft; juice content >50%, 10-13 °Brix, TA 1.3% to 0.75%; seeds 0.5 under heavy cross-pollination, polyembryonic; ripens 2 weeks after Nadorcott, late January to late February in Beni Mellal; similar to parent in tolerance to spring heat and winter frost. **Tree:** shape ellipsoid; growth habit compact; branches thornless; trunk bark smooth; leaves lanceolate, long, narrow; pollen viability low, 8% vs. 60% for parent; does not seem to be sensitive to Alternaria; adapted to very high-density planting (1666 trees/ha).

**Starcott 1.** See Star Cott 1.

**Starcott 3.** See Star Cott 3.

**Super Cott 1.** See Star Cott 1.

**Super Cott 3.** See Star Cott 3.

**Sweet Cott 2.** Virtually seedless, late-ripening mandarin hybrid, suited for high density planting. **Origin:** Qualiaogro, Casablanca, Morocco, by M. Zenzami. Gamma irradiation-induced bud mutation of selection of AS-2 (introduced from Saudi Arabia; aka Fun 2; similar to US Furr) mandarin hybrid, obtained 2013; grafted in Kénitra, Morocco; tested in Beni Mellal, Morocco. Moroccan PBR applied for. USPP 33,700; 30 Nov. 2021. **Fruit:** spherical to slightly ovoid; height 70 mm, diameter 71.5 mm (vs. 95 mm for parent); rind strong reddish orange (RHS N30B), slightly rough, thickness 2.2 mm; segments 9-11, membrane thin; fruit axis hollow; flesh reddish orange (RHS 31A); juice content >50%, 11-15 °Brix, TA 1.2 to 0.85%; seeds 0.3 under heavy cross-pollination (vs. 19 for parent), polyembryonic; ripens last week March to 3rd week April in Beni Mellal; less susceptible than parent to damage by Mediterranean fruit fly (Ceratitis capitata); intended primarily for fresh fruit use, but may also serve for juice extraction. **Tree:** vigor low; growth habit upright; compared to parent, exhibits less fruit drop and alternate bearing; pollen viability low, 7.2% vs. 60% for parent; suited for high-density planting, 1666 trees/ha; yield lower than Sweet Cott 2.

**Sweet Cott 3.** Low-seeded, late-ripening mandarin hybrid. **Origin:** Qualiaogro, Casablanca, Morocco, by M. Zenzami. Gamma irradiation-induced bud mutation of a selection of AS-2 (introduced from Saudi Arabia; aka Fun 2; similar to US Furr) mandarin hybrid, obtained 2013; grafted in Kénitra, Morocco; tested in Beni Mellal, Morocco. Moroccan PBR applied for. USPP 33,656; 23 Nov. 2021. **Fruit:** spherical to slightly ovoid; height 70 mm, diameter 68-80 mm (vs. 95 mm for parent); rind strong reddish orange (RHS N30B), smooth but with a slightly rough look due to conspicuous oilglands, thickness 2.2 mm; segments 11-13, membrane thin; fruit axis hollow; flesh reddish orange (RHS N25B); juic content >50%, 11-16 °Brix, TA 1.2 to 0.75%; seeds 2 under heavy cross-pollination (vs. 19 for parent), polyembryonic; ripens mid-March to mid-April in Beni Mellal; less susceptible than parent to damage by Mediterranean fruit fly; intended primarily for fresh fruit use, but may also serve for juice extraction. **Tree:** vigor moderate; growth habit upright; compared to parent, exhibits less fruit drop and alternate bearing; pollen viability low, 12% vs. 60% for parent; yield higher than Sweet Cott 2.

**Sweet Martin.** Washington navel orange sport ripening 2 weeks earlier. **Origin:** J.K. Martin, Sanger, CA. Old Line Washington navel orange limb sport, disc. Sanger 1980s. USPP 8,238; 25 May 1993. **Fruit:** globose to depressed globose; diameter 60-76 mm; rind orange, smooth to slightly dimpled; segments 10-12 (vs. 9-10 for parent); flesh orange; firm; flavor mild, sweet, and slightly tart, 11.0 °Brix, TA 1.3%; juice content 43.7%; seedless; ripens early, 7 weeks before parent, mid-late October; stores well on tree into early May, with no tendency to regreen. **Tree:** typical size for navel orange; vigorous; bushy with well-rounded top.

**Tami.** Early-season, easy peeling, seedless or low-seeded mandarin hybrid. **Origin:** Agricultural Research Organization, Volcani Center, Bet Dagan, Israel, by A. Vardi, P. Spiegel-Roy, A. Frydman-Shani, A. Elchanati, and H. Neumann. Temple tangor × Michal mandarin hybrid, crossed 1980. Israeli PBR 2070; 27 July 2000. USPP 13,709; 1 Apr. 2003. **Fruit:** oblate; midsize, height 51 mm, diameter 59 mm, 95 g; rind yellow-orange (RHS 23B), smooth, thin, thickness 3 mm, easy to peel, oilglands conspicuous; segments 9-11; flesh yellow-orange (RHS 23B); flavorful; pleasant; 13.5 °Brix, TA 1.1%, TSS/TA ratio 9.0 on 29 Oct.; generally seedless, may contain a few polyembryonic seeds when cross-pollinated; ripens October-November in Bet Dagan. **Tree:** small to midsize; canopy less dense than parents.

**Tarocco Rosso.** Highly colored Tarocco blood orange mutation. **Origin:** Istituto Sperimentale per l’Agrumicoltura (now CREA-ACM), Acireale, Italy. Tarocco mutation, disc. Lentini, Sicily; sanitized 1987. **Fruit:** spheroid to slightly ovoid with concave base, neck present; diameter 83 mm, 190-251 g; rind red-blushed when mature in Sicily, orange-yellow with minor red blush in Sunraysia, Victoria, Australia; rind finely pebbled, pealability medium to good; flesh intensely red when fully mature or overmature in March in Sicily, internal pigmentation less pronounced and more erratic in Australia, intensity varying with weather and location; juice content 48%, 9.5 °Brix, TA 0.85%, TSS/TA ratio 11.1 in Sunraysia; seeds <1, nearly seedless; ripens end December through February in Sicily, mid-July to mid-August in Sunraysia; does not store well on tree and quickly deteriorates when it reaches full maturity in Australia. **Tree:** resembles standard Tarocco; vigor medium; upright; yield medium, constant; susceptible to winds, mal secco (Phoma tracheiphila), and Citrus psorosis ophiolivus.

**Th01-Queen.** See Queen.

**Tift C26 (Southern Frost™)**. Cold tolerant navel orange with low seed count and good flavor for backyard gardening. **Origin:** University of Georgia, Tifton, by W.W. Hanna and K. Giddens. In 2009 K. Giddens informed W.W. Hanna of 2 orange trees, ~25 years old, that appear to have established as seedlings in a private backyard; these trees, tested as Tift C25 and Tift C26, were increased by bud-ding and grafting beginning in 2009. Tift C25 was killed by the 2009/2010 winter; Tift C26 showed no cold damage and was tested at two locations from 2017-2019; introd. 2020. **Fruit:** diameter 3.13-4.14 cm, 400-500 g; juice content per fruit 150-200 ml, 9-11 °Brix; seeds usually 1 or none; ripens November thru January. **Tree:** depending on rootstock, 5-year-old tree height ranged from 1.90 to 2.50 m, and canopy width ranged from 2.0 to 3.0 m; cold hardy USDA zone 8b.

**Tsukonooki (津之香; Tangor Norin No. 3).** Late-season, nearly seedless mandarin hybrid. **Origin:** Fruit Tree Research Station, Ministry of Agriculture, Forestry and Fisheries, Tsukuba, Ibaraki Prefecture, Japan, by N. Okudai, I. Oiyama, R. Matsumoto, T. Takahara, D. Ishiuchi, K. Asada, and M. Yamamoto. Kiyomi tangor × Okitsu satsuma, crossed 1972; tested as Kuchinosuto No. 12; registered as
Tangor Norin No. 3. USPP 8,559; 25 Jan. 1994. **Fruit**: oblate; midsize, height 46 mm, diameter 61 mm, 160 g; rind orange to yellowish orange, smooth, thin, 2.8 mm, can be peeled although moderately adherent; does not puff; segment membrane thin; flesh orange, tender, moderately juicy, sweet, 13-15 °Brix; acidity moderate; flavor rich; aroma orangelike; nearly seedless, polyembryonic; ripens late, late March to mid-April; storability on tree moderate, storability post-harvest good. **Tree**: vigor medium; spreading, drooping, foliage dense, branches midsize, thornless; leaves smaller than parents; productive, constant; resistant to cold and citrus scab, moderately resistant to citrus canker, low incidence of stem pitting due to CTV.

UF RedLime. Finger lime that develops deep red pigmentation in Florida. **Origin**: University of Florida, Lake Alfred, by M. Dutt. Hybrid between two selections of red finger lime (**Citrus australasica** var. *sanguinea*), crossed 2014; selected 2018. USPP 34,188; 3 May 2022. **Fruit**: cylinndrical with a blunt protuberance on both ends, length 106.65 mm, width 25.9 mm, 25.8 g; rind dark red (RHS 180B), smooth, thickness 0.97 mm; locules 3-5; juice vesicles ovoid length 106.65 mm, width 25.9 mm, 25.8 g; rind dark red (RHS 28A); flavor sweet-tart, keeps acidity, 11.45 °Brix, TA 1.05%, TSS/TA ratio 10.9; seeds <2, flat and misshapen; ripens 10 Nov. to 10-15 Jan. in Florida; stores minimum 21 d at 2 °C. **Tree**: vigor good; growth habit narrow; bears fruit inside or on heavy limbs that weep down under heavy crop set; appears to tolerate HLB much better than most mandarins.

WG3 (Roe™). Early to midseason, low-seeded, easy peeling mandarin hybrid. **Origin**: GJH LLC, Winter Haven, FL, by B. Roe. Hybrid of two unnamed proprietary seedlings, crossed 2001, selected 2006. USPP 24,465; 20 May 2014. **Fruit**: oblate; height 50 mm, diameter 65-70 mm, 60-155 g; segments 8-12; rind orange-red (RHS 30B), mostly smooth, thin, 2 mm, easily peeled, peels very dry with little albedo or mess; flesh orange (RHS 28A); flavor sweet-tart, keeps acidity, 11.45 °Brix, TA 1.05%, TSS/TA ratio 10.9; seeds <2, flat and misshapen; ripens 10 Nov. to 10-15 Jan. in Florida; stores minimum 21 d at 2 °C. **Tree**: vigor good; growth habit narrow; bears fruit inside or on heavy limbs that weep down under heavy crop set; appears to tolerate HLB much better than most mandarins.

Valley Gold (Arcit 1614). Late-season, seedless or low-seeded mandarin hybrid. **Origin**: Agricultural Research Council—Tropical and Subtropical Crops, Mbombela, Mpumalanga Province, South Africa, by J.E. Miller, J.G.J. Maritz, and I.J. Froneman. Ellendale tangor × Robin mandarin hybrid, crossed 1980; seeds extracted and irradiated 1981; selected 1992; tested as X83-2505/5 in Addo, Eastern Cape, South Africa. **Fruit**: oblate, length 47.1 mm, diameter 60 mm, 131.4 g; proximal part slightly rounded; rind dark orange (RHS 28A), slightly pebbled, thickness 2 mm, easy to peel; segments 8-10; flesh dark orange (RHS 28A); texture coarse, rag tough, juicy; juice content 58.1%, 11.2-14.4 °Brix, TA 0.98-1.18%, TSS/TA ratio 11.1-12.2; seedless in solid blocks, seed count <3 in mixed blocks; season mid-end July in South Africa; ships and stores well. **Tree**: vigor and density medium; moderately spreading; small thorns, although fruit-bearing branches tend to become thornless.

**Vered.** Large, low-seeded midseason mandarin hybrid. **Origin**: Agricultural Research Organization, Volcani Center, Bet Dagan, Israel, by A. Vardi, P. Spiegel-Roy, A. Friedman-Shani, A. Elchanati, and H. Neumann. Gamma irradiation –× Michal mandarin, obtained 1987-1988; tested as 1/22/20. USPP 13,627; 4 Mar. 2003. **Fruit**: oblate; midsize, height 58 mm, diameter 65 mm, 120 g; rind orange (RHS 25A), thin, easy to peel; albedo white; segments 11-13; flesh orange (RHS 25A), juicy, 13.2 °Brix, TA 1.1%, TSS/TA ratio 12 on 16 Dec.; seedless (vs. 9-25 for Nova); ripens mid-November to December in Israel. **Tree**: similar to Nova, moderately vigorous; upright; canopy moderately dense; thorns few; bearing regular and high; pollen fertility very low, 2% of pollen grains stained by acetocarmine; may develop alternate bearing.

**WG17 (Autumn Honey™).** Large-fruited, easy peeling mandarin hybrid with a meaty, crunchly texture. **Origin**: GJH LLC, Winter Haven, FL, by B. Roe. Unknown seed parent × Murcott (syn. Honey Murcott) tangor, crossed 2000, selected 2006. USPP 24,464; 20 May 2014. **Fruit**: not as round as an orange, but not too oblate; large, height 62 mm, diameter 75 mm, 180-280 g, firm; rind orange (RHS 28B), tight, very thin, 1.5 mm, very smooth, very easy peeling; segments 11-12; flesh orange (RHS 28B); texture crunchy like pummelo; flavor tart, sweet, 11.3 °Brix, TA 0.44%, TSS/TA ratio 25.7; seeds <2, aborted; ripens 10 Oct. to Dec. 1 in Florida; takes ethylene gas very well; stores minimum 60 d at 2 °C. **Tree**: vigor good with heavy spring flush; somewhat spreading; canopy density average; crops heavily.

**Wiffen Summer Navel.** Late-season navel orange with good fruit quality. **Origin**: Yandolly Park Ltd., Renmark, South Australia, by A. Weigall. Parentage unknown, disc. as a young tree in a Valencia orange grove in Nangiloc, Victoria, Australia 1987. USPP 11,246; 29 Feb. 2000. **Fruit**: globose to ovoid; length 80 mm, diameter 74 mm, 251-292 g; navel small, open, diameter 9 mm; rind orange, grained, adherent to pulp, thickness 5.7 mm at base and median, 7.9 mm at apex; flesh orange (RHS 25A), fine, tender; flavor good, with sugar and acid well balanced, 13.3 °Brix, TA 0.63%; juice content 60%; aroma medium; seedless; ripens November-February in Sunraysia, later and with better fruit quality than Lane Late; ripens February to June in Riverside, CA. **Tree**: vigor medium; growth habit spreading to intermediate; thornless; susceptibility to insects and diseases average.

Yanov. Early-season seedless mandarin hybrid. **Origin**: Agricultural Research Organization, Volcani Center, Bet Dagan, Israel, by A. Vardi, P. Spiegel-Roy, A. Friedman-Shani, A. Elchanati, and H. Neumann. Gamma irradiation-induced bud mutation of Nova mandarin hybrid, obtained 1987-1988; tested as 1/22/20. USPP 13,627; 4 Mar. 2003. **Fruit**: oblate; midsize, height 58 mm, diameter 65 mm, 120 g; rind orange (RHS 25A), thin, easy to peel; albedo white; segments 11-13; flesh orange (RHS 25A), juicy, 13.2 °Brix, TA 1.1%, TSS/TA ratio 12 on 16 Dec.; seedless (vs. 9-25 for Nova); ripens mid-November to December in Israel. **Tree**: similar to Nova, moderately vigorous; upright; canopy moderately dense; thorns few; bearing regular and high; pollen fertility very low, 2% of pollen grains stained by acetocarmine; may develop alternate bearing.

**CITRUS ROOTSTOCKS**


Jude Grosser, Citrus Research and Education Center, University of Florida, Lake Alfred, FL

David Karp, Dept. of Botany and Plant Sciences, University of California, Riverside, CA

fruit slightly rounded, height 49 mm, diameter 55 mm, 69 g; rind dark orange, rough, with no pubescence, thickness 4.36 mm, ease of peeling high, aroma citrus; flesh medium yellow orange; seeds 21; ripens January-February in Valencia; holds well on tree, stores well; used for seeds only. **Rootstock performance:** vigor low; growth habit weeping; imparts high fruit quality to scion; fruit hangs for a long time on tree; resistant to citrus tristeza virus and Phytophthora, tolerant to cold; not tolerant to heat or drought.

**US-1279.** Standard size rootstock for sweet orange and other citrus scions that appears to provide some improved tolerance to Huanglongbing (HLB) at Florida flatswoods sites. **Origin:** USDA-ARS, Ft. Pierce, FL, by K.D. Bowman. Changsha mandarin × Gotha Road trifoliate orange, crossed 1995 at A.H. Whitmore Foundation Farm, Groveland, FL; tested as BS95-V3-11; released 2014. **Plant:** upright; growth rate medium; leaves trifoliate; does not produce true-to-type seedlings, so uniform seed propagation is impossible; propagation is recommended by stem cuttings for small quantities, or tissue culture for large quantities. **Rootstock performance:** provides superior fruit productivity with sweet orange as compared with trees on Swingle rootstock grown in the Florida flatswoods, and infected with Candidatus Liberibacter asiaticus, the causal agent of HLB; fruit size and TSS/acid ratio was significantly higher for Hamlin orange on US-1279 than on Swingle; trees on US-1279 appear to be more tolerant to HLB than Swingle in the East Coast Florida flatswoods, but did not appear to be superior to trees on Swingle or Carrizo rootstocks at a Florida ridge site with HLB.

**US-1281.** Standard size rootstock for sweet orange and other citrus scions that appears to provide some improved tolerance to Huanglongbing (HLB) at Florida flatswoods sites. **Origin:** USDA-ARS, Ft. Pierce, FL, by K.D. Bowman. Cleopatra mandarin × Gotha Road trifoliate orange, crossed 1995 at A.H. Whitmore Foundation Farm, Groveland, FL; tested as BS95-V5-10; released 2014. **Plant:** upright; growth rate medium; leaves trifoliate; does not produce true-to-type seedlings, so uniform seed propagation is impossible; propagation is recommended by stem cuttings for small quantities, or tissue culture for large quantities. **Rootstock performance:** provides superior fruit productivity with sweet orange as compared with trees on Sweet rootstock grown in the Florida flatswoods, and infected with Candidatus Liberibacter asiaticus, the causal agent of HLB; fruit size and TSS/acid ratio were significantly higher for Hamlin orange on US-1281 than on Swingle; trees on US-1281 appear to be more tolerant to HLB than Swingle in the East Coast Florida flatswoods.

**US-1282.** Standard size rootstock for sweet orange and other citrus scions that appears to provide some improved tolerance to Huanglongbing (HLB) at Florida flatswoods sites. **Origin:** USDA-ARS, Ft. Pierce, FL, by K.D. Bowman. Cleopatra mandarin × Gotha Road trifoliate orange, crossed 1995 at A.H. Whitmore Foundation Farm, Groveland, FL; tested as BS95-V5-78; released 2014. **Plant:** upright; growth rate medium; leaves trifoliate; does not produce true-to-type seedlings, so economical seed propagation is impossible; propagation is recommended by stem cuttings for small quantities, or tissue culture for large quantities. **Rootstock performance:** provides superior fruit productivity with sweet orange as compared with trees on Swingle rootstock grown in the Florida flatswoods, and infected with Candidatus Liberibacter asiaticus, the causal agent of HLB; fruit size and TSS/acid ratio were significantly higher for Hamlin orange on US-1282 than on Swingle; trees on US-1282 appear to be more tolerant to HLB than Swingle in the East Coast Florida flatswoods.

**US-1283.** Standard size rootstock for sweet orange that appears to provide some improved tolerance to Huanglongbing (HLB) at Florida flatswoods sites. **Origin:** USDA-ARS, Ft. Pierce, FL, by K.D. Bowman. Ninkat mandarin × Gotha Road trifoliate orange, crossed 1995 at A.H. Whitmore Foundation Farm, Groveland, FL; tested as BS95-V6-14; released 2014. **Plant:** upright; growth rate medium; leaves trifoliate; produces numerous seeds and a high percentage of true-to-type seedlings, and is thus suited for nursery seed propagation. **Rootstock performance:** provides superior fruit productivity with sweet orange as compared with trees on Swingle rootstock grown in the Florida flatswoods, and infected with Candidatus Liberibacter asiaticus, the causal agent of HLB; fruit size was significantly larger for Hamlin orange on US-1283 than on Swingle, while TSS/acid ratio was similar; trees on US-1283 appear to be more tolerant to HLB than Swingle in the East Coast Florida flatswoods, but did not appear to be clearly superior to trees on Swingle or Carrizo at a Florida ridge site with HLB.

**US-1284.** Standard size rootstock for sweet orange and other citrus scions that appears to provide some improved tolerance to Huanglongbing (HLB) at Florida flatswoods sites. **Origin:** USDA-ARS, Ft. Pierce, FL, by K.D. Bowman. Ninkat mandarin × Gotha Road trifoliate orange, crossed 1995 at A.H. Whitmore Foundation Farm, Groveland, FL; tested as BS95-V6-24; released 2014. **Plant:** upright; growth rate medium; leaves trifoliate; produces numerous seeds and a high percentage of true-to-type seedlings, and is thus suited for nursery seed propagation. **Rootstock performance:** provides superior fruit productivity with sweet orange as compared with trees on Swingle rootstock grown in the Florida flatswoods, and infected with Candidatus Liberibacter asiaticus, the causal agent of HLB. Fruit size was significantly larger for Hamlin orange on US-1284 than on Swingle, while TSS/acid ratio was similar; trees on US-1284 appear to be more tolerant to HLB than Swingle in the East Coast Florida flatswoods, but did not appear to be clearly superior to trees on Swingle or Carrizo at a Florida ridge site with HLB.

**US-1516.** Standard size rootstock for sweet orange and other citrus scions that appears to provide some improved tolerance to Huanglongbing (HLB) at Florida ridge sites. **Origin:** USDA-ARS, Ft. Pierce, FL, by K.D. Bowman, H. Barrett, and T.G. McCollum. African pummelo × Flying Dragon trifoliate orange, crossed 1975 at USDA Date and Citrus Station, Indio, CA, by H. Barrett; hybrid seed from the cross was planted at A.H. Whitmore Foundation Farm, Groveland, FL 1976; released 2015. **Plant:** upright; medium growth rate; leaves trifoliate; produces numerous seeds and a high percentage of true-to-type seedlings, and is thus suited for nursery seed propagation. **Rootstock performance:** provides superior tree health, superior fruit productivity, and good fruit quality with sweet orange trees grown on the Florida ridge and infected with Candidatus Liberibacter asiaticus, the causal agent of HLB; in a trial with Valencia orange trees severely affected by HLB, trees on US-1516 rootstock had the best survival, and a good tree health rating, compared to trees on common rootstocks; Valencia fruit quality for trees on US-1516 was good, with large fruit size (212 g), intermediate TSS (9.41%), high TSS/acid ratio (12.5), and high juice color number (CN=38.6) at harvest time in April.

**CRANBERRY**

Nicholi Vorsa, Dept. of Plant Biology and Pathology, Rutgers University, New Brunswick, NJ

CJN99-52-15 (Welker™). Early-season, suited for processing, with high and precocious production. **Origin:** Rutgers University, NJAES, Chatsworth, NJ, by N. Vorsa and J. Johnson-Cicalese. No. 35 × NJ998-34; crossed 1999; selected 2007; introd. 2014. USPP 27,769; 28 Feb. 2017. Canadian PBR 6509; 23 Nov. 2021. **Fruit:** moderate to large, 2.0-2.4 g in NJ, WI; skin shiny with waxy bloom around calyx; berry firm; round to widely ovate, with rounded to slightly oblique stem end, and variable calyx end (rounded to slightly flat to protruding); anthocyanins moderate to high, generally less than Ben Lear and greater than Stevens in September; TA ~2.0, lower than most cultivars. **Plant:** stolons and uprights medium

HortScience Vol. 57(9) September 2022
Coarse; uprights somewhat short; plant vigor above average, coming into fruit production early; flowers early midseason, slightly after NJ9S8-23 (Crimson Queen®); moderately susceptible to fruit rot (disease complex of >15 pathogens) in New Jersey, where disease pressure is severe. Especially suited to a moderate oceanic climate.

CNJ99-9-25 (Vasanna™). Midseason processing cranberry with high yield potential. Origin: Rutgers University, NJAES, Chatsworth, NJ, by N. Vorsa and J. Johnson-Cicalles. NJ9S8-23 (Crimson Queen®) × No. 35; crossed 1999; selected 2007; introd. 2019. USPP 32,896; 16 Mar. 2021. Canadian PBR applied for. Fruit: large, 2.1–2.4 g in NJ; shape variable, oval to slightly pyriform; skin shiny with slight waxy bloom around calyx; stem end mildly elongated, calyx end slightly flattened; fruit very firm; anthocyanins moderate, similar but slightly less homogeneous than in Haines, and 50% greater than Stevens in September. Plant: stolons and uprights moderately coarse; plant vigor above average in mineral soils, stolon growth vigorous in peat soils; flowers moderately early, before Stevens by a few days; typically has similar fruit rot (disease complex of >15 pathogens) to Haines. Suited to most areas where cranberry is cultivated, but particularly adapted to peat organic soils and moderate oceanic climate.

CNJ99-9-96 (Haines™). Widely adapted, suitable for processed or fresh markets, with consistently high yield potential. Origin: Rutgers University, NJAES, Chatsworth, NJ, by N. Vorsa and J. Johnson-Cicalles. NJ9S8-23 (Crimson Queen®) × No. 35; crossed 1999; selected 2007; introd. 2014. USPP 27,657; 14 Feb. 2017; Canadian PBR 5345; 30 Sept. 2016. Fruit: medium to large; globose; black; medium to firm; ripens midseason. Plant: tall; diameter medium; number of basal shoots medium; bud burst midseason; flowers early; yield high; well suited to machine harvesting; winter hardy; no noticeable disease or pest issues.

Lewis. Black currant with mild flavor on tall bush. Origin: Hillcrest Nursery (now Berry Hill Nursery), Greensboro, VT, by L.R. Hill. Selected from O.P. seed received from Russia early 1980s; selected early 1990s. Fruit: dull black with faint lenticels; ripens mid-July. Plant: height up to 2 m in USDA Zone 3; flowers late May; highly winter tolerant; no noticeable pest or disease issues.

Nancy May. Black currant with mild flavor on compact bush. Origin: Hillcrest Nursery (now Berry Hill Nursery), Greensboro, VT, by L.R. Hill. Selected from O.P. seed received from Russia early 1980s; selected early 1990s. Fruit: large, diameter 1.27 cm; dull purple-black with slight bloom; flavor mild and sweet; ripens early July in Vermont. Plant: compact, height ~1 m in USDA Zone 3; flowers late May; highly winter tolerant; some twig dieback, otherwise no noticeable pest or disease issues.


Tiben. Black currant with midsize, erect plants suitable for mechanical harvesting, moderately resistant to White Pine Blister Rust, highly resistant to powdery mildew. Origin: Fruit Breeding Department, Research Institute of Horticulture, Skirniewice, Poland, by E. Zurawicz and S. Pluta. Titania × Ben Nevis, crossed 1987; selected 1991 as PC-78. Canadian PBR 2689; 30 Jan. 2007; revoked 30 Jan 2014. Fruit: midsize, 1.42 g. Plant: tall; height 142 cm, diameter 118 cm; resistant to powdery mildew and leaf spots (Drepanopeziza ribis); moderately resistant to White Pine Blister Rust.

Tihope. Black currant selected for plant architecture, fruit productivity, size and quality, disease resistance, and suitability for mechanical harvesting.
ELDERBERRY

Michele R. Warmund, Division of Plant Sciences, University of Missouri, Columbia, MO

**Allelo.** Productive European elder (*Sambucus nigra*). Origin: Denmark; released before Samyl and Samdal. Fruit: drupes dark purple; anthocyanin content lower than Samyl, Sambu, and Samdal. Plant: height 2.4-3.0 m; crops regularly.

**Aurea (Golden Elder).** Ornamental European elder. Origin: unknown. Fruit: drupes small; dark purple; edible after processing. Plant: upright; height 3.7 m, width 3 m; foliage yellow-green; flowers white.

**Black Beauty™.** See Gerda.

**Black Lace®.** See Eva.

**Black Tower™.** See Eiffel 1.

**Eiffel 1 (Black Tower™).** Ornamental European elder. Origin: West Malling, Kent, Great Britain, by K.R. Tobutt. USPP 23,633; 28 May 2013. Fruit: umbel diameter ~20 cm; drupes dark purple-black, diameter ~8 mm, edible after processing, but not noteworthy; harvest 15 Aug. to 30 Sept. Plant: growth habit upright, narrow; height 1.8-2.4 m, width 0.9-1.2 m; foliage purple, leaflets typically 5; flowers pink.

**Emerald Lace™.** See Laciniata.


**Goldbeere.** European elder. Origin: Germany. Fruit: drupes golden green; yield/plant 18-23 kg. Plant: foliage pale green; flowers white; height 2.4 m.

**Golden Elder.** See Aurea.

**Golden Tower™.** See Jdeboer001.

**Haschberg.** European elder, once widely popular but replaced by new cultivars. Origin: presumably a wild selection from Klosterneuburg, Austria. Fruit: drupes dark purple, typical of *S. nigra* fruit. Plant: upright, height 3 m; annual flowering and fruiting heavy; flowers primarily used as flavorant in Great Britain.

**Jdeboer001 (Golden Tower™).** Ornamental European elder. Origin: Feanwelden, the Netherlands, by J. de Boer. Chance seedling. USPP 28,957; 13 Feb. 2018. Fruit: dark purple, typical of *S. nigra*. Plant: height 2.4-3 m, width 0.6-1.2 m; foliage deeply dissected, yellow-green; leaflets usually 8; flowers white.

**Korsor.** European elder. Origin: Denmark, released before Samyl and Samdal. Fruit: drupes dark purple, anthocyanin content lower than Samyl, Sambu, and Samdal. Plant: similar to Haschberg and Allelo; height 2.4-3.0 m.

**Instant Karma®.** See Sanivalk.

**Laced Up®.** See SNR1292.

**Laciniata (Emerald Lace™).** European elder. Origin: unknown. Fruit: dark purple, edible but not noteworthy. Plant: typical *S. nigra* form, height and width 2.4-3.0 m; leaflets finely dissected, green; flowers white.

**Linearis (Thread-leaved).** Ornamental European elder. Origin: unknown. Fruit: dark purple, typical of *S. nigra*. Plant: height 1.5-1.8 m, width 1.2 m; leaflets very narrow, green.

**Madonna.** Ornamental European elder. Origin: unknown. Fruit: dark purple, typical of *S. nigra*. Plant: height and width 1.8-3.0 m; leaflets green with gold variegation; flowers white.

**Marginata.** Ornamental European elder. Origin: unknown. Fruit: dark purple typical of *S. nigra*. Plant: vigorous; height and width 3.0-4.6 m; leaflets green, with creamy white variegation along the margins; flowers white.

**Pulverulent.** Ornamental European elder. Origin: unknown. Fruit: yield low, especially without cross-pollination; edible but not noteworthy. Plant: vigor medium; height 3.7 m; leaflets green with white mottling; flowers white.

**Samdal.** European elder with very good juice flavor for processing. Origin: Institute of Horticulture, Royal Veterinary and Agricultural University, Pometet, Denmark, original cross by S. Dalbro; selected by A. Thuesen; first published cultivar description by K. Kaack, 1989. Fruit: yield higher than Samyl and Sampo; umbel midsize, 111 g; drupes midsize; anthocyanin content high; titratable acidity low. Plant: vigor medium, height 2.4 m.

**Sampo.** European elder with exceptional juice flavor. Origin: Institute of Horticulture, Royal Veterinary and Agricultural University, Pometet, Denmark, original cross by S. Dalbro; selected by A. Thuesen; first published cultivar description by K. Kaack, 1989. Fruit: yield lower than Samdal; umbel midsize, 110 g; drupes small; anthocyanin content medium, titratable acidity medium. Plant: vigor medium, height 3 m, with many shoots.

**Samyl.** European elder with excellent juice flavor. Origin: Institute of Horticulture, Royal Veterinary and Agricultural University, Pometet, Denmark, original cross by S. Dalbro; selected by A. Thuesen;
first published cultivar description by K. Kaack, 1989. **Fruit:** yield lower than Samdal; umbel midsize, 100 g; drupes small; anthocyanin content very high; titratable acidity high. **Plant:** vigor medium, height 2.4 m, with many shoots.

**Sanivalk (Instant Karma)**. Compact ornamental European elder. **Origin:** A. Brand and Sons, Hatfield, Great Britain, by P. Brand. Mutation of an unnamed proprietary *S. nigra* seedling, CPVO PBR 52032; 28 Mar. 2019. USPP 28,314; 22 Aug. 2017. **Fruit:** umbel diameter 16 cm; drupes dark purple, edible, but not noteworthy. **Plant:** typical *S. nigra* form, height and width 1.8-2.4 m; leaflets dark green, with cream-colored margins; flowers white.

**SNR1292 (Laced Up)**. Compact ornamental European elder. **Origin:** Kent, Great Britain, by K.R. Tobutt and F.M. Wilson. Eiffel 1 × unnamed proprietary *S. nigra* seedling, crossed 2005. CPVO PBR applied for. USPP 29,501; 10 Aug. 2017. **Fruit:** umbel diameter 12 cm; drupes dark purple, edible but not noteworthy. **Plant:** growth habit columnar; height 1.8-3 m, slightly dwarfed compared to Eiffel 1; foliage dark purple, dissected; flowers white, with pink tinge.

**Thread-leaved.** See Linearis.

**Thundercloud.** Ornamental European elder. **Origin:** unknown. **Fruit:** dark purple, typical of *S. nigra*. **Plant:** height and width 1.8-2.4 m; foliage purple; flowers pink.

**Variegata.** Ornamental European elder. **Origin:** unknown. **Fruit:** purple-black, but not noteworthy. **Plant:** height 3 m; leaflets green, with creamy white variegation; flowers white.

**GOJI**

David Karp, Dept. of Botany and Plant Sciences, University of California, Riverside, CA

**FPW03 (Princess Tao)**. Compact *Lycium barbarum* plant with large fruit, for home garden use. **Origin:** FPW Développement, La Menitre, Maine-et-Loire, France, by O. Pantin. O.P. from unknown *Lycium barbarum* parent, 2013. CPVO PBR 57595; 1 Mar. 2021. USPP 30,984; 29 Oct. 2019. **Fruit:** large, length 23 mm, diameter 13 mm, 0.8-1.5 g; elongated oval; near orange-red (RHS N34B); flesh soft; flavor semi-sweet, low in astringency; aroma faint, fresh/sweet; seeds 20-30, <1 mm in diameter, yellow-white (RHS 158A); ripens twice, spring and late summer in Camarillo, CA; storage life 2-3 weeks at 2 ºC. **Plant:** vigor moderate; height ~2 m, width 1-1.5 m; thorns needlelike, 5-40 mm; foliage dark green; flowers purple; propagated by fresh softwood cuttings in spring; resistant to powdery mildew (*Arthrocladiella*); tolerates low temperatures to -5 ºC, high temperatures to 35 ºC; suitable for home garden use.

**FPW07. Lycium barbarum** plant with fruit low in astringency, for commercial use. **Origin:** FPW Développement, La Menitre, Maine-et-Loire, France, by W. Wang, Angers, Maine-et-Loire. O.P. from unknown *Lycium barbarum* parent, 2013. CPVO PBR 57821; 6 Apr. 2021. USPP 31,125; 26 Nov. 2019. **Fruit:** large, length 16 mm, diameter 12 mm, 0.5-0.8 g; slightly irregular elongated oval; near orange-red (RHS N34B); flesh soft; flavor semi-sweet, low in astringency; aroma faint, fresh/sweet; seeds 15-20, <1 mm in diameter, yellow-white (RHS 158A); ripens twice, spring and late summer in Camarillo, CA; storage life 2-3 weeks at 2 ºC. **Plant:** vigor moderate; height ~2 m, width 1-1.5 m; thorns needlelike, 5-40 mm; foliage dark green, flowers purple; propagated by fresh softwood cuttings in spring; resistant to powdery mildew; tolerates low temperatures to -5 ºC, strongly resistant to heat and wind; suitable for commercial use.

**Princess Tao.** See FPW03.

**Red Zeppelin.** See Smnllbb.

**Smnllbb (Red Zeppelin).** High-yielding *Lycium barbarum* plant. **Origin:** T.D. Wood, Spring Lake, MI. Smndbl O.P., 2012; selected 2015. USPP 31,084; 19 Nov. 2019. **Fruit:** larger than Smndsls, length 17.5 mm, diameter 10 mm; attractive, orange-red (RHS N30A); texture smooth, slightly undulate. **Plant:** vigor moderate; height 95 cm, diameter 137 cm; deciduous shrub, growth habit upright and outwardly arching; foliage dense, bushy; leaves yellow-green; flowers purple; more productive than Smndsls; tolerant to rain, wind and temperatures from -32 ºC to 36 ºC; garden performance good.

**GRAPE**

Matthew Clark, Dept. of Horticultural Science, University of Minnesota, St. Paul, MN

**Ambulo Blanc.** Pierce’s Disease-resistant hybrid for white wine. **Origin:** University of California, Davis, by M.A. Walker, A.C. Tenscher, S. Riaz, and N. Romero. 07370-028 × Cabernet Sauvignon; pedigree 97% *V. vinifera*; source of PD resistance is a form of *V. arizonica* that appears to have some *V. candicans* parentage and is from Monterey, Mexico; tested as 09314-102; introd. 2019. USPP 32,949; 6 Apr. 2021. **Fruit:** berry small to medium, 1.0 g; spherical; skin green to yellow-green, adherent; flesh soft; juice green-yellow; seeds/berry 2; harvest 13 Aug. **Cluster:** long cylindrical, well filled to compact. **Vine:** resistance to Pierce’s Disease (*Xylella fastidiosa*) high.

**BN5-4.** Grayed-purple, early ripening, Pierce’s Disease-resistant hybrid wine grape. **Origin:** University of Florida, Apopka, by J. Mortensen. *Vitis aestivalis* × Renally Seedless; tested in Leesburg, FL, then Apopka; initially selected 1987. USPP 27,451; 13 Dec. 2016. **Fruit:** small, 1.4 g; round to slightly ovoid; skin grayed-purple (N186A), relatively thick, non-adherent; juice near red-purple (RHS 67A); 18.8-25 ´Brix, 0.8-1.5% TA; aroma neutral to slightly foxy; seeds/berry 3.6; harvest 2nd week of August. **Cluster:** conical with distinct shoulders. **Vine:** vigor high; 14.5 kg/vine; perfect flowered; ripening non-uniform; tolerant to Pierce’s Disease and fungal diseases common in Florida.

**Cabernet Volos.** Dark blue, disease-resistant wine grape. **Origin:** Università degli Studi di Udine and Istituto di Genomica Applicata, Udine, Friuli Venezia Giulia, Italy, by S.D. Castellarin, G. Cipriani, G. Di Gaspero, M. Morgante, E. Peterlunger, and R. Testolin. Cabernet Sauvignon × 20/3 (Bianca × SK77-4/5), crossed 2002; selected 2004. CPVO PBR 53449; 16 Sept. 2019. USPP 28,047; 23 May 2017. **Fruit:** globose; 1.44 g; skin dark blue (RHS 103B); flesh colorless, soft; seeds/berry 2-3; flavor herbaceous; harvest mid-late September. **Cluster:** cylindrical with middle-sized wing. **Vine:** vigor on Ramsey medium; hermaphrodite; resistant to downy mildew (*Plasmopara viticola*), tolerant to powdery mildew (*Erysiphe necator*); cold resistant to -24 ºC.

**Caminante Blanc.** Pierce’s Disease-resistant hybrid for white wine. **Origin:** University of California, Davis, by M.A. Walker, A.C. Tenscher, S. Riaz, and N. Romero. 07371-20 × Cabernet Sauvignon; pedigree 97% *V. vinifera*; source of PD resistance is a form of *V. arizonica* that appears to have some *V. candicans* parentage and is from Monterrey, Mexico; tested as 09314-102; introd. 2019. USPP 32,949; 6 Apr. 2021. **Fruit:** berry small to medium, 1.0 g; spherical; skin green to yellow-green, adherent; flesh soft; juice green-yellow; seeds/berry 2; harvest 13 Aug. **Cluster:** long cylindrical, well filled to compact. **Vine:** resistance to Pierce’s Disease (*Xylella fastidiosa*) high.

**High-yielding **
Camminare Noir. Pierce’s Disease–resistant hybrid for red wine. 
**Origin:** University of California, Davis, by M.A. Walker, A.C. Tensi cher, S. Riaz, and N. Romero. U0505-01 × Petite Sirah; pedigree ~94% **V. vinifera**; source of PD resistance is a form of **V. arizonica** that appears to have some **V. candicans** parentage and is from Monterey, Mexico. USPP 32,929; 30 Mar. 2021. **Fruit:** berry round; 1.3 g; dark purple-black with blue-gray bloom; juice pink-red, 26.3 °Brix, 3.51 pH; 6.0 g/l TA; harvest 11 Aug. **Cluster:** midsize; 254 g; conical, well filled. **Vine:** 10.9 kg/vine; perfect flowered; very highly resistant to Pierce’s Disease.

Chenibec. Golden hybrid grape suitable for sparkling and champagne-style wine. **Origin:** R. Jeneau, Pont-Rouge, Quebec, Canada. E.S. 2-3-17 × Chenin Blanc; tested in Saint-Ubalde, Quebec, Canada, crossed 1990; selected 1998. Canadian PBR 6001; 1 Aug. 2019. **USPP 27,872; 11 Apr. 2017. **Fruit:** large, 2.5 g; 21.92 °Brix, 7.7 g/l TA; seeds 2.5/berry; harvest 1st and 2nd weeks of October. **Cluster:** large; shouldered; density medium; conical to conical winged. **Vine:** vigor and productivity high; 1.5 kg/vine; perfect flowered; resistant to downy mildew, powdery mildew, and black rot (**Guisardia bidwellii**); cold hardy USDA Zone 3.

Crimson Pearl. Cold hardy, blue hybrid slipskin grape for red wine. **Origin:** Plocher Vines, Hugo, MN, by T.A. Plocher. MN 1094 × E.S. 4-7-26, crossed 1996; selected 2002. **USPP 30,263; 5 Mar. 2019. **Fruit:** berry round and slightly flattened; skin blue, slipskin; flesh greenish white to pale yellow, gelatinous; juice strong purplish red (RHS 67A), 22.0 °Brix, 8.0 g/l TA, pH 3.4; harvest mid- to late September. **Cluster:** 110 g; cylindrical with a small wing with curve on distal half. **Vine:** less vigorous than Marquette, with fewer lateral shoots, and higher tannin content; self-fertile; hardy to -32 °C or colder; highly resistant to downy and powdery mildew; resistance to black rot good; somewhat susceptible to phomopsis (**Phomopsis viticola**).

Dazzle. Complex hybrid for white wine. **Origin:** University of Arkansas, Fayetteville, by J.R. Clark and J.N. Moore. Gewurztraminer × Melody, crossed 1992; selected 1995; tested as Ark. 2574 at Clarksville, AR. **USPP applied for. **Fruit:** 1.9 g; skin pink; 19.9 °Brix, 3.27 pH, 7.0 g/l TA 1.9 g; flavor light, semi-fruity, reflective of Gewurztraminer; harvest ~15 Aug. **Cluster:** 162.3 g. **Vine:** 9.8 kg/vine; powdery mildew incidence very limited in 20+ years; no downy mildew, anthracnose (**Elsinoe ampelina**), or black rot observed.

EJG Three. Black grape for fruity and floral red or pink wine. **Origin:** E&J Gallo Winery, Modesto, CA, by P.S.M. Cousins. Controlled cross of two unspecified, unpatented parents, crossed 2013; selected 2015; evaluated at Ripperdan, CA. USPP 33,950; 15 Feb. 2020. **Fruit:** midsize, 1 g; skin purple-black/purple-gray, thickness medium; flesh colorless, soft, slightly juicy, slightly mealy; seeded; has rose petal flavors and aromas; harvest ~2 Oct. **Cluster:** medium-large, loose, 175 g. **Vine:** perfect flowered, fertile with spur pruning.

EJG Two. White wine grape with distinct sweet herbal and mint flavor. **Origin:** E&J Gallo Winery, Modesto, CA, by P.S.M. Cousins. Symphony × unspecified unpatented pollen parent, crossed 2013; first selected 2016; evaluated at Ripperdan, CA. USPP 33,963; 22 Feb. 2022. **Fruit:** medium-large, 2.5 g; skin green-yellow, thin; flesh colorless, soft, very juicy; seeded; herbals mint aroma; harvest ~1 Aug. **Cluster:** medium-large, 187 g; dense. **Vine:** fertile with spur pruning.

Errante Noir. Red wine hybrid grape resistant to Pierce’s Disease. **Origin:** University of California, Davis, by M.A. Walker, A.C. Tenscher, S. Riaz, and N. Romero. 07371-019 × Sylvaner; pedigree 97% **V. vinifera**; source of PD resistance is a form of **V. arizonica** that appears to have some **V. candicans** parentage and is from Monterey, Mexico. USPP 32,999; 27 Apr. 2021. **Fruit:** skin purple-black with gray bloom, adherent; flesh soft; 25.4 °Brix, 3.69 pH, 5.7 g/l TA; harvest 20 Aug. **Cluster:** large, 329 g; long conical, well-filled. **Vine:** yield 10.5 kg/vine; highly resistant to Pierce’s Disease.

Everest Seedless®. See NY98.0228.02.

FireStar. See Stargrape 1.

Fleurtau. White wine grape. **Origin:** Università degli Studi di Udine, Istituto di Genomica Applicata, Udine, Friuli Venezia Giulia, Italy, by S.D. Castellaria, G. Cipriani, G.D. Gaspero, M. Morgante, E. Peterlunger, and R. Raffaele. Tocai Friulano × 203, crossed 2002. **CPVO PBR 52167; 28 Mar. 2019. USPP 28,021; 16 May 2017. **Fruit:** berry small, 1.8 g; broad ellipsoid; skin golden-green with amber highlights; flesh soft, colorless; 22.6 °Brix, 4.6 g/l TA; seeds/berry 2-3; flavor neutral; harvest early, 25 Aug. **Cluster:** midsize, 170 g; density loose to medium; conical with 2 medium-sized wings. **Vine:** vigorous; growth habit erect; hermaphroditic; resistant to downy mildew, tolerant to powdery mildew; hardy to -23 °C.

Floriana. Muscadine red wine grape. **Origin:** Florida A&M University, Tallahassee, by Z. Ren, J. Lu, and V. Tsolova. Supreme × Pineapple, crossed 1999; selected 2006; tested as O28-22-5 or C16-6. USPP 31,654; 14 Apr. 2020. **Fruit:** berry large, 5.3 g; skin relatively thick, dark red (RHS N92A) with inconspicuous lenticels; flesh colorless; 15.8 °Brix; typical muscadine aromatic flavor; incidence of wet scar low; harvest early to mid-September; produces wines with deep red color, smooth mouthfeel, excellent stability, and good longevity. **Cluster:** 8-36 berries, dense. **Vine:** yield high, 26.7 kg/vine; self-fertile; resistant to Pierce’s Disease; incidence of fruit rot low; resistant to phylloxera and nematodes.

Florida Onyx. Very large, deep black-red muscadine table grape. **Origin:** Florida A&M University, Tallahassee, by Z. Ren, J. Lu, and V. Tsolova. Supreme × Black Beauty, crossed 1998; tested as O26-1-2. **USPP 31,407; 28 Jan. 2020. **Fruit:** berry very large, 16.2 g; skin black-red (RHS 82A-83A), edible; flesh firm, greenish yellow (RHS 151D); 15.2 °Brix, 3.57 pH, 3.8 g/l TA; seeds/berry 3.3; flavor pleasant, fruity, with typical muscadine aroma; harvest 20 Aug. to beginning of September; incidence of wet scar low; shelf life long. **Cluster:** dense, 4-15 berries. **Vine:** vigor moderate; pistillate; resistant to Pierce’s Disease; incidence of fruit ripening rot (ripe rot) and bitter rot low.

Franconia. Blue-black, complex hybrid red wine grape. **Origin:** Winehaven, Chisago City, MN, by Kevin Peterson and Kyle Peterson. St. Croix × Nokomis; tested as KP 76. USPP 31,040; 12 Nov. 2019. **Fruit:** berry medium-large, 2.3-5.4 g; round; firm; skin black (RHS 202A) with light waxy bluish (RHS 98D) bloom at maturity; flesh light pink (RHS 63C); 19.5-26.3 °Brix, 3.15-3.47 pH, 7.0 to 9.5 g/l TA; seeds/berry 2-4; produces attractive deep red wine with no herbaceous aroma or very slight **V. labrusca** aroma; harvest mid-September. **Cluster:** 181-363 g, tight, conical. **Vine:** vigorous; hermaphroditic; cold hardy to -40 °C; incidence of powdery mildew, downy mildew, and black rot low, limited to leaves.

Ga. 6-2-26 (Pauk®). Purple-skinned muscadine table grape. **Origin:** University of Georgia, Tifton, by P.J. Connor. Supreme × Tara, crossed 2006; selected 2009; named for Jacob Paulk. USPP 30,014; 25 Dec. 2018. **Fruit:** large, 15.3-15.5 g, diameter 30.2-30.5 mm; skin purple (RHS 187A-186A) at base to purple-red (RHS 58A) at stem; high percentage of dry stem scars; flesh soft, juicy, yellow-green; sweet, 14.2 °Brix; aroma fruity; seeds/berry 3; harvest 3rd week of August in Tifton; keeps in cold storage up to 2-4 weeks. **Cluster:** very loose,
8 berries. **Vine:** 26.4 kg/vine at Tifton, 48.7 kg/vine at Wray, GA; self-fertile; low incidence of berry rot.

**Ga. 8-1-338 (RubyCrisp).** Dark red muscadine table grape. **Origin:** University of Georgia, Tifton, by P.J. Connor. Supreme × Tara, crossed 2008; selected 2011. USPP 32,111; 25 Aug. 2020. **Fruit:** berry very large, 15 g; skin red-purple (RHS 59A) at stem end, crisp but tender; flesh firm, crisp; 16.1 °Brix; flavor excellent; harvest midseason, 2nd week of August. **Cluster:** 5-7 berries. **Vine:** vigorous; yield 25.2 kg/vine; hermaphrodite; suitable for U-pick or home garden.

**Gewurztraminer RJ.** Aromatic wine grape. **Origin:** R. Juneau, Pont-Rouge, Quebec, Canada. Gewurztraminer sport, selected 1991 in Portneuf, Quebec. Canadian PBR applied for. USPP 33,282; 27 July 2021. **Fruit:** berry 3.25 pH, 8.1 g/l TA; harvest 10 d before Kyoho. **Cluster:** medium-large, 183 g; cylindro-conical. **Vine:** compared to parent, more cold hardy and resistant to powdery mildew, downy mildew, black rot, and botrytis (Botrytis cinerea); USDA Zone 4a.

**Hanareum (한아름).** Black seedless table grape. **Origin:** Gwangondo Agricultural Research and Extension Services, Chuncheon, South Korea, by Y.-S. Park, N.Y. Um, Y.G. Chang, S.B. Bang, and J.H. Kim. Tetramploid Kyoho O.P., crossed 2002; tested as GWA2002-23. Hypotetraploid (2n=4x=175). South Korean PBR 7305; 4 July 2018. **Fruit:** berry round; 8.9-10.8 g; 19.3 °Brix, 4.5-5.5 g/l TA; harvest 10 d before Kyoho. **Cluster:** up to 3 clusters per cane, 457 g; conical. **Vine:** vigor high; up to 1,964 kg/vine; hermaphrodite; resistant to ripe rot (Colletotrichum spp.); susceptible to downy mildew; cold hardy to -20 °C.

**Hongju (Hongju Seedless; 홍주세대리스).** Grayed-purple seedless table grape. **Origin:** Rural Development Administration, North Jeolla Province, South Korea, by J.-H. Noh, K.-S. Park, H.-K. Yun, J.-C. Nam, S.-M. Jung, Y.Y. Hur, and H.-S. Hwang. Italia × Perlon, crossed 1996; selected 2006. South Korean PBR 7249; 8 June 2018. USPP 30,760; 30 July 2019. **Fruit:** berry 5.4 g; oviod; skin grayed-purple (RHS 187B, 187C); flesh translucent; seedless, seed traces 2; flavor weak muscat; harvest late, ~1 Oct. **Cluster:** large, 538 g; dense; long conical. **Vine:** very vigorous; moderately susceptible to downy mildew on leaves; no incidence of powdery mildew observed.

**Iasma Eco 1.** Blue-black grape for red wine. **Origin:** Fondazione Edmund Mach–Centro Ricerca e Innovazione, San Michele All’Adige, Trentino, Italy, by M. Stefanini. Teroldego × Lagrein. CPVO PBR 46231; 18 Apr. 2017. USPP 26,821; 14 June 2016. **Fruit:** berry 2.01 g; elliptical; skin blue-black (RHS 89C); flesh very juicy, soft; 22.0 °Brix, 3.25 pH, 8.1 g/l TA. **Cluster:** 297 g; loose; conical. **Vine:** hermaphrodite; highly resistant to Botrytis; resistant to downy and powdery mildew.

**Iasma Eco 2.** Blue-black grape for red wine. **Origin:** Fondazione Edmund Mach–Centro Ricerca e Innovazione, San Michele All’Adige, Trentino, Italy, by M. Stefanini. Teroldego × Lagrein. CPVO PBR 46232; 18 Apr. 2017. USPP 26,822; 14 June 2016. **Fruit:** berry 1.3 g; globose; skin blue-black (RHS 89C); flesh very juicy, soft; 22.0 °Brix, 3.25 pH, 8.1 g/l TA. **Cluster:** 214 g; cylindrical, winged, slightly straggly. **Vine:** 3.21 kg/vine; relatively resistant to botrytis; resistant to downy mildew and powdery mildew.

**Iasma Eco 3.** Green-yellow, white wine grape with muscat aroma. **Origin:** Fondazione Edmund Mach–Centro Ricerca e Innovazione, San Michele All’Adige, Trentino, Italy, by M. Stefanini. Moscato Ottolone × Malvasia (Bianca) di Candida Aromatica. CPVO PBR 46233; 18 Apr. 2017. USPP 27,979; 9 May 2017. **Fruit:** berry 2.1 g; globose; 22.52 °Brix, 3.46 pH, 5.82 g/l TA. **Cluster:** 189 g; conical. **Vine:** 2.25 kg/vine; resistant to botrytis; resistant to downy mildew; moderately resistant to powdery mildew.

**Icon.** See Stargrape 2.

**Indulgence.** Complex hybrid (V. Inconeum, V. rupestris, and V. Vinifera) for white wine. **Origin:** University of Arkansas, Fayetteville, by J.R. Clark and J.N. Moore. Seyval Blanc × Muscat Ottolone, crossed 1989; selected 1992; tested as Ark. 2359 in Clarksville, AR. USPP applied for. **Fruit:** berry 2.5 g; 16.9 °Brix, 3.32 pH, 6.4 g/l TA; flavor strong muscat. **Cluster:** 153.1 g, loose with variation due to berry set and rainy weather at bloom. **Vine:** vigor moderate; growth habit upright; yield 16.6 kg/vine; powdery mildew incidence limited to some years, no evidence of downy mildew infection; cold tolerant to -26 °C.

**JB05-22-3-27 (RazzMazzat).** Complex hybrid of muscadine and bunch grapes producing small, red, stenospermocarpically seedless berries. **Origin:** P.J. Bloodworth, Hillsborough, NC. JB94-38-7-44 × JB98-13-1-10; pedigree 72.3% muscadine. US Utility Patent 9,045,767; 2 June 2015. US Utility Patent 9,706,726; 18 July 2017. **Fruit:** small; ~1/3 of fruits are parthenocarpic and 2/3 stenospermic; parthenocarpic berries spherical, height 7.9-9.5 mm, width 7.9-9.5 mm; stenospermic berries elliptical to ovate, rarely oblate, height 10.3-19.1 mm, width 8.7-14.3 mm, depending on the size and number of partially developed ovules; skin color near ripe grayed-purple (RHS 185A), ripe purple (RHS N77A); skin thick, non-adherent, crunchy, tender, resistant to cracking; flesh mucilaginous, juicy; juice clear; 15 °Brix (near ripe), 18.5 °Brix (ripe); flavor mildly floral, lacking musky character of V. rotundifolia; harvest from midsummer to frost. **Cluster:** small, 100 berries, average 50. **Vine:** vigor high; growth habit recumbent, climbing; hermaphrodite; yield high; highly resistant to downy mildew, powdery mildew, and angular leaf spot (Mycosphaerella angustula); susceptible in very wet years to target spot (Cristulariella moricola); appears to prefer higher soil pH in the range of 6.4-7.2, vines grown in this pH range have improved berry set and berry size.

**JB06-43-6-22 (Oh My!).** Seedless, full-sized, edible-skinned muscadine hybrid for fresh use and possibly for juice or wine. **Origin:** P.J. Bloodworth, Hillsborough, NC. JB99-1-4-15 (Vitis Muscadinia × JB03-20-1-21 (hybrid of V. Muscadinia [primarily V. rotundifolia with admixture of V. musconiana]) and V. Euvitis [primarily V. vinifera with admixture of various other Euvitis species]), selected 2008. USPP 31,010; 5 Nov. 2019. **Fruit:** berry midsize, 5.4 g; spherical; skin color ranges from greenish yellow (RHS 153B, 152C) to gray brown (RHS 199A, N199A); skin edible, but not as edible as vinifera, thickness ~1.6 mm; flesh very juicy, yellow-green (RHS 150D), translucent; 16 °Brix; stenospermocarpically seedless; aroma and flavor typical muscadine; harvest mid- to late September. **Cluster:** 56 g, 6-15 berries; globular; density medium. **Vine:** vigorous; phenotype muscadine; growth habit recumbent, climbing; productivity medium-high; no powdery mildew observed, minimal berry rot.

**Jumeador Précoce.** Golden-fruited hybrid white wine grape. **Origin:** R. Juneau, Pont-Rouge, Quebec, Canada. 27 Aug. 2016; crossed 2002; selected 2015. Canadian PBR applied for. USPP 33,408; 31 Aug. 2021. **Fruit:** berry round, 2.2 g; skin thick, golden (RHS 153D and 154A-B); flesh firm, pale yellowish green (RHS 157A-B); 18.6 °Brix, 3.42 pH, 8.2 to 11.92 g/l TA; seeds/berry 2; harvest very early, 30 Aug.; produces well balanced, aromatic, fruity wine. **Cluster:** 98 g; loose with variation due to berry set and rainy weather at bloom. **Vine:** yield high; no powdery mildew, downy mildew, or black rot observed; moderately susceptible to botrytis; cold hardy at least USDA Zone 4a.
Kersus. Yellow-green grape for white wine. Origin: Università degli Studi di Udine and Istituto di Genomica Applicata, Udine, Friuli Venezia Giulia, Italy, by S.D. Castellarin, G. Cipriani, G. Di Gaspero, M. Morgante, E. Peterlunger, and R. Testolin. SK-00-1/7 × Pinot Blanc, crossed 2005; selected 2013. CPVO PBR applied for. USPP 32,534; 1 Dec. 2020. Fruit: berry globose; skin yellow-green (RHS 150C); flesh soft, yellow-green (RHS 150C); seeds/berry 2-3; 21.1 °Brix, 3.4 pH, 6.2 g/l TA; flavor neutral; harvest early, end of August. Cluster: 260 g; cylindrical, 1 or 2 wings, compact. Vine: vigor high; growth habit semi-erect; resistant to downy mildew and powdery mildew.

Merlot Kanthus. Blue-black hybrid grape for red wine. Origin: Università degli Studi di Udine and Istituto di Genomica Applicata, Udine, Friuli Venezia Giulia, Italy by S.D. Castellarin, G. Cipriani, G. Di Gaspero, M. Morgante, E. Peterlunger, and R. Testolin. Merlot × 20/3 (Bianca × Sk77-4/5), crossed 2002. USPP 28,020; 16 May 2017. Fruit: berry 1.67 g; broad ellipsoid; skin deep purplish blue (RHS 99A), soft; flesh moderate yellowish green (RHS 148B); juice transparent; flavor neutral; 22.4 °Brix, pH 5.1 g/l TA; seeds/berry 2-3; harvest 6 Sept. Cluster: 160 g; conical; density medium. Vine: vigor medium; growth habit upright; resistant to downy mildew; tolerant to powdery mildew; cold hardy to -22 °C.

Messías. Blue-black grape for red wine. Origin: University of Pennsylvania, Keszthely, Hungary, by P. Szabo, B. Kovacs, and L. Kocsis. Dunaj × Merlot. Fruit: berry small, 1.4 g; round; skin blue-black, thick; 21-22 °Brix, 6.3-7.8 g/l TA; flavor neutral or slight herbal; harvest 15 Sept.; consistently produces good quality, full bodied wines regardless of vintage. Cluster: midsize, 131-155g. Vine: yield 8-10 t/ha; moderately susceptible to downy mildew and powdery mildew.

Nicollet. Hybrid white wine grape. Origin: Winehaven, Chisago City, MN, by Kevin Peterson and Kyle Peterson. St. Pepin × LaCrosse; tested as KP 92. USPP 31,039; 12 Nov. 2019. Fruit: berry 2.3 g; skin yellow-green (RHS 144A, 144B); flesh yellowish green (RHS 144C); 18.2 to 24.7 °Brix, 3.1-3.4 pH, 6.5 to 9.2 g/l TA; has tropical aromas and flavors with no to low V. labrusca foxy aroma; seeds/berry 2.4; harvest early September. Cluster: tight, conical with shoulder. Vine:vigorous; cold hardy to -40 °C; moderately susceptible to downy mildew; susceptibility to powdery mildew low.

NY98.0228.02 (Everest Seedless®). Seedless, slipskin table grape, hybrid tetraploid. Origin: Cornell University, Geneva, NY, by B. Reisch and S. Luce. NY87.0439.02 × NY88.0515.01, crossed 1998. USPP 29,792; 6 Nov. 2018. Fruit: berry moderately large, 5.3-7.7 g; spherical; 16.0 °Brix, 3.23 pH, 6.3 g/l TA; stenospermocarpically seedless; flavor similar to Concord. Cluster: 270-450 g; conical, shouldered, compact. Vine: productive; resistance to downy mildew intermediate; moderately susceptible to powdery mildew.

Oh My!™. See JB06-43-6-22.

Paseante Noir. Dark purple-black, Pierce’s Disease–resistant hybrid producing high-quality red wine. Origin: University of California, Davis, by M.A. Walker, A.C. Tenscher, S. Riaz, and N. Romero. 07355-020 × Zinfandel; 97% V. Vinifera; source of PD resistance is a form of V. arizonica that appears to have some V. candicans parentage and is from Monterey, Mexico. USPP 33,039; 11 May 2021. Fruit: berry 1.3 g; spherical; skin purple-black with light gray bloom; 27.5 °Brix, 3.78 pH, 5.0 g/l TA; harvest midseason; produces the highest quality wine of any PD-resistant wine grape. Cluster: medium to large, 294 g; long conical, loose to well-filled, long shoulders. Vine: 10.0 kg/vine; blooms relatively late; highly resistant to Pierce’s Disease.

PAUL®. See Ga. 6-2-26.

Pinot Iskra. Yellow-green hybrid grape for white wine. Origin: Università degli Studi di Udine and Istituto di Genomica Applicata, Udine, Friuli Venezia Giulia, Italy, by S.D. Castellarin, G. Cipriani, G. Di Gaspero, M. Morgante, E. Peterlunger, and R. Testolin. SK-00-1/7 × Pinot Blanc, crossed 2005; selected 2013. CPVO PBR applied for. USPP 32,533; 1 Dec. 2020. Fruit: berry 1.53 g; globose; skin yellow-green (RHS 154C); flesh yellow-green (RHS 150C), soft; 20.6 °Brix, 3.3 pH, 6.1 g/l TA; seeds 2-3; flavor neutral; harvest early-medium, end of August. Cluster: 168 g; cylindrical, winged, compact. Vine: vigor medium-high; growth habit semi-erect; hysteraphodite; resistant to downy mildew and powdery mildew.


Pixie Pinot Meunier White. See VDG003.

Pluto. See Stargrape 1.

RazzMatazz®, See JB05-22-3-27.

Royal Red. Blush (red) seedless table grape producing naturally large berries. Origin: Mt. View Farming, Tulare, CA, by T.A. Kinoshita. Autumn Royal × Cabernet Sauvignon, crossed 2008. USPP 30,212; 19 Feb. 2019. Fruit: berry 8 g; ovoid; skin blushed, not deep red; firmness medium; juice clear; 19.0 °Brix; flavor neutral, sweet, with no hint of bitterness when fully mature; rudimentary seeds present, small, soft and undetectable; harvest mid-August. Cluster: midsize, 144 g, 24 berries; loose to well filled, but not tight. Vine: growth habit semi-erect; stamens partially reflexed.

RubyCrisp®. See Ga. 8-1-338.

Sauvignon Kretos. Green-yellow grape for white wine. Origin: Università degli Studi di Udine and Istituto di Genomica Applicata, Udine, Friuli Venezia Giulia, Italy, by S.D. Castellarin, G. Cipriani, G. Di Gaspero, M. Morgante, E. Peterlunger, and R. Testolin. Sauvignon Blanc × Kozma 20/3 (Bianca × Sk77-4/5), crossed 2002. CPVO PBR 53453; 16 Sept. 2019. USPP 27,980; 9 May 2017. Fruit: berry 1.8 g; skin yellow-green (RHS 150B); flesh firm; juice transparent; 22.6 °Brix, 4.6 g/l TA; flavor neutral; seeds 2-3; harvest 25 Aug. Cluster: midsize, 170 g, 200 berries; conical with 2 wings; medium dense. Vine: vigorous; growth habit erect; resistant to downy mildew; tolerant to powdery mildew; hardy to -20 °C.

Sauvignon Rytos. Green-yellow grape for white wine. Origin: Università degli Studi di Udine and Istituto di Genomica Applicata, Udine, Friuli Venezia Giulia, Italy, by S.D. Castellarin, G. Cipriani, G. Di Gaspero, M. Morgante, E. Peterlunger, and R. Testolin. Sauvignon Blanc × Bianca. CPVO PBR 53447; 16 Sept. 2019. USPP 28,022; 16 May 2017. Fruit: berry small, 1.3 g; ellipsoid; skin yellowish green (RHS 2C and 154C); flesh soft; 22.6 °Brix, 4.8 g/l TA; seeds 2-3; flavor neutral; harvest 17 Sept. Cluster: 192 g; cylindrical. Vine: vigor medium; growth habit semi-erect; resistant to downy mildew; tolerant to powdery mildew; hardy to -20 °C.

Shiny Star (아이에스에이). Cold-hardy yellow seedless table grape. Origin: Rural Development Administration, Wanju,
South Korea, by Y.Y. Hur, J.H. Noh, K.S. Park, J.C. Nam, S.M. Jung, S. Park, S.W. Koh, and H.K. Yun. Tano Red × Himrod, crossed 2001; selected 2007; tested as Wonkyo RA-44. South Korean PBR 7306; 4 July 2018. **Fruit:** berry midsize, 3.8 g; round; skin yellow, adherent, thickness medium; 19.5 °Brix, 5.4 g/l TA; seedless, with very small, barely discernible seed traces; aroma foxy; harvest 31 Aug. **Cluster:** 330.8 g; conical, sometimes cylindrical. **Vine:** 17.9 kg/vine; perfect flowered; resistant to powdery mildew; moderately resistant to downy mildew; hardy to -28 °C.

**Solbrio.** Black-skinned table grape. **Origin:** USDA-ARS, Parlier, CA, by C.A. Ledbetter and D.W. Ramming. B55-70 × C49-3, crossed 2004; tested as Y130-163-05. USPP 30,126; 22 Jan. 2019. **Fruit:** berry 7.3 g, elliptic; skin black, adherent; flesh non pigmented, crisp, crunchy; 19.1 °Brix, 4.7 g/l TA; undetectable seed traces 1.4 mg; eating quality very good; harvest 30 July; stores up to 8 weeks. **Cluster:** midsize, ~350 g; conical, slightly loose. **Vine:** vigor medium; growth habit semi-drooping; susceptible to powdery mildew.

**Stargrape 2 (Icon; Stargrape-Icon).** Vigor strong.

**Soreli.** Green-yellow hybrid grape for white wine. **Origin:** Università degli Studi di Udine and Istituto di Genomica Applicata, Udine, Friuli Venezia Giulia, Italy, by S.D. Castellarin, G. Cipriani, G. Di Gaspero, M. Morgante, E. Peterlunger, and R. Testolin. Tocai Friulano × 20/3 (Bianca × SK77-4/5); selected 2002. CPVO PBR 52165; 28 Mar. 2019. USPP 28,057; 30 May 2017. **Fruit:** berry very small to small, 1.5 g; skin greenish yellow (RHS 8C); 22.7 °Brix, 4.0 g/l TA; flavor neutral; seeds 2-3; harvest 30 Aug. **Cluster:** very small to small, 170 g, conical with two wings; density medium. **Vine:** growth habit horizontal; vigor medium-strong; hermaphroditic; hardy to -24 °C; resistant to downy mildew; tolerant to powdery mildew.

**Stargrape 1 (Pluto; Firestar™).** Red table grape that colors well in hot areas, resistant to cracking. **Origin:** Stargrow Cultivar Development, Stellenbosch, Western Cape, South Africa, by J. Fourie and P. Ellis. Parentage unknown; selected 2003 at Clanwilliam, Western Cape; tested as SG-TG-3073. South African PBR ZA 20104422; 11 May 2010. USPP 26,651; 26 Apr. 2016. **Fruit:** berry midsize, length 23-27 mm, width 19-22 mm; broad elliptic to narrow elliptic; skin gray-purple (RHS 187A), 100% of berries fully colored; skin thin to medium, resistant to cracking; flesh yellow-green (RHS 145D), slightly firm, juicy; 16 °Brix; flavor neutral; seed traces present, 2.9-3.3 mm; harvest midseason, early January; stores and ships well. **Cluster:** midsize; long, well-filled. **Vine:** large; vigor strong.

**Stargrape 2 (Icon; Stargrape-Icon).** Red table grape that colors well in hot areas. **Origin:** Stargrow Cultivar Development, Stellenbosch, Western Cape, South Africa, by J. Fourie and P. Ellis. Parentage unknown; selected 2003 at Clanwilliam, Western Cape; tested as SG-TG-3009. South African PBR ZA 20114744; 1 June 2011. USPP 26,650; 26 Apr. 2016. **Fruit:** berry size similar to Flame, length 21-25 mm, width 19-20 mm; cylindrical; skin gray-purple (RHS 183A, 187A), 90%-100% of berries fully colored; skin thickness medium, susceptible to cracking; flesh yellow-green (RHS 145D), slightly firm, juicy; 16 °Brix; flavor neutral; seed traces present, 1.3-3.2 mm; harvest early to mid-January; stores and ships well. **Cluster:** midsize; long, well-filled. **Vine:** large; vigor strong.

**Stargrape-Icon.** See Stargrape 2.

**Tawny Seedless.** Red table grape with large round berries, resistant to rain, stores well. **Origin:** Lombardi Genetics, Paarl, Western Cape, South Africa, by A.B. Lombard. Red Globe × Flame Seedless, crossed 2002; tested as L2004/01. South African PBR ZA 20135347; 12 June 2013. USPP 26,300; 12 Jan. 2016. **Fruit:** berry 4.95 g; globose to round elliptic; skin red (PMS 505); flesh translucent white (PMS 5005), juicy, very crispy; 16-18 °Brix, 6.5 g/l TA; flavor neutral, sweet; seeds absent to very small rudimentary; harvest early to midseason, late November to early January in early areas in Southern Hemisphere; keeping and shipping quality excellent. **Cluster:** very large, 1,302 g, 300 berries; loose/straggly. **Vine:** vigor very strong; yield high; perfect flowered; resistant to rain and botrytis.

**TP 1-1-12.** Violet blue-skinned grape for red wine. **Origin:** Plocher Vines, Hugo, MN, by T.A. Plocher. Troubador × E.S. 5-4-16, crossed 2004. USPP 31,934; 7 July 2020. **Fruit:** berry 1.05 g; roundish; skin violet blue (RHS 98A) overlaid with grayish purplish blue (RHS 103A); flesh pale yellow (RHS 160D), slipskin; juice dark red (RHS 59A), fruity, slightly herbaceous; 23 °Brix, 3.3-3.4 pH, 8.0 g/l TA; seeded; harvest early- to mid-September. **Cluster:** large, 163 g; conical with 2 or 3 wings. **Vine:** vigor moderate; perfect flowered, buds late; hardy to -36 °C; highly resistant to downy mildew and powdery mildew; resistance to black rot good.

**VDG003 (Pixie Pinot Meunier White).** Green grape, ornamental, dwarf grapevine. **Origin:** Vineland Research and Innovations Centre, Vineland Station, Ontario, Canada, by R. Conev and D. Somers. Pixie O.P., obtained 2010. Canadian PBR 5176; 3 Feb. 2016; rights surrendered 29 Mar. 2017. USPP 26,502; 15 Mar. 2016. **Fruit:** berry small to medium, 1.5 g, globose; skin yellow-green (RHS 153B); thickness medium; flesh moderately firm; 22.5 °Brix; flavor neutral; seeded. **Cluster:** very small, 27.4 g; density medium. **Vine:** dwarf, with indeterminate growth habit, similar to Pixie; resistant (RENI) to powdery mildew.

**Verona.** Blue grape for red and rose wine. **Origin:** Plocher Vines, Hugo, MN, by T.A. Plocher. Troubador × E.S. 5-4-16, crossed 1997. USPP 30,631; 2 July 2019. **Fruit:** berry round and slightly flattened; skin blue (RHS 103A) overlaid with some violet-blue (RHS 98A); 19-22 °Brix, 3.38 pH, 8.0 g/l TA; seeded; has pronounced raspberry flavor; harvest late, early to mid-October; wine has good balance, moderate acidity, abundant tannins, and complex aromas of raspberry with a hint of chocolate. **Cluster:** large, 145 g; cylindrical with wing and characteristic bend, compact. **Vine:** buds late; cold hardy to -32 to -35 °C; resistant to downy mildew, powdery mildew, and black rot.

**Voluturnis.** Blue-black grape for red wine. **Origin:** Università degli Studi di Udine and Istituto di Genomica Applicata, Udine, Friuli Venezia Giulia, Italy, by S.D. Castellarin, G. Cipriani, G. Di Gaspero, M. Morgante, E. Peterlunger, and R. Testolin. 99-1-48 × Pinot Noir. CPVO PBR applied for. USPP 32,783; 2 Feb. 2021. **Fruit:** 1.43 g, globose; skin blue-black (RHS 99A); 22 °Brix, 3.6 pH, 6.6 g/l TA; seeds/berry 2-3; flavor neutral; harvest midseason, early September. **Cluster:** 263.3 g; conical, 3-4 wings, medium to dense. **Vine:** vigor high; growth habit semi-erect; resistant to downy mildew.

**HAZELNUT**

**Aldara.** Hazelnut for the fresh market in colder regions. **Origin:** Grimo Nut Nursery, Niagara-on-the-Lake, ON, Canada, by E. Grimo. **Corylus heterophylla** selection O.P.; selected as Grimo Het #3; introd. 2016. **Nut:** midsize, 2.2 g; round; 43.9% kernel by weight; pellicle has little fiber; husk is 75% longer than nut and most slit; 90% free-husking; flavor and texture good; defects and empty nuts few; matures late August. **Tree:** midsize; growth habit spreading; productive; highly resistant to eastern filbert blight (**Anisog-ramma anomala**); susceptible to bud mite (**Phytoptus avellanae**); incompatibility alleles S<sub>25</sub>S<sub>27</sub>.

**Shawn A. Mehlenbacher, Dept. of Horticulture, Oregon State University, Corvallis, OR**
Alex. Hazelnut pollinator and nuts for fresh market. **Origin:** Grimo Nut Nursery, Niagara-on-the-Lake, ON, Canada, by E. Grimo. Faroka O.P.; selected as Grimo 186M; named in 2016. Faroka originated from open pollination of a Turkish tree hazel (**Corylus colurna**) selected by J.U. Gellatly in Kelowna, BC, Canada. **Nut:** midsize, 2.2 g; oval; 48% kernel by weight; pellicle has little fiber; husk 50% longer than nut and most slit; 80% free-husking; flavor and texture good; 5% shriveled kernels and empty nuts; most empties remain in husk; matures early October. **Tree:** vigorous; growth habit upright; productive; resistant to eastern filbert blight; highly resistant to bud mite; incompatibility alleles undetermined.

Beast™, The. See OSU 541.147.

Carmela. Hazelnut pollinator and nuts for fresh market. **Origin:** Grimo Nut Nursery, Niagara-on-the-Lake, ON, Canada, by E. Grimo. NY 1329 (**Corylus americana** Rush × **C. avellana** Cosford.) O.P.; selected as Grimo 208P; introd. 2016. **Nut:** large, 4 g; oval; well filled, 36% kernel by weight; pellicle has little fiber; husk 25% longer than nut and most slit; 80% free-husking; flavor and texture good; 5% shriveled and empty nuts; matures mid-October. **Tree:** vigorous; growth habit spreading; alternate bearing; resistant to eastern filbert blight; susceptible to bud mite; incompatibility alleles S23S25.

Chelsea C-28. Hazelnut for in-shell market. **Origin:** Courtland, ON, Canada, by M. Hodgson. Parentage unknown. O.P. seeds from parent trees that included Barcelona, Slate, Gellatly, Myoka, Petoka, and Grimo 502; planted 1992-95; selected 2008; tested as C-28; introd. 2017. Canadian PBR 5492; 15 June 2017. **Nut:** large, long cylindric, conspicuous stripes; low kernel percentage; very little fiber on the pellicle. **Husk:** shorter than or equal in length to nut, not constricted, most nuts fall free of the husk; matures very late. **Tree:** vigor moderate to high; growth habit upright-spread; suckers few; highly resistant to eastern filbert blight; female inflorescences receptive late; incompatibility alleles not tested.

Cheryl. Hazelnut pollinator and nuts for the fresh market. **Origin:** New York State Agricultural Experiment Station, Geneva, NY, by G. Slate. NY 110, **C. americana** Rush × DuChilly; introd. as Cheryl in 2016 by Grimo Nut Nursery, Niagara-on-the-Lake, ON, Canada. **Nut:** midsize, 3.9 g; 39% kernel by weight; pellicle has little fiber; husk 50% longer than nut, most slit; 80% free-husking; flavor and texture good; nut and kernel defects few; matures mid-October. **Tree:** vigorous; growth habit moderately spreading; productive; highly resistant to eastern filbert blight; susceptible to bud mite; incompatibility alleles S23S25.

Dawn. Hazelnut for the fresh market in colder regions. **Origin:** Grimo Nut Nursery, Niagara-on-the-Lake, ON, Canada, by E. Grimo. **Corylus heterophylla** selection O.P.; selected as Grimo Het #5; introd. 2016. **Nut:** midsize, 2.3 g; round; 46% kernel by weight; pellicle has little fiber; husk is 40% longer than nut and most slit; 90% free-husking; flavor and texture good; nut and kernel defects few; matures early September. **Tree:** midsize; vigor modest; growth habit spreading; very productive; resistant to filbert blight; susceptible to bud mite; incompatibility alleles S13S27.

Dermis. Hazelnut for the fresh market and potential pollinator. **Origin:** Grimo Nut Nursery, Niagara-on-the-Lake, ON, Canada, by E. Grimo. Skinner O.P. (Skinner is from Manitoba from a cross of a **Corylus americana** × **C. avellana**); selected by E. Grimo of Grimo Nut Nursery; introd. as Dermis in 2016. **Nut:** midsize, 2.7 g; almost round; 37.7% kernel by weight; pellicle has little fiber; husk is 40% longer than nut and most slit; 90% free-husking; flavor and texture good; nut and kernel defects few; nuts drop mid-October. **Tree:** vigorous; growth habit spreading; very productive; highly resistant to eastern filbert blight; susceptible to bud mite; incompatibility alleles have not been determined.

Edward. Hazelnut pollinator and nuts for fresh market. **Origin:** Grimo Nut Nursery, Niagara-on-the-Lake, ON, Canada, by E. Grimo. Alex O.P.; selected as Grimo 196J; introd. as Edward in 2020. **Nut:** midsize, 2.68 g; oval; 39.5% kernel by weight; pellicle has little fiber; husk 50% longer than nut and most slit; 80% free-husking; flavor and texture good; 5% shriveled kernels and empty nuts; most empties remain in husk; matures midseason. **Tree:** vigorous; growth habit moderately spreading; production moderate; resistant to eastern filbert blight; resistant to bud mite; incompatibility alleles S15S23.

Frank. Hazelnut for the fresh market in colder regions. **Origin:** L. Kerr, Morden Station, MB, Canada crossed a **Corylus americana** from Saskatchewan with pollen from European hazels; E. Grimo, Grimo Nut Nursery, Niagara-on-the-Lake, ON, Canada, obtained seed from a Saskatchewan nursery that had trees from Kerr’s work; 2 of these Saskatchewan hybrids were open pollinated in the diverse Grimo hazelnut orchard and the seedlings were planted in 2001; selected as Grimo 202F by E. Grimo; introd. 2016. **Nut:** midsize, 2.7 g; 39.9% kernel by weight; pellicle has little fiber; husk is 70% longer than nut and slit; 80% free-husking; flavor and texture good; nut and kernel defects few; matures late August. **Tree:** midsize; vigor moderate; growth habit spreading; productive; highly resistant to eastern filbert blight; susceptible to bud mite; incompatibility alleles S14 (only one allele has yet been identified).

Gene. Hazelnut for the fresh market. **Origin:** New York State Agricultural Experiment Station, Geneva, NY, by G. Slate. NY 398, a cross of **C. americana** Rush × Red Lambert; introd. first as Geneva and later renamed Gene by Grimo Nut Nursery, Niagara-on-the-Lake, ON, Canada, in 2016. **Nut:** midsize, 3.6 g; 38% kernel by weight; pellicle has little fiber; husk 50% longer than the nut and most slit; 80% free-husking; flavor and texture good; nut and kernel defects few; matures mid-October. **Tree:** vigorous; spreading, 90% of Barcelona; productive; highly resistant to eastern filbert blight; susceptible to bud mite; incompatibility alleles S15S23.

Hunterdon. Hazelnut for the blanched kernel market. **Origin:** cross made at Oregon State University, Corvallis, OR, by S.A. Mehlenbacher and D.C. Smith; selected and released by Rutgers University, New Brunswick, NJ, by T.J. Molnar. Sacajawea × OSU 616:055 (OSU 309.053 × OSU 280.036); crossed 2004; selected 2012; tested as H3FR04P42; introd. 2019. USPP 32,461; 17 Nov. 2020. **Nut:** midsize, 2.7 g; 46% kernel by weight; pellicle has no fiber; 95% of pellicle removed by dry heat; husk 50% longer than nut and flared; 90% free-husking; flavor and texture excellent; nut and kernel defects few; matures early September, 7 d before Barcelona. **Tree:** vigorous; growth habit upright; productive; female inflorescences receptive early; high quantitative resistance to eastern filbert blight; incompatibility alleles S16.

Joanne. Hazelnut for the fresh market in colder regions. **Origin:** L. Kerr, Morden Station, MB, Canada, crossed a **Corylus americana** from Saskatchewan with pollen from European hazels. E. Grimo, Grimo Nut Nursery, Niagara-on-the-Lake, ON, Canada, obtained seed from a Saskatchewan nursery that had trees from Kerr’s work; 2 of these Saskatchewan hybrids were open pollinated in the diverse Grimo hazelnut orchard and the seedlings were planted in 2001; selected as Grimo 202C by E. Grimo; introd. 2016. **Nut:** midsize, 3.2 g; 38% kernel by weight; pellicle has little fiber; husk is 70% longer than nut and slit; 80% free-husking; flavor and texture good; nut and kernel defects few; matures late August. **Tree:** midsize; vigorous; moderate; growth habit spreading; productive; resistant to filbert blight; susceptible to bud mite; incompatibility alleles S14.
Kiara. Hazelnut for the fresh market in colder regions. Origin: L. Kerr, Morden Station, MB, Canada, crossed a Corylus americana from Saskatchewan with pollen from European hazels. E. Grimo, Grimo Nut Nursery, Niagara-on-the-Lake, ON, Canada, obtained seed from a Saskatchewan nursery that had trees from Kerr’s work; 2 of these Saskatchewan hybrids were open pollinated in the diverse Grimo hazelnut orchard and the seedlings were planted in 2001; selected as Grimo 200G by E. Grimo; introd. 2016. Nut: midsize, 2.2 g; 37% kernel by weight; pellicle has little fiber; husk is 80% longer than nut and slit; 80% free-husking; flavor and texture good; nut and kernel defects few; matures late August. Tree: midsize; vigor moderate; growth habit spreading; productive; resistant to filbert blight; susceptible to bud mite; incompatibility alleles $S_1S_2S_3$.

Linda. Hazelnut pollinizer and nuts for the fresh market. Origin: New York State Agricultural Experiment Station, Geneva, NY, by G. Slate. NY 104, C. americana Rush × DuChilly. Introduced as Linda in 2016 by the Grimo Nut Nursery, Niagara-on-the-Lake, ON, Canada. Nut: midsize, 4.3 g; 33.6% kernel by weight; pellicle has little fiber; does not Blanch well; husk 50% longer than nut, most slit; 80% free-husking; flavor and texture good; nut and kernel defects few; matures mid-October. Tree: vigorous; growth habit moderately spreading; productive; highly resistant to eastern filbert blight; susceptible to bud mite; incompatibility alleles $S_1S_2S_3$.

Marion. Hazelnut for the fresh market in colder regions. Origin: L. Kerr, Morden Station, MB, Canada, crossed a Corylus americana from Saskatchewan with pollen from European hazels. E. Grimo, Grimo Nut Nursery, Niagara-on-the-Lake, ON, Canada, obtained seed from a Saskatchewan nursery that had trees from Kerr’s work; 2 of these Saskatchewan hybrids were open pollinated in the diverse Grimo hazelnut orchard and the seedlings were planted in 2001; selected as Grimo 204E by E. Grimo; introd. 2016. Nut: midsize, 3.3 g; 37% kernel by weight; pellicle has little fiber; husk is 70% longer than nut and slit; 80% free-husking; flavor and texture good; nut and kernel defects few; matures late August. Tree: midsize; vigor moderate; growth habit spreading; productive; resistant to eastern filbert blight; susceptible to bud mite; incompatibility alleles $S_1S_2S_3$.

Matt. Hazelnut pollinizer and nuts for fresh market. Origin: Faroka O.P., selected as Grimo 208D by E. Grimo, Grimo Nut Nursery, Niagara-on-the-Lake, ON, Canada; named 2016. Faroka is from open pollination of a Turkish tree hazel (Corylus colurna) and selected by J.U. Geltatly in Kelowna, BC, Canada. Nut: midsize, 3.5 g; oval; 41% kernel by weight; pellicle has little fiber; husk 50% longer than nut and most slit; 80% free-husking; flavor and texture good; 5% shriveled kernels and empty nuts; most empties remain in husk; matures mid-September. Tree: vigorous, upright; production moderate, alternate bearing; resistant to eastern filbert blight; highly resistant to bud mite; incompatibility alleles $S_1S_1S_3$.

Monmouth. Hazelnut for the blanched kernel market. Origin: Cross made at Oregon State University, Corvallis, OR, by S.A. Mehlenbacher and D.C. Smith; selected and released by Rutgers University, New Brunswick, NJ, by T.J. Molnar. Sacajawea × OSU 616.055 (OSU 309.053 × OSU 280.036); crossed 2004; selected 2012; tested as H3FR05P69; introd. 2019. USPP 32,462; 17 Nov. 2020. Nut: small-medium, 2.5 g; 51% kernel by weight; pellicle has light fiber; 95% of pellicle removed by dry heat; husk 50% longer than nut, flared, and slit on the side; 90% free-husking; flavor and texture very good; number of nut and kernel defects moderate; matures early September, 1 week before Barcelona. Tree: vigor moderate; upright; productive; female inflorescences receptive in early midseason; high quantitative resistance to eastern filbert blight; incompatibility alleles $S_1S_1S_3$.

Nathan. Hazelnut for the fresh market and as a pollinizer in colder regions. Origin: Grimo Nut Nursery, Niagara-on-the-Lake, ON, Canada, by E. Grimo. Corylus heterophylla selection O.P. in the diverse Grimo hazelnut orchard, selected as Grimo 194M; introd. 2019. Nut: midsize, round; 36.0% kernel by weight; pellicle has low fiber; husk is 50% longer than the nut and most slit; 80% free-husking; flavor and texture good; nut and kernel defects few; matures late August. Tree: midsize; vigor moderate; growth habit spreading; productive; highly resistant to eastern filbert blight; susceptible to bud mite; incompatibility alleles $S_1S_1S_1$.

Northern Blais. Hazelnut for the fresh market in colder regions. Origin: 1 of 20 seedlings purchased from Jacques Blais of Joly, QC, Canada (USDA Zone 4b); selected by E. Grimo of Grimo Nut Nursery, Niagara-on-the-Lake, ON, Canada; introd. 2016. Nut: midsize, 2.8 g; 34.6% kernel by weight; pellicle has little fiber; husk is 70% longer than nut and slit; 80% free-husking; flavor and texture good; nut and kernel defects few; matures late August. Tree: midsize; vigor moderate; spreading; productive; highly resistant to eastern filbert blight; incompatibility alleles not tested.

PollyO. Hazelnut for the blanched kernel market. Origin: Oregon State University, Corvallis, OR, by S.A. Mehlenbacher, D.C. Smith, R.L. McCluskey, and J.W. Sneling. Released as the Hybrid Hazelnut Consortium, whose members also include Rutgers University, the University of Nebraska-Lincoln, and the Arbor Day Foundation. Slate (NY 616) (Corylus americana Rush × Barcelona) × OSU 226.118 (Tombul Ghiaghli × OSU 442.103); crossed 1990, selected 1998; tested as OSU 541.147; introd. 2020. USPP 33,561; 19 Oct. 2021. Nut: small, 2.6 g; 44% kernel by weight; pellicle has heavy fiber; 50% of pellicle removed by dry heat; husk 60% longer than nut; 85% free-husking; flavor and texture good; nut and kernel defects few; matures 5 d later than Barcelona. Tree: vigorous; upright; productive; female inflorescences receptive in midseason; pollen shed in midseason; catkins more cold-hardy than C. avellana cultivars; very highly resistant to eastern filbert blight; susceptible to bud mite; incompatibility alleles $S_1S_2S_3$.

Raritan. Hazelnut for the blanched kernel market. Origin: Cross made 2004 at Oregon State University, Corvallis, OR, by S.A. Mehlenbacher and D.C. Smith; selected and released by Rutgers University, New Brunswick, NJ, by T.J. Molnar. OSU 539.031 (OSU 275.031 × Sant Pere) × OSU 616.018 (Tonda di Giuffi × OSU 252.146); crossed 2004; selected 2012; tested as H3FR03P33; introd.
Slate. Hazelnut for the fresh market. Origin: New York State Agricultural Experiment Station, Geneva, NY, by G. Slate. NY 616, a cross of C. americana Rush × Barcelona; introduced as Slate in 2016 by Grimo Nut Nursery, Niagara-on-the-Lake, ON, Canada. Nut: midsize, 3.4 g; 38.2% kernel by weight; pellicle has little fiber; husk 50% longer than nut, flared and slit on side; 90% free-husking; flavor and texture very good; nut and kernel defects few; matures mid-October. Tree: very vigorous; growth habit upright; productive; female inflorescences receptive in early midseason; high quantitative resistance to eastern filbert blight; incompatibility alleles S3S23.

Somerset. Hazelnut for the kernel market. Origin: cross made 2000 at Oregon State University, Corvallis, OR, by S.A. Mehlenbacher and D.C. Smith; selected and released by Rutgers University, New Brunswick, NJ, by T.J. Molnar. OSU 665.123 (OSU 245.098 × Mortarella) × Ratoli; selected 2008; tested as CRXR04P43; introd. 2019. USPP 32,494; 24 Nov. 2020. Nut: small-medium, 2.1 g; 54% kernel by weight; no fiber on pellicle, 55% of pellicle removed by dry heat; nuts mature 1st or 2nd week September; husk 40% longer than nut, flared and slit on the side; 90% free-husking; flavor and texture very good; nut and kernel defects few. Tree: vigorous; growth habit compact, slightly spreading; precocious and productive; female inflorescences receptive in early midseason; very highly resistant to eastern filbert blight; susceptible to bud mite; incompatibility alleles S3S10.

The Beast™. See OSU 541.147.

KIWIFRUIT

A. Ross Ferguson, The New Zealand Institute for Plant & Food Research, Auckland, New Zealand

AC 401 057. Female, early maturing, elliptic, yellow flesh, sweet with good sweetness/acidity balance, Actinidia chinensis var. chinensis. Origin: University of Udine and University of Bologna, Italy, by R. Testolin, G. Cipriani, and G. Costa. C9 × AC 171.1; crossed 2004. CPVO PBR applied for. Fruit: 114 g; elliptic, stylar end flat, cross section circular; skin light brown, hairs absent, lenticels inconspicuous; pericarp flesh medium yellow, locules medium yellow, core medium, circular to elliptical, light yellow-white; flavor sweet, 16.3 °Brix, eating ripe; ripens early, 15 Sept. to 5 Oct., Forli, Emilia-Romagna, Italy. Vine: deciduous; vigorous medium; pistillate flowers requiring pollinator; budburst early, 23 Mar., similar to Tomua, flowering 7-8 d before Hayward; tetraploid.

AC 459 011. Female, late maturing, elliptic, green flesh, very sweet, with low acidity. Actinidia chinensis var. chinensis. Origin: University of Udine and University of Bologna, Italy, by R. Testolin, G. Cipriani, and G. Costa. C9 × AC 171.1. CPVO PBR applied for. Fruit: large; elliptic, stylar end weakly blunt protruding, cross section circular; skin light brown, hairs absent, lenticels inconspicuous; pericarp flesh brilliant green, locules dark green, core medium, triangular, very pale green-white; flavor sweet, acidity low; harvest few days before Hayward, Forli, Emilia-Romagna, Italy. Vine: deciduous; vigorous medium; pistillate flowers requiring pollinator; budburst early, flowering 4-5 d before Hayward; tetraploid.

AC 497 076. Female, early maturing, oblong, dark yellow flesh, very sweet with low acidity. Actinidia chinensis var. chinensis. Origin: University of Udine, Italy, by R. Testolin and G. Cipriani. Jintao (Wuzhi No. 6) × A134.41; crossed 2008. CPVO PBR applied for. USPP 32,743; 12 Jan. 2021. Fruit: 109 g, 76 × 50 mm; oblong-elliptic, stylar end strongly depressed, cross section circular; skin thick, purple-brown (RHS 183A), hairs absent, lenticels inconspicuous; pericarp flesh yellow (RHS 12A), locules light yellow-brown (RHS 160B), core medium, elliptical, light yellow-white (RHS 4D); flavor sweet, 16.2 ± 0.3 °Brix, eating ripe; acidity low; harvest early, 15 Sept. to 1 Oct., Bernalda-Metaponto, Italy. Vine: deciduous; vigorous medium; pistillate flowers requiring pollinator; budburst early, similar to Tomua, flowering 7-8 d before Hayward; tetraploid.

AC 501 022. Female, early maturing, oblong, yellow flesh, very sweet, with low acidity. A. chinensis var. chinensis. Origin: University of Udine, Italy, by R. Testolin and G. Cipriani. Ac328.26 × A134.41; crossed 2008. CPVO PBR applied for. USPP 32,742; 12 Jan. 2021. Fruit: size uniform, 103 g, 74 × 50 mm; oblong, stylar end strongly depressed, cross section circular; skin thin, dark brown (RHS 199C), hairs absent, lenticels inconspicuous; pericarp flesh medium yellow (RHS 7D), locules light yellow-brown (RHS 160B), core small, circular, light yellow-white (RHS 4D); flavor sweet, 18.3 ± 0.3 °Brix, eating ripe; acidity low; storage long, ~5 months in cold storage, harvest early, 25 Sept. to 10 Oct., Bernalda-Metaponto, Italy. Vine: deciduous; vigorous strong; productivity high, pistillate flowers requiring pollinator; budburst early, similar to Tomua, flowering 6 d before Hayward; no preharvest drop or fruit cracking; tetraploid.

Red Goal. Female, late-maturing, large, red inner pulp, good storage life. A. chinensis var. chinensis. Origin: G. Dal Pane, Castel Bolognese, Italy. Parentage unknown; selected 2016; grafted on Hayward and Tomuri rootstocks in greenhouse at Santa Cristina e Bissone, Pavia, Italy. CPVO PBR applied for. USPP 33,472; 14 Sept. 2021. Fruit: large for red-fleshed kiwifruit, 100 g, 65 × 55 mm; oblong, slightly obovoid, stylar end round, cross section circular-oblate; skin greenish-brown depending on exposure, hairs short, soft, easily removed, lenticels minute; pericarp flesh yellow, locules red, core medium, oblate, white; flavor sweet, 19-21 °Brix, eating ripe; storage long, 5 months; harvest mid-October. Vine: deciduous; vigorous weak-medium; pistillate flowers requiring pollinator; budbreak mid-March, flowering late April to early May; diploid.

Tango. Female, cold hardy with relatively small fruit, not a kiwiberry. A. chinensis var. chinensis. Origin: USDA-ARS Appalachian Fruit Research Station, Kearneysville, WV, by R. Scorza and M. De-muth. O.P. seed from plants growing at Istituto Sperimentale per la Frutticoltura, Rome, Italy. Parentage unknown; selected 2016; grafted on Hayward and Tomuri rootstocks in greenhouse at Santa Cristina e Bissone, Pavia, Italy. CPVO PBR applied for. USPP 33,617; 15 Dec. 2020. Fruit: small, 35 g, 43 × 35 mm; shape short oblong, stylar end round, cross section circular; skin mostly yellow-green (RHS 144A); hairs fine downy, gray-orange (RHS 165B), lenticels small, abundant; outer pericarp yellow-green (RHS 144C), inner pericarp yellow-green (RHS 144B), core yellow-green (RHS 144D); storage 3 month; harvest late October to early November. Vine: deciduous; vigorous moderate-vigorous; winter-hardiness good, surviving -21 °C; flowering early May.

Zes008 (fruit sold as Zespi RubyRed®, previously Zespi Red®). Female, locules on ripe fruit are dark red, outer pericarp greenish yellow with red speckles. A. chinensis var. chinensis. Origin: New Zealand Institute for Plant & Food Research, Te Puke, by R.G. Lowe. Zes006 × CK51_09, seedling from a seed accession from the wild in China; crossed 2005; selected as K07.19-10-09e July 2011, selection based on fruit size, high sweetness and consistently dark and intense red coloration; trialed as Red19 by grafted onto Bruno seedling rootstocks 2011-2019. New Zealand PBR 34525; 19 Mar. 2020. USPP 32,076; 18 Aug. 2020; test marketed from 2019; introd. 2020. Fruit: size medium, 62.3-87 g, average 73.5 g, 60 × 49.9 × 42.9 mm; short elliptical, blunt, stylar end weakly depressed, cross section oblate; skin greenish brown (RHS 152A at harvest, RHS 152C at eating maturity); hairs short, soft, reddish brown (RHS 163B), primarily at
stylar end, weakly adherent; lenticels numerous, small; outer pericarp greenish yellow with red speckles (RHS 46A), number varying considerably from fruit to fruit, locules strong dark red (RHS 46), core orange white (RHS 159B) at harvest, white (RHS 155A) at eating ripeness; flavor very sweet, 18.7-23.9 °Brix, average 21.1 °Brix; storage life 4-5 months, fruit firmness >0.5 kgf under cold storage, controlled atmosphere; harvest late March to early April. **Vine:** deciduous; size moderate; vigor medium; pistillate flowers requiring pollinizer; budburst early September, flowering mid-October; tolerant of bacterial flower rot (*Pseudomonas syringae pv. actinidiae*); diploid.

### MANGO

**David Karp, Dept. of Botany and Plant Sciences, University of California, Riverside, CA**

**Magriver.** Bright yellow, with excellent flavor, suitable for processing and rootstock. **Origin:** Magdalena River Colombia, Malambo, Atlántico Department, Colombia, by M.I. Cervantes Mantilla and F. Ricciardiello. Hilacha O.P.; selected 2016 in Sitionuevo, Magdalena Department, Colombia. USPP 32,719; 5 Jan. 2021. **Fruit:** length 71 mm, diameter 60 mm, 168 g; oblong to oval, base and apex rounded, with small lateral beak; skin yellow-orange (RHS 21A) with orange to pink blush (RHS 32B) on fruit exposed to sun; skin tender, adhesive; flesh soft, melting, juicy, fibrous, yellow-orange (RHS 24A); flavor excellent, rich and aromatic, reminiscent of melon, citrus, and sugar cane, 15.5 °Brix; seed polyembryonic; ripe April through July in Barranquilla, Atlántico Department; picking and shelf life above average; for mango pulp and juice. **Tree:** vigorous; growth habit erect, open, and branched; yield high and consistent; tolerant to anthracnose (*Colletotrichum gloeosporioides*); moderately susceptible to powdery mildew (*Oidium mangiferae*); suitable as rootstock for saline soils.

**Orange Star.** Large, yellow, kidney-shaped, with fiberless orange flesh, for fresh markets and processing. **Origin:** R. Vail, El Pesca-dero, Baja California Sur, Mexico. Keitt × Lemon, crossed 1999; tested starting 2003 in La Paz, Baja California Sur. USPP 32,768; 26 Jan. 2020. **Fruit:** length 140 mm, width 100 mm, 400-700 g; elongated, kidney-shaped; skin yellow-orange to orange-red (RHS 34C) with red blush; lenticel spotting dense; skin thickness ~1 mm, adherence to skin moderate; flesh intense orange (RHS 25A), firm at maturity, easy to cube or process, smooth, fiberless; flavor blends citrus with mango; ripens before Keitt, more evenly than Keitt, and for a longer season; stores 2-3 weeks at 10 °C. **Tree:** vigorous; first blooms November to January in La Paz; resistant to fungal diseases.

### MULBERRY

**David Karp, Dept. of Botany and Plant Sciences, University of California, Riverside, CA**

**Trader.** Very cold hardy *Morus alba* with purple-black fruit ripening over 2 months. **Origin:** Oriska, ND, by J. Walla and M.E. Kjelland. Disc. 2000 as sole survivor from a grove of unnamed seedlings planted by a German immigrant c. 1890. USPP 28,932; 6 Feb. 2018. **Fruit:** length 16.5 mm, width 11 mm, 0.5 g; oblong; fruits twist 10; drupelets per aggregate fruit 40; skin and flesh color when mature purple-black (N186A with very base 181A); flesh very firm, flavor sweet and slightly tart; seeds few, 1 per drupelet if present, lacks viability; style and stigma persistent at maturity; ripens sequentially from mid-July to mid-September in North Dakota. **Tree:** very vigorous when young; crown spherical, relatively open; 13-year-old tree’s height 6 m, spread 4 m; original (125-year-old) tree’s height 11 m, spread 9.1 m; propagated by softwood cuttings; blooms early summer in North Dakota; extremely cold hardy, USDA Zone 4a, branch dieback rare; resistant to spotted-wing drosophila (**Drosophila suzukii**).

### NECTARINE

**John Mark Lawton and Ksenija Gasic, Dept. of Plant and Environmental Sciences, Clemson University, Clemson, SC**

**Andes Nec-5 (Andesnecincio).** White-fleshed, melting, clingstone. **Origin:** University of Chile, Viveros Asociados Chile, Santiago, by R. Infante. Andesnecrectes × 18-R-47. Chilean PBR 49/19; 2 July 2019. USPP 32,853; 2 Mar. 2021. **Fruit:** large, 190-210 g; round; 90-100% red blush; sweetness and acidity balanced, low acid; 16-18 °Brix; shipping and keeping quality good; ripens 15-20 d before August Red in El Tambo, VI region, Chile. **Tree:** large; vigorous; upright; productive; flowers non-showy; leaf glands reniform.

**Andesnecincio.** See Andes Nec-5.

**Blanq 2601.** White-fleshed, melting, clingstone. **Origin:** Agro Selections Fruits, Institute of Agrifood Research and Technology, by C. Font i Forcada, G. Reig, C. Fontich, I. Batttle, S. Alegre, C.M. Cantín, I. Eduardo, J. Carbó, A. Maillard, L. Maillard, and J. Bonany. ASF 11.01.290.94 NB × ASF 01.01.02.00 NJ. CPVO PBR 51289; 11 Feb. 2019. **Fruit:** small to medium; round; 90-100% red blush; firm; crunchy; flavor moderate to intense; 11.6 °Brix; postharvest quality good; ripens 20 June to 5 July in Lleida, Spain. **Tree:** upright to spreading; flowers non-showy, self-fertile; leaf glands reniform.

**Blanq 3001.** White-fleshed, melting, clingstone. **Origin:** Agro Selections Fruits and Institute of Agrifood Research and Technology, by C. Font i Forcada, G. Reig, C. Fontich, I. Batttle, S. Alegre, C.M. Cantín, I. Eduardo, J. Carbó, A. Maillard, L. Maillard, and J. Bonany. ASF 01.14.77.01 NB × ASF 01.07.43.01 NJ. CPVO PBR 49948; 16 July 2018. **Fruit:** medium; broad elliptic; 70-90% light red blush; crunchy; flavor moderate; 12.0 °Brix; postharvest quality moderate; ripens 21 July to 8 Aug. in Lleida, Spain. **Tree:** upright to spreading; flowers showy, self-fertile; leaf glands reniform.

**Blanq 3301 (Blanq 33 01).** White-fleshed, melting, clingstone. **Origin:** Agro Selections Fruits and Institute of Agrifood Research and Technology, by C. Font i Forcada, G. Reig, C. Fontich, I. Batttle, S. Alegre, C.M. Cantín, I. Eduardo, J. Carbó, A. Maillard, L. Maillard, and J. Bonany. JMD698 NB × 01.24.49.02 NJ. CPVO PBR 46011; 3 Apr. 2017. **Fruit:** medium to large; round; 70-80% dark red blush; very firm; crunchy; flavor intense; 12.2 °Brix; postharvest quality good; ripens 22 Aug. to 7 Sept. in Lleida, Spain. **Tree:** spreading; flowers showy, self-fertile; leaf glands reniform.

**Burnecttwentyeight (Spring Flare® 25** [multiple cultivars may be marketed under this trade name]). Yellow-fleshed, non-melting, clingstone. **Origin:** Burnchell Nursery, Oakdale, CA, by J.K. Slaughter and T.J. Gerds. Burnecttwentytwo × Galaxy. USPP 26,610; 19 Apr. 2016. **Fruit:** large, 258 g; rounded to slightly obovate; 85% medium to dark red blush over deep yellow background color; firm; sweet and acidic, 14.5 °Brix; ripens 16-27 June in Oakdale. **Tree:** medium-large; vigorous; upright; productive; flowers showy, self-fertile; chilling requirement low, 450 h; leaf glands globose.

**Cakebuzz.** Flat, white-fleshed, melting, semi-clingstone. **Origin:** Agro Selections Fruits, Elne, France, by A. Maillard and L. Maillard. Cakebuzzel × Nectarboom. CPVO PBR applied for. USPP 31,688; 21 Apr. 2020. **Fruit:** medium to large, 180 g; flat; 95° purple red blush; firm; crunchy; juicy; semi-sweet, sugary, low acid, 15.3 °Brix; keeping quality excellent; ripens 21 July to 4 Aug. in Pyrénées-Orientales Dept., France. **Tree:** large; vigorous; semi-flared; productive; flowers showy, self-fertile; chilling requirement moderate to high, 550-1100 h; leaf glands round.

**Cakediva.** Flat, white-fleshed, melting, semi-clingstone. **Origin:** Agro Selections Fruits, Elne, France, by A. Maillard and L. Maillard.
Nectarperf × Cakedelic. CPVO PBR applied for. USPP 33,509; 28 Sept. 2021. **Fruit:** medium to large, 155-210 g; flat; near 100% purple red blush; firm; crunchy; semi-sweet, aromatic, 16.1-16.6 °Brix; keeping quality excellent; ripens 28 Aug. to 26 Sept. in Pyrénées-Orientales Dept., France. **Tree:** large; vigor moderate; semi-flared; semi-upright; productive; flowers showy, self-fertile; chilling requirement moderate to high, 700-1100 h; leaf glands reniform.

Cakequeen. Flat, white-fleshed, melting, semi-clingstone. **Origin:** Agro Selections Fruits, Elne, France, by A. Maillard and L. Maillard. Nectarloire × Cakedelic. CPVO PBR applied for. USPP 33,547; 12 Oct. 2021. **Fruit:** flat; medium to large, 115-150 g; full purple red blush; firm; crunchy; semi-sweet, aromatic, 15.5-16 °Brix; keeping quality excellent; ripens 6 Aug. to 13 Sept. in Pyrénées-Orientales Dept., France. **Tree:** large; vigor moderate; semi-flared; semi-upright; productive; flowers showy, self-fertile; chilling requirement moderate to high, 700-1100 h; leaf glands between round and reniform.

Cakepop. Flat, white-fleshed, melting, semi-clingstone. **Origin:** Agro Selections Fruits, Elne, France, by A. Maillard and L. Maillard. Nectarloire × Flatdiva. CPVO PBR applied for. USPP 33,446; 7 Sept. 2021. **Fruit:** medium to large, 140-160 g; flat; 80-90% purple red blush; firm; crunchy; semi-sweet, aromatic, 13.5-15 °Brix; keeping quality excellent; ripens 23 Aug. to 17 Sept. in Pyrénées-Orientales Dept., France. **Tree:** large; vigor moderate; growth habit semi-flared, semi-upright; productive; flowers showy, self-fertile; chilling requirement moderate to high, 700-1100 h; leaf glands reniform.

Cakerumba. Flat, white-fleshed, melting, semi-clingstone. **Origin:** Agro Selections Fruits, Elne, France, by A. Maillard and L. Maillard. Nectarperf × Cakedelic. CPVO PBR applied for. USPP 31,687; 21 Apr. 2020. **Fruit:** medium to large, 120-130 g; flat; 75-85% purple red blush over red background color; firm; crunchy; semi-sweet, aromatic, 15-16 °Brix; shipping quality good; ripens 4-30 Aug. in Pyrénées-Orientales Dept., France. **Tree:** large; vigor moderate; semi-flared; productive; flowers showy, self-fertile; chilling requirement moderate to high, 550-1100 h; leaf glands reniform.

Eric’s Bliss. White-fleshed, clingstone. **Origin:** Zaiger’s Genetics, Modesto, CA, by G.N. Zaiger, L.M. Gardner, and G.G. Zaiger. 60ZB345 × 552ZH874. USPP 31,037; 12 Nov. 2019. **Fruit:** medium to large, 190.3 g; globose; speckled dark red blush; firm; balanced sweetness and acidity, 15.2 °Brix; keeping quality good; ripens 23 May to 2 June in Modesto, CA. **Tree:** medium; vigorous; upright; flowers showy, self-fertile; chilling requirement low, 400 h; leaf glands reniform.

Magic Fire. Yellow-fleshed, clingstone. **Origin:** Zaiger’s Genetics, Modesto, CA, by G.N. Zaiger, L.M. Gardner, and G.G. Zaiger. 359LY48 × 219LV284. USPP 32,016; 28 July 2020. **Fruit:** large, 296.7 g; globose; high degree of dark red blush; firm; meaty; crisp; sweetness and acidity balanced, 13.5 °Brix; keeping and shipping quality good; ripens 24 July to 3 Aug. in Modesto, CA. **Tree:** large; vigorous; upright; productive; flowers showy, self-fertile; chilling requirement moderate, 750 h; leaf glands reniform.

Magna 2901 (Magna 29 01). Yellow-fleshed, melting, clingstone. **Origin:** Agro Selections Fruits and Institute of Agrifood Research and Technology, by C. Font i Forcada, G. Reig, C. Fontich, I. Batlle, S. Alegre, C.M. Cantin, I. Eduardo, J. Carbó, A. Maillard, L. Maillard, and J. Bonany. Redpear × ASF01.23.15.02. NJ. CPVO PBR 44942; 5 Dec. 2016. **Fruit:** medium; broad elliptic; 80-100% dark red blush; very firm; crunchy; flavor moderate to intense; 12.9 °Brix; postharvest quality moderate to poor; ripens 17-31 July in Lleida, Spain. **Tree:** spreading; flowers showy, self-fertile; leaf glands reniform.

Magna 3701. Yellow-fleshed, melting, clingstone. **Origin:** Agro Selections and Institute of Agrifood Research and Technology, by C. Font i Forcada, G. Reig, C. Fontich, I. Batlle, S. Alegre, C.M. Cantin, I. Eduardo, J. Carbó, A. Maillard, L. Maillard, and J. Bonany. 01.16.13.02 NJ × ASF17.24.93.02. NJ. CPVO PBR 49950; 16 July 2018. **Fruit:** medium to large; round; 50-70% red blush; firm; crunchy; flavor moderate to intense; 12.1 °Brix; postharvest quality good; ripens 8-24 Sept. in Lleida, Spain. **Tree:** upright to spreading; flowers showy, self-fertile; leaf glands reniform.

Nsdrl4262. Red-fleshed, melting, semi-clingstone. **Origin:** Agro Selections Fruits, Elne, France, by A. Maillard and L. Maillard. Nectarperf O.P. CPVO PBR applied for. USPP 31,651; 14 Apr. 2020. **Fruit:** medium to large, 153-168 g; round; 95% dark purple red blush on purple red background; firm; semi-sweet, low acid, aromatic, >12 °Brix; keeping and shipping quality very good; ripens 10 June to 7 July in Pyrénées-Orientales Dept., France. **Tree:** large; vigor moderate; semi-flared; semi-upright; productive; flowers showy, self-fertile; chilling requirement moderate to high, 700-1200 h; leaf glands reniform.

Nsdrl5261. Red-fleshed, melting, semi-clingstone. **Origin:** Agro Selections Fruits, Elne, France, by A. Maillard and L. Maillard. Nectarperf O.P. CPVO PBR applied for. USPP 31,700; 28 Apr. 2020. **Fruit:** medium, 115-130 g; 95% dark purple red blush on red background; firm; crunchy; semi-sweet, low acid, aromatic, >12 °Brix; keeping and shipping quality very good; ripens 5-23 June in Pyrénées-Orientales Dept., France. **Tree:** large; vigor moderate; semi-flared; productive; flowers showy, self-fertile; chilling requirement moderate to high, 700-1200 h; leaf glands reniform.

Nsdrl5262. Red-fleshed, melting, semi-clingstone. **Origin:** Agro Selections Fruits, Elne, France, by A. Maillard and L. Maillard. Nectarperf O.P. CPVO PBR applied for. USPP 31,745; 12 May 2020. **Fruit:** medium to large, 120-160 g; round; 95% dark red blush on purple red background; firm; crunchy; semi-sweet, low acid, aromatic, >12 °Brix; keeping and shipping quality very good; ripens 15 June to 2 July in Pyrénées-Orientales Dept., France. **Tree:** large; vigor moderate; semi-flared; productive; flowers showy, self-fertile; chilling requirement moderate to high, 700-1200 h; leaf glands reniform.

Nsdrl5273. Red-fleshed, melting, clingstone. **Origin:** Agro Selections Fruits, Elne, France, by A. Maillard and L. Maillard. Nectarperf O.P. CPVO PBR applied for. USPP 31,744; 12 May 2020. **Fruit:** medium to large, 145-160 g; round to slightly oblong; 95% dark purple red blush on purple red background; firm; crunchy; semi-sweet, low acid, aromatic, >13 °Brix; keeping and shipping quality very good; ripens 5-24 Aug. in Pyrénées-Orientales Dept., France. **Tree:** large; vigor moderate; semi-flared; semi-upright; productive; flowers showy, self-fertile; chilling requirement moderate to high, 700-1200 h; leaf glands reniform.

Polar Pride. White-fleshed, clingstone interspecific nectarine. **Origin:** Zaiger’s Genetics, Modesto, CA, by G.N. Zaiger, L.M. Gardner, and G.G. Zaiger. 48LW224 O.P.; pedigree includes nectarine, plum, and peach. USPP 26,732; 17 May 2016. **Fruit:** large, 241.1 g; globose; high red blush; firm; meaty, juicy; flavor balanced, 15.2 °Brix; keeping and shipping quality good; ripens 5-24 Aug. in Modesto. **Tree:** large; vigorous; upright; productive; flowers showy, self-fertile; chilling requirement moderate to high, 1000 h; leaf glands reniform.

Spring Flare®. 25. See Burnettcweighty.

medium to large, 268 g; globose; 90-95% red blush over medium orange-yellow background; firm; balanced sweetness with medium to low acidity, 13-15 °Brix; keeping and shipping quality good; ripens 8-18 July in San Joaquin Valley, CA. Tree: large; vigorous; upright; productive; flowers non-showy, self-fertile; chilling requirement moderate, 550 h; leaf glands reniform.

**Wanectthree.** Yellow-fleshed, non-melting, clingstone. Origin: Wawona Packing, Cutler, CA, by J.K. Slaughter and K.M. Roberts. Unnamed selection O.P., most likely selfed. USPP 32,906; 23 Mar. 2021. Fruit: medium to large, 255 g; globose; 85-95% red blush over medium orange-yellow background; firm; sweetness and acidity balanced, 12.5-14 °Brix; keeping and shipping quality good; ripens 30 June to 10 July in San Joaquin Valley, CA. Tree: medium large; moderately vigorous; upright; productive; flowers showy, self-fertile; chilling requirement moderate, 600 h; leaf glands reniform.

**Wanecttwo.** White-fleshed, non-melting, freestone. Origin: Wawona Packing, Cutler, CA, by J.K. Slaughter and K.M. Roberts. M9.111 × M12.070. USPP 31,715; 5 May 2020. Fruit: medium to large, 257 g; globose; 85-95% red blush over medium white background; firm; sweetness and low acidity balanced, 15-17 °Brix; keeping and shipping quality good; ripens 20-29 July in San Joaquin Valley, CA. Tree: medium large; vigorously; growing habit upright; productive; flowers non-showy, self-fertile; chilling requirement moderate, 500 h; leaf glands reniform.


**PASSION FRUIT**

**Eric T. Stafne, Mississippi State University, Poplarville, MS**

**Panama Red (Red Panama).** Vigorous, highly productive vine bearing oval, reddish purple fruit. Origin: Passiflora edulis f. edulis × P. edulis f. flavicarpa selected in Queensland, Australia. Fruit: medium to large, height and diameter 90 mm, ~71 g; oval; skin reddish purple, lenticels prominent; skin moderately thick; flesh yellow with black seeds; flavor sweet, acidity mild, juice 13.7 °Brix; aroma pleasant; keeps up to 10 days; not cold hardy, requires frost-free growing area and fertile, well-drained soil; not tolerant to drought or salinity; heat tolerant.

**PEACH**

**John Mark Lawton and Ksenija Gasic, Dept. of Plant and Environmental Sciences, Clemson University, Clemson, SC**

A-858P (Saturn Gold®). Yellow-fleshed, flat, melting, semi-freestone. Origin: University of Arkansas, Fayetteville, AR, by J.R. Clark. White Diamond × A609P. USPP 33,973; 1 Mar. 2022. Fruit: medium, 120 g; flat; 90% red blush over yellow orange background; flavor sweet, good, 15.9 °Brix; ripens 27 June near Clarksville, AR. Tree: size standard; vigorous; semi-spreading; productivity moderate; flowers showy, self-fertile; chilling requirement moderate to high, 800 h; fruit and leaf both moderately resistant to bacterial spot (Xanthomonas arboricola pv. pruni); leaf glands reniform.

**American.** Yellow-fleshed, nonmelting, clingstone. Origin: Zaiger’s Genetics, Modesto, CA, by G.N. Zaiger, L.M. Gardner, and G.G. Zaiger. 225LV72 O.P. USPP 27,828; 4 Apr. 2017. Fruit: large, 230 g; globose; skin attractive orange; firm; suitable for mechanical pitting; flavor balanced, 10.7 °Brix; keeping and shipping quality good; ripens 24 June to 4 July in Modesto. Tree: large; vigorous; growth habit upright; productive; flowers non-showy, self-fertile; chilling requirement moderate, 700 h; leaf glands reniform.

**Anna Rose™.** See NJ360.

**Burmepachfortytwo (Snow Flame® 35 [multiple cultivars may be marketed under this trade name]).** White-fleshed, nonmelting, clingstone. Origin: Burchell Nursery, Oakdale, CA, by J.K. Slaughter and T.J. Gerds. A40.005 × unnamed low-acid white nectarine. USPP 31,380; 21 Jan. 2020. Fruit: large, 275 g; uniform; 65-85% orange red blush over creamy white background; firm; juicy; sweetness and acidity balanced, 15-18 °Brix; keeping and shipping quality excellent; ripens 2-10 Sept. in Fowler, CA. Tree: large; vigor moderate; upright; productive; flowers showy, self-fertile; chilling requirement moderate, 650 h; leaf glands reniform.

**Felicia™.** See NJ361.

**Flatboom.** White-fleshed, flat, melting, semi-clingstone. Origin: Agro Selections Fruits, Elene, France, by A. Maillard and L. Maillard. Flattese × Nectarruby; tested at 02.12.430.16 and ASFI16245. CPVO PBR applied for. USPP 33,510; 28 Sept. 2021. Fruit: small-medium, 162 g; flat; 95% purple red blush over red background; very firm, crunchy; aromatic; semi-sweet, low-acid, >13 °Brix; shipping and keeping quality good; ripens 1-14 July in Pyrénées-Orientales Dept., France. Tree: large; vigor moderate; growth habit half-standing, semi-flared; flowers showy, self-fertile; chilling requirement moderate to high, 700-1200 h; leaf glands reniform.

**Flatrumba.** White-fleshed, flat, melting, semi-clingstone. Origin: Agro Selections Fruits, Elene, France, by A. Maillard and L. Maillard. Nectarbrandont × Cakedelice; tested as 24.05.87.15 PBP and ASFI15245. CPVO PBR applied for. USPP 33,510; 28 Sept. 2021. Fruit: large, 180-200 g; flat; pubescent light; purple red blush covers 75% of washed red background; very firm, crunchy; texture smooth; aromatic, sweet, >13 °Brix; shipping and keeping quality good; ripens 21 Aug. to 2 Sept. in Pyrénées-Orientales Dept., France. Tree: large; vigor moderate; productive; flowers showy, self-fertile; chilling requirement moderate to high, 700-1200 h; leaf glands round.

**Ivana.** Yellow-fleshed, semi-freestone Springcrest sport with higher color, lighter fuzz and firmer texture. Origin: University of Novi Sad, Faculty of Agriculture, Department of Fruit Growing and Viticulture, Novi Sad, Serbia, by V.M. Ognjanov, M. Miodragović, G. Barać, M. Ljubojević, J. Dulić, M. Sekulić, and T. Narandžić. Springcrest sport; selected 2006, introd. 2018. Fruit: medium to large, 152.4 g; globose; pubescent extremely light; 85% dark purple red blush over orange yellow background; very firm; flavor sweet, balanced, 11.97 °Brix; postharvest and keeping quality good; ripens 26 June in Novi Sad. Tree: vigor moderate; spreading; flowers showy, self-fertile; chilling requirement moderate to high, 700-900 h; leaf glands reniform.

Lust 2902 (Lux 29 02). White-fleshed, melting, clingstone. Origin: Agro Selections Fruits and Institute of Agrifood Research and Technology, by C. Font i Forcada, G. Reig, C. Fontich, I. Batlle, S. Alegre, C.M. Cantín, J. Carbo, J. Carlo, A. Mailla, L. Mailla, and J. Bonany. ASF 02.04.32.02 Pj × ASF 02.10.66.02 Nb. CPVO PBR 48353; 19 Feb. 2018. Fruit: medium to large; globose; light red blush covers nearly 100% of cream background surface; crunchy; flavor quality medium, 11.7 °Brix; postharvest quality good; ripens 10-31 July in Lleida, Spain. Tree: vigor moderate; spreading; flowers showy, self-fertile; flower bud density very sparse; chilling requirement high, 1000-1500 h (42-75 chill portions); leaf glands round.

Lust 3501 (Lux 35 01). White-fleshed, nonmelting freestone. Origin: Agro Selections Fruits and Institute of Agrifood Research and Technology, by C. Font i Forcada, G. Reig, C. Fontich, I. Batlle, S. Alegre, C.M. Cantín, J. Carbo, J. Carlo, A. Mailla, L. Mailla, and J. Bonany. ASF 01.05.05.08 Pb × ASF 01.24.93.02 Nj. CPVO PBR 46010; 3 Apr. 2017. Fruit: large; globose; 90% dark red blush over greenish white background; crunchy; flavor quality medium, 11.1 °Brix; postharvest quality good; ripens 26 Aug. to 6 Sept. in Lleida, Spain. Tree: vigor moderate; spreading; flowers showy, self-fertile; flower bud density very sparse tosparse; chilling requirement high, 1000-1500 h (42-75 chill portions); leaf glands reniform.

Lust 3502. White-fleshed, nonmelting freestone. Origin: Agro Selections Fruits and Institute of Agrifood Research and Technology, by C. Font i Forcada, G. Reig, C. Fontich, I. Batlle, S. Alegre, C.M. Cantín, J. Carbo, J. Carlo, A. Mailla, L. Mailla, and J. Bonany. ASF 03.13.07.04 Pb O.P. CPVO PBR 49951; 16 July 2018. Fruit: medium to large; globose; pink-red blush covers nearly 100% of creamy white background; crunchy; flavor quality medium, 11.1 °Brix; postharvest quality moderate; ripens 22 Aug. to 9 Sept. in Lleida, Spain. Tree: vigor moderate; growth habit upright to spreading; flowers showy, self-fertile; flower bud density very sparse to sparse; chilling requirement high, 1000-1500 h (42-75 chill portions); leaf glands reniform.


NJ361 (Felicia™). Yellow-fleshed, melting, semi-freestone. Origin: Rutgers University, New Brunswick, NJ, by J.C. Goffreda and A.M. Voordeekers. P.F.23 × D91-184-94229. USPP 33,474; 14 Sept. 2021. Fruit: medium to large, 180-280 g; globose; purple red blush over yellow-orange ground color; firm; sweetness and acidity balanced, 14.9 °Brix; keeping quality medium; ripens 28 July to 12 Aug. in Cream Ridge, NJ. Tree: vigorous; spreading; very productive; flowers showy, self-fertile; susceptibility to bacterial leaf spot low to medium; leaf glands reniform.

Nordic Gem™. See W-2.

Octoberfest™. See Zee Peh-1.

Pbro15170. White-fleshed, melting, semi-clingstone. Origin: Agro Selections Fruits, Elene, France, by A. Maillard and L. Maillard. Sweetstar O.P. CPVO PBR applied for. USPP 31,652; 14 Apr. 2020. Fruit: medium, 250 g; slightly asymmetrical; 75% dark red purple red blush over washed pink background; firm; semi-sweet; aromatic; eating quality good, 15 °Brix; shipping and postharvest quality good; ripens 30 July to 2 Aug. in Pyrénées-Orientales Dept., France. Tree: large; vigorous; moderate; productive; flowers showy, self-fertile; chilling requirement moderate to high, 552-1200 h; leaf glands reniform.

Pbro16168. White-fleshed, melting, semi-clingstone. Origin: Agro Selections Fruits, Elene, France, by A. Maillard and L. Maillard. Sweetstar O.P. CPVO 31,653;14 Apr. 2020. Fruit: medium, 210 g; 80% dark purple red blush over luminous red background; firm to very firm; crunchy; juicy; semi-sweet, aromatic, 14.1 °Brix; shipping and postharvest quality good; ripens 24 July to 14 Aug. in Pyrénées-Orientales Dept., France. Tree: large; vigorous; moderate; productive; flowers showy, self-fertile; chilling requirement moderate to high, 552-1200 h; leaf glands reniform.

Pearl Princess VI. White-fleshed, melting, clingstone. Origin: B Q Genetics, Le Grand, CA, by L.G. Bradford and J.M. Quisenberry. Pearl Princess V ™ × 66M351. USPP 33,156; 15 June 2021. Fruit: large, 300 g; oblate; full deep red blush over a strong pink background; firm; shoulders soften fast; sweet, low-acid, 16 °Brix; ripens 22 June to 2 July in San Joaquin Valley, CA. Tree: medium; vigorous; semi-upright; flowers showy, self-fertile; chilling requirement moderate, 550 h; leaf glands reniform.


Red Princess VI. Yellow-fleshed, nonmelting, clingstone. Origin: B Q Genetics, Le Grand, CA, by L.G. Bradford and J.M. Quisenberry. July Princess × August Bright. USPP 31,701; 28 Apr. 2020. Fruit: large, 369 g; globose; dark red blush over strong orange background with dark reddish orange suture line; firm; sweetness and acidity balanced; 15-16 °Brix; eating and keeping quality good; ripens 21 Aug. to 1 Sept. in San Joaquin Valley, CA. Tree: large; vigorous; spreading; flowers showy, self-fertile; chilling requirement moderate, 700 h; leaf glands reniform.

Saturn Gold™. See A-858P.

Snow Flame™. See Burpeachfortytwo.

Supechtwentive. Low-chill, yellow-fleshed, melting, clingstone. Origin: Sun World International, Bakersville, CA, by T.A. Bacon and T.J. Frett. Supechtesseventeen × PeachLate12. USPP 32,928; 30 Mar. 2021. Fruit: large, 190 g; globose; nearly 100% medium red blush covering medium yellow-orange background; firm; flavor
sweet, mild, balanced; 13 °Brix; ripens 27 Apr. to 7 May in Wasco, CA. **Tree:** medium; vigorous; semi-upright; blooms early, ~10 Feb.; flowers showy, self-fertile; chilling requirement low, 200 h; leaf glands globose.

**Supechwentsysix.** Low-chill, yellow-fleshed, melting, semi-cling-stone. **Origin:** Sun World International, Bakersfield, CA, by T.A. Bacon. PE226 O.P. USPP 32,947; 6 Apr. 2021. **Fruit:** large, 270 g; globose; medium to dark red blush covering 95% of medium yellow-orange background; firm; flavor sweet, mild, balanced; 12 °Brix; ripens 1-10 June in Wasco, CA. **Tree:** medium; vigorous; semi-upright; flowers showy, self-fertile; chilling requirement low, 200 h; leaf glands globose.

**Terram 2902 (Terram 29 02).** Yellow-fleshed, melting, clingstone. **Origin:** Agro Selections Fruits and Institute of Agrifood Research and Technology, Spain, by C. Font i Forcada, G. Reig, C. Fontich, I. Batlle, S. Alegría, C.M. Cantín, I. Eduardo, J. Carbó, A. Maillard, L. Maillard, and J. Bonany. EP 01.27.83.97 Pj × ASF 01.07.33.01 Nj. CPVO PBR 48567; 19 Mar. 2018. **Fruit:** medium to large; globose; medium red blush covering nearly all greenish yellow background; crunchy; flavor quality medium, 10.8 °Brix; postharvest quality medium; ripens 7-28 July in Lleida, Spain. **Tree:** vigorous; upright; medium to large; globose; medium red blush covering 90% of yellow background; crunchy; flavor quality medium, 11.3 °Brix; postharvest quality poor; ripens 13-17 August in Lleida, Spain. **Tree:** vigor moderate; upright; flowers showy, self-fertile; flower bud density very sparse to sparse; chilling requirement high, 1000-1500 h (42-75 chill portions); leaf glands globose.

**Terram 3401.** Yellow-fleshed, nonmelting clingstone. **Origin:** Agro Selections Fruits and Institute of Agrifood Research and Technology, Spain, by C. Font i Forcada, G. Reig, C. Fontich, I. Batlle, S. Alegría, C.M. Cantín, I. Eduardo, J. Carbó, A. Maillard, L. Maillard, and J. Bonany. ASF 02.04.55.02 Pj × 58GC76. CPVO PBR 52697; 20 May 2019. **Fruit:** medium to large; globose; medium red blush covering 90% of yellow background; crunchy; flavor quality medium, 11.3 °Brix; postharvest quality poor; ripens 13-17 August in Lleida, Spain. **Tree:** vigor moderate; upright; flowers showy, self-fertile; flower bud density very sparse; chilling requirement high, 1000-1500 h (42-75 chill portions); leaf glands reniform.

**Terram 3601 (Terram 36 01).** High-chill, yellow-fleshed, melting, freestone. **Origin:** Agro Selections Fruits and Institute of Agrifood Research and Technology, Spain, by C. Font i Forcada, G. Reig, C. Fontich, I. Batlle, S. Alegría, C.M. Cantín, I. Eduardo, J. Carbó, A. Maillard, L. Maillard, and J. Bonany. Ryan Sun O.P. CPVO PBR 44390; 19 Sept. 2016. **Fruit:** medium to large; broad elliptic; medium red blush covering 80% of creamy yellow background; crunchy; flavor quality medium; 11.6 °Brix; postharvest quality poor; ripens 31 Aug. to 15 Sept. in Lleida, Spain. **Tree:** vigor moderate; upright; flowers showy, self-fertile; flower bud density very sparse; flowers showy, self-fertile; chilling requirement high, 1000-1500 h (42-75 chill portions); leaf glands reniform.

**Terram 3701.** Yellow-fleshed, melting, clingstone. **Origin:** Agro Selections Fruits and Institute of Agrifood Research and Technology, Spain, by C. Font i Forcada, G. Reig, C. Fontich, I. Batlle, S. Alegría, C.M. Cantín, I. Eduardo, J. Carbó, A. Maillard, L. Maillard, and J. Bonany. ASF 01.06.39.99 Pj × ASF 01.07.33.01 N. CPVO PBR 52696; 20 May 2019. **Fruit:** medium to large; globose; medium red blush covering 60% of yellow background; crunchy; flavor quality medium; 11.3 °Brix; postharvest quality medium; ripens 7-27 Sept. in Lleida, Spain. **Tree:** vigor moderate; upright; flowers showy, self-fertile; chilling requirement high, 1000-1500 h (42-75 chill portions); leaf glands reniform.

**W-2 (Nordic Gem™).** White-fleshed, melting, freestone. **Origin:** Clovis, CA, by J. Doyle. Autumn Flame × Snowflame. USPP 33,248; 13 July 2021. **Fruit:** medium to large, 169-202 g; uniform; globose; striped to dappled red blush over cream to greenish-yellow background; aromatic, sweetness and acidity balanced; texture fine; ripens 4-14 Aug. in Sanger, CA. **Tree:** vigorous; upright to spreading; flowers showy, self-fertile; leaf glands usually reniform, occasionally globose.

**Wapeachone.** Yellow-fleshed, nonmelting, late-season clingstone. **Origin:** Wawona Packing, Cutler, CA, by J.K. Slaughter and K.M. Roberts. J25.002 × O.P. USPP 32,431; 10 Nov. 2020. **Fruit:** large, 327 g; globose; orange-red blush covers 50-60% of medium yellow background; firm; juicy; sweetness and acidity balanced, 15-17 °Brix; ripens 12-19 Oct. in San Joaquin Valley, CA. **Tree:** large; vigorous; productive; flowers showy, self-fertile; chilling requirement moderate, 650 h; leaf glands reniform.

**White Delight Three.** White-fleshed, clingstone. **Origin:** Texas A&M University, College Station, TX, by D.H. Byrne and N. Anderson. TXW1591-1 × Zao Hong Zhu; planted 1999. USPP abandoned. **Fruit:** medium; round with slight tip; 30-65% red blush over very pale yellow background; keeping and shipping quality good; firm; sweet, low-acid; ripens end of June near Fairfield, TX. **Tree:** size standard; vigorous; semi-spread; productive; flowers showy, self-fertile; chilling requirement moderate, 700 h; leaf glands reniform.

**Zee Peh-1 (Octoberfest™).** Yellow-fleshed, clingstone. **Origin:** Zaiger’s Genetics, Modesto, CA, by G.N. Zaiger, L.M. Gardner, and G.G. Zaiger. 366LH584 × O.P. USPP 32,236; 29 Sept. 2020. **Fruit:** large, 258.4 g; globose; attractive red blush over yellow background; firm; sweetness and acidity balanced; 13 °Brix; storage and shipping ability good; ripens 27 Aug. to 6 Sept. in Modesto. **Tree:** large; vigorous; upright; productive; flowers showy, self-fertile; chilling requirement moderate, 800 h; leaf glands reniform.

**PEAR**

**Soon Li Teh and Kate Evans, Washington State University Tree Fruit Research and Extension Center, Wenatchee, WA**

**Chastity®.** See NCPX2.

**Olsen Bosc.** Distinctive bronze-russetted European pear. **Origin:** D. Olsen, Zillah, WA. Bosc mutation; discovered 2000; propagated 2007. USPP 31,444; 18 Feb. 2020. **Fruit:** medium-large, length 10.2 cm, width 7.0 cm, ~216 g; pyriform, less elongated than Golden Russet Bosc, slightly asymmetric; yellowish brown, 95-100 % russet; flesh color cream; flesh firmness 8.6 kg, texture crisp, fine-grained, medium to juicy; 16 °Brix; fresh, dessert market; storage excellent. **Tree:** highly vigorous, similar to Bosc; growth habit upright to spreading; height 3.6-5.5 m, spread 3.0 m; blooms late March to early April in Zillah; winter hardy, similar to Bosc; disease resistance similar to Bosc.

**NCPX2 (Chastity®).** Tripled, interspecific flowering pear for landscape with attractive fall foliage and reduced fertility. **Origin:** North Carolina State University, Raleigh, by T.G. Ramney. Pyrus calleryana H2002-031-010 (induced tetraploid) × P. Silver Ball (diploid hybrid); propagated 2010. USPP 30,788; 13 Aug. 2019. **Fruit:** small, diameter 1.3-2.5 cm, round to ovoid; gray orange to gray brown, no russet. **Tree:** growth habit upright pyramidal, height 8.0 m, width 6.0 m after 9 years; cold hardy USDA Zone 5b; highly tolerant to fire blight (**Erwinia amylovora**).
University, Auburn, AL, by H. Amling. Seedling selection; DNA analysis indicates it is a likely offspring of Schley. **Nut:** ovate to oblong, base cupulidate, apex acuminate; oblong in cross section; 139 nuts/kg, 55% kernel; golden kernel; ripens 11 Oct. in Tifton, GA. **Tree:** bearing light; protandrous with early pollen shed and midseason receptivity; highly resistant to pecan scab; resistant to black pecan aphid (*Melanocallis caryaeolae*); late-season foliar health excellent.

**Avalon™.** See Ga. 00-7-75.

**Cunard.** Extremely precocious and prolific plant producing early maturing nuts with high percent kernel. **Origin:** University of Georgia, Athens, by D. Sparks. Wichita × Pawnee; crossed 1989; selected 2002; tested as #70; introd. 2011. USPP 24,373; 8 Apr. 2014. **Nut:** oblong, base obtuse, apex cupulidate to cupulidate asymmetric; round in cross section; 106 nuts/kg, 62% kernel; ripens 27 Sept. in Albany, GA. **Tree:** extremely precocious and prolific; bud break early; protogynous with early receptivity and midseason pollen shed; susceptible to pecan scab.

**Ga. 00-7-75 (Avalon™).** Productive, regular-bearing plant with high resistance to pecan scab. **Origin:** University of Georgia, Tifton, by P. Conner. Gloria Grande × Caddo (erroneously listed as Gloria Grande × Barton in release); crossed 2000; selected 2009; tested as Ga. 00-7-75; introd. 2018. USPP 30,227; 26 Feb. 2019. **Nut:** oblong, apex acuminate, base acuminate; round in cross section; 104 nuts/kg, 54% kernel; dorsal groove medium narrow, basal cleft deep; golden kernel to cream; ripens 7-10 Oct. in Tifton. **Tree:** vigorous; bearing productive and regular; protogynous with early receptivity and mid to late pollen shed; highly resistant to scab; susceptible to black pecan aphid.

**Huffman.** Scab-resistant plant consistently producing large nuts with mammoth-sized kernels. **Origin:** University of Georgia, Athens, by D. Sparks. Desirable × Pawnee; crossed 1990; selected 2005; tested as #3; introd. 2013. USPP 25,465; 22 Jan. 2015. **Nut:** oblong, base round, apex obtuse and cupulidate to cupulidate asymmetric; round in cross section; 84 nuts/kg, 57% kernel; dorsal grooves wide; golden kernel to cream; ripens 6 Oct. in Albany, GA. **Tree:** fruit cluster count small, with acceptable production; protandrous with early pollen shed and mid receptivity; moderately resistant to scab; resistant to black pecan aphid.

**Lipan.** Medium-early maturing plant producing regular crops of high-quality nuts. **Origin:** USDA-ARS, College Station, TX, by T.E. Thompson and L.J. Grauke. Cheyenne × Pawnee; crossed 1986; selected 1996; tested as 1986-03-0624; introd. 2012. **Nut:** oblong, base obtuse, apex cupulidate to cupulidate asymmetric; oblate in cross section; 101 nuts/kg, 53% kernel; kernel cream to golden; ripens 4 Oct. in Brownwood, TX. **Tree:** bearing regular, protandrous with early pollen shed and midseason receptivity; moderately resistant to scab; resistant to black pecan aphid.

**Morrill.** Large nuts with exceptionally high percentage kernel. **Origin:** University of Georgia, Athens, by D. Sparks. Wichita × Pawnee; crossed 1989; selected 2003; tested as #58; introd. 2011. USPP 23,335; 22 Jan. 2013. **Nut:** oblong, base obtuse, apex elongated cupulidate to cupulidate asymmetric; round in cross section; 115 nuts/kg, 64% kernel; dorsal grooves narrow; golden kernel to cream; ripens 9 Oct. in Albany, GA. **Tree:** moderate productivity with low cluster count; protogynous with midseason receptivity and late pollen shed; susceptible to pecan scab; resistant to black pecan aphid.

**Tanner.** Early-maturing, productive, large-fruited plant resistant to pecan scab. **Origin:** University of Georgia, Athens, by D. Sparks. Desirable × Pawnee; crossed 1995; selected 2009; tested as #112; introd. 2018. USPP 29,422; 11 Jan. 2019. **Nut:** oblong, base obtuse, apex acute to acute asymmetric; round in cross section; 99 nuts/kg, 55% kernel; dorsal grooves wide; golden kernel to cream; ripens 20 Sept. in Albany, GA. **Tree:** vigorous; productive; protandrous with early to mid pollen shed and mid to late receptivity; resistant to scab; moderately resistant to black pecan aphid.

Tom. Early-maturing, productive plant producing small nuts of good quality suited for the confectionary trade. **Origin:** University of Georgia, Athens, by D. Sparks. Wichita × Pawnee; crossed 1995; selected 2006; tested as #121; introd. 2014. USPP 26,705; 11 May 2016. **Nut:** ovate, base round, apex cupulidate; round in cross section; 128 nuts/kg, 55% kernel; dorsal grooves wide and deep; kernel golden to cream; ripens early, 24 Sept. in Albany, GA. **Tree:** vigorous but of small stature; productive; protandrous with early to mid pollen shed and mid to late receptivity; resistant to black pecan aphid; resistant to pecan leaf scorch mite (*Eotetranychus hiciariae*).

**Treadwell.** Precocious and prolific plant producing early maturing nuts of excellent quality. **Origin:** University of Georgia, Athens, by D. Sparks. Wichita × Pawnee; crossed 1989; selected 2002; tested as #34; introd. 2013. USPP 25,740; 22 Jan. 2015. **Nut:** oblong, base obtuse, apex cupulidate to cupulidate asymmetric; round in cross section; 115 nuts/kg, 64% kernel; dorsal grooves narrow and shallow; kernel golden to cream; ripens 24 Sept. in Albany, GA. **Tree:** vigorous; fruit production precocious; protandrous with early to mid pollen shed and mid to late receptivity; highly resistant to nitrogen scorch; resistant to black pecan aphid.

**Whiddon.** Scab-resistant plant consistently producing large nuts with mammoth-sized kernels. **Origin:** University of Georgia, Athens, by D. Sparks. Desirable × Pawnee; crossed 1990; selected 2004; tested as #16; introd. 2016. USPP 29,316; 29 May 2018. **Nut:** oblong, base round, apex cupulidate to cupulidate asymmetric; round in cross section; 88 nuts/kg, 56% kernel; dorsal grooves narrow and deep; kernel golden to cream; ripens 9 Oct. in Albany, GA. **Tree:** productive, fruit cluster count small; protandrous with early to mid pollen shed and mid to late receptivity; resistant to scab; moderately resistant to black pecan aphid.

**Zinner.** Productive and regular-bearing plant producing high-quality nuts with exceptional light kernel color. **Origin:** Auburn University, Auburn, AL, by W. Goff; seedling selection made at Auburn from the orchard of S. Zinner in Baldwin County, AL, subsequently recommended by P. Conner, University of Georgia, Tifton; DNA analysis indicates it is a likely offspring of Stuart and Schley. **Nut:** oblong, base round, apex cupulidate to cupulidate asymmetric; oval in cross section; 106 nuts/kg, 56% kernel; kernel light cream color with excellent color stability; ripens 10 Oct. in Tifton. **Tree:** productive and regular bearing; protogynous with early to mid receptivity and mid to mid-late pollen shed; susceptible to pecan scab; susceptible to black pecan aphid.

**PINEAPPLE**

Garth M. Sanewski, Queensland Dept. of Agriculture and Fisheries, Nambour, QLD, Australia

**Okino P17.** Disease-resistant plant producing fruit with high TSS. **Origin:** Okinawa Prefectural Agricultural Research Center, by M. Shoda, M. Takeuchi, I. Yonaha, K. Yonamine, C. Moromizato, K. Degi, Y. Awaguni, K. Kina, S. Sakiyama, and H. Ikemiya. Yagafu × Summer Gold. Japanese PBR 29925; 19 Jan. 2017. **Fruit:** size medium; oblong; skin yellow; fruitlets flat; flesh pale yellow; core large; TSS 19%; titratable citric acid equivalent acidity 0.6%. **Plant:** vigor moderate; slips 3; suckers 3; leaves green with weak anthocyanin; spines absent; resistant to fruitlet core rot (*Fusarium ananatum*).

**Okino P19.** Orange/yellow-skinned fruit with white flesh. **Origin:** Okinawa Prefectural Agricultural Research Center, by M. Takeuchi, M.

**Pinkglow.** See Rosé.

**Red Dragon.** Red-skinned fruit with pale yellow flesh. **Origin:** DMPL Management Services, Singapore by R.B. Pimentel, A.T. Aquino, and D.D. Gamutan. Morada × MD-2. Japanese PBR 28708; 13 Dec. 2021. **Fruit:** small; slightly conical; skin red/purple; fruitlets flat, midsize; flesh pale yellow, firm; core large; TSS medium; titratable citric acid equivalent low. **Plant:** growth habit semi-upright; leaf edge spiny; leaves very high in anthocyanin; slips absent.

**Red Gold.** Dark red–skinned fruit with pale yellow to yellow flesh. **Origin:** DMPL Management Services, Singapore, by R.B. Pimentel, A.T. Aquino, and D.D. Gamutan. Morada × MD-2. Japanese PBR 28707; 13 Dec. 2021. **Fruit:** small; slightly conical; skin red/purple; fruitlets flat, midsize; flesh pale yellow to yellow; TSS medium, flesh firm. **Plant:** growth habit semi-upright; leaf edge spiny; leaves very high in anthocyanin, slips absent or few.

**Rosé (Pinkglow).** MD-2 genetically modified to have pink flesh and striped, red skin color from suppression of carotenoids and expression of lycopene; suppression of autonomous flowering through suppression of ethylene. **Origin:** genetic engineering at Del Monte Fresh Produce laboratory, Richmond, CA, by T.R. Young and E. Firoozabady; US patent 7,663,021; 16 Feb. 2010. Event name EF2-114; event code FDP-00114-5; reviewed by U.S. Food and Drug Administration in 2016. **Selection:** field selection at Del Monte Fresh Produce, Pindeco Plantation, Costa Rica, by E. Firoozabady and T.R. Young. USPP 25,763: 4 Aug. 2015. **Method of trait development:** Agrobacterium tumefaciens-mediated plant transformation; introduction of a phytoene synthase from *Citrus unshiu*; RNAi suppression of lycopene β-cyclase and lycopene cyclase; RNAi suppression of 1-aminocyclopropane-1-carboxylic acid synthase. **Fruit:** size medium, 1.5 kg with crown; cylindrical; skin develops yellow, orange and red striping in shoulders at maturity; flesh develops yellow, orange/yellow; texture firm; cores large; TSS medium; titratable citric acid equivalent acidity 0.6%; vitamin C 40 mg/100 ml. **Plant:** growth habit medium; leaf edge smooth with spines at tip; leaf color green.

**Sensuous.** Small, yellow/orange-skinned fruit with pale yellow flesh. **Origin:** Dole Asia Holdings, by J.C. Acosta. Japanese PBR 24306; 20 May 2015. **Fruit:** small; cylindrical; skin yellow/orange; flesh pale yellow; core medium; TSS high; titratable citric acid equivalent medium; ripens midseason. **Plant:** size medium; leaves green with anthocyanin mid-lamina.

**View of Sunset.** Dark green-skinned fruit, low to medium in acidity. **Origin:** by C.H. Ng. Malaysian PBR 0111; 23 Aug. 2016. **Fruit:** small, 1.06 kg; cylindrical; skin dark green at maturity; flesh pale yellow; texture fibrous; core small to medium; TSS 15%; titratable citric acid equivalent low to medium. **Plant:** growth habit upright; leaf/pale green with weak anthocyanin along margins; spines present, purple/pink; peduncle long, slips few.

**Vintage Ruby.** Bright reddish/purple-skinned fruit. **Origin:** Del Monte International, Buenos Aires, Puntarenas, Costa Rica by, M. Jimenez, G. Matarrita, F. Vargas, and H. Sauter. MD-2 × F1 (MD-2 × Morada); crossed 2008; selected 2019; tested as C83-5.4. USPP 33,544; 12 Oct. 2021. **Fruit:** size medium-large, 2.5 kg with crown; cylindrical to slightly conical; skin red/purple; fruitlets flat, midsize; flesh light yellow to yellow; core large; TSS 13.8%; titratable citric acid equivalent acidity 0.6%; vitamin C 49 mg/100 ml. **Plant:** vigorous; growth habit semi-upright; height 52 cm; leaf edge smooth with occasional spiny tip; leaf color purple to dark purple; peduncle long; slips absent.

**PISTACHIO**

Dan E. Parfitt (emeritus), Dept. of Plant Sciences, University of California, Davis, CA

**Famoso.** Mid-spring flowering male *P. vera* for use as a pollinator for Kerman. **Origin:** University of California, Davis, by C.E. Kallsen, D.E. Parfitt, and J. Maranto. 2-35 × ES#4; introd. 2015. USPP 28,994; 27 Feb. 2018. **Flowers:** male; multiple inflorescences borne laterally on 1-year-old branches; panicles 2.5 cm long; similar to Peters or Randy males; blooms 0-7 d before Peters but after Randy male. **Tree:** similar to other male cultivars; provides better flowering synchrony for Kerman female than the standard pollinator, Peters.

**Gundrop.** Early flowering and maturing female *P. vera*. **Origin:** University of California, Davis, by C.E. Kallsen and D.E. Parfitt. B15-69 O.P.; selected as S-43; introd. 2015. USPP 28,953; 13 Feb. 2016. **Nuts:** large; split percentage very good; borne in large panicles, husks can be “gummy” in some years; matures over relatively short period, 10-12 d before Golden Hills. **Tree:** large; irregular crown and large, stiff secondary branches suitable for nut shaking at harvest; blooms 5 d before Golden Hills, and 10-11 d before Kerman; can be used to spread out harvest season; yield high; may require less chilling and perform better in low-chill years.

**Tejon.** Very early flowering male *P. vera* for use as a pollinator for Gundrop female pistachio. **Origin:** University of California, Davis, by C.E. Kallsen and D.E. Parfitt. B4-19 O.P. B4-19 is an early flowering open-pollinated female from the UCD breeding program; introd. 2015. USPP 28,931; 6 Feb. 2018. **Flowers:** similar to Peters or Randy males; number of flowers large; pollen abundant, durable, with a high germination ratio. **Tree:** earliest flowering commercial male in California, flowers 5 d before Randy.

**PISTACHIO ROOTSTOCK**

Dan E. Parfitt (emeritus), Dept. of Plant Sciences, University of California, Davis, CA

**Arota.** *P. hybrid* rootstock for *P. vera* scions. **Origin:** Nazari Business Group, Iran, by M. Akbari, H. Horkhahabi, M. Heydari, and A. Ghorbani. **Flowering and maturing female** *P. atlantica × P. integerrima*. **Tree:** leaves intermediate; root growth habit similar to *P. vera*; 7% of seedlings are more vigorous than on UCBI; good graft compatibility, similar to UCBI.

**P.N.B.1.** *P. hybrid* rootstock for *P. vera* scions. **Origin:** McFarland, CA, by B. Blackwell. **Flowering and maturing female** *P. atlantica O.P. × unknown P. integerrima* pollen. **Tree:** produces 1-2% higher yield as a rootstock for grafted *P. vera*; grows more vigorously in field; similar to PN 15-4, USPP 14,132; suckers more than some other rootstock selections; sex not determined at time of plant patent.

**PIAHAYA**

Ricardo Goenaga, USDA-ARS, Tropical Agriculture Research Station, Mayaguez, PR

David Karp, Dept. of Botany and Plant Sciences, University of California, Riverside, CA

DF 14. *Hyllocerus undatus* with dark to red skin and white flesh. **Origin:** Southern Horticultural Research Institute, Long Dinh, Vietnam, by T.O.Y. Tran, Nhat T. Nguyen, Ngoc T. Nguyen, and V.C. Huynh; New Zealand Institute for Plant and Food Research, Havelock North, New Zealand, by S. Kumar. **Flowers:** male; multiple inflorescences borne laterally on 1-year-old branches; panicles 2.5 cm long; similar to Peters or Randy males; blooms 0-7 d before Peters but after Randy male. **Tree:** similar to other male cultivars; provides better flowering synchrony for Kerman female than the standard pollinator, Peters.
medium, 98 mm; width medium, 65 mm; 255 g; number of bracts few, 18; length of apical bracts medium, 44 mm; main color of middle bracts near light green (RHS 144A); skin dark pink to red; skin thickness average, 2 mm; flesh near white (RHS NN155D), with a pink strip under skin; sweetness medium, 16.7 °Brix; seed size small to medium; flavor excellent; ripens mid-May to end November in Long Dinh. Plant: drooping; vigor strong; areoles: number of spines on intact mature stems medium, ~3; spine length medium, 4 mm; tolerant to canker (Neoscytalidium dimidiatum).

DF 16. Hylocereus undatus with pink skin and light pink flesh. Origin: Southern Horticultural Research Institute, Long Dinh, Vietnam, by T.O.Y. Tran, Nhat T. Nguyen, Ngoc T. Nguyen, and V.C. Huynh; New Zealand Institute for Plant and Food Research, Havelock North, New Zealand, by S. Kumar. RF × LD1, crossed 2013 in Tien Giang; selected 2016. USPP 33,176; 22 June 2021. Fruit: mid-size, length medium, 94 mm; width narrow to medium, 62 mm; 290 g; number of bracts medium, 23; length of apical bracts short, 35 mm; main color of middle bracts near red (RHS 53D); skin dark pink to red; skin thick, 2 mm; flesh near light pink (RHS 55C); sweetness high, 19 °Brix; seed size small to medium; flavor excellent; ripens mid-May to end November in Long Dinh. Plant: drooping; vigor strong; areoles: number of spines on intact mature stems medium to many, ~4; spine length long, 5 mm; tolerant to canker.

N97-17. Hylocereus undatus with red skin and white flesh. Origin: selection made by C.Y. Yen, donated to the USDA-ARS Tropical Plant Genetic Resources and Disease Research Unit, Hilo, HI; evaluated for 5 years under intensive management at USDA-ARS Tropical Agriculture Research Station, Mayaguez, PR. Fruit: length 76.7 mm, diameter 62.1 cm, 170 g; round; skin red, intermediate in thickness, with numerous bracts; flesh very firm, white, 12.2 °Brix; quality acceptable; ripens June to November; 5-year yield average: 16,142 kg/ha, 79,404 fruits/ha; commercial potential good.

NOI-13. Hylocereus undatus with red skin and red flesh. Origin: selection made by C.Y. Yen, donated to the USDA-ARS Tropical Plant Genetic Resources and Disease Research Unit, Hilo, HI; evaluated for 5 years under intensive management at USDA-ARS Tropical Agriculture Research Station, Mayaguez, PR. Fruit: 309.4 g; round; quality good; skin red, intermediate in thickness, with numerous bracts; flesh very firm, red, 12.4 °Brix; ripens June to November; 5-year yield average: 17,057 kg/ha, 79,404 fruits/ha; grows well in full sun; commercial potential good.

NOI-14. Hylocereus undatus with red skin and red flesh. Origin: selection made by C.Y. Yen, donated to the USDA-ARS Tropical Plant Genetic Resources and Disease Research Unit, Hilo, HI; evaluated for 5 years under intensive management at USDA-ARS Tropical Agriculture Research Station, Mayaguez, PR. Fruit: 215 g; round; skin red, intermediate in thickness, with numerous bracts; flesh very firm, red, 13.2 °Brix; quality good; ripens June to November; 5-year yield average: 15,160 kg/ha, 63,556 fruits/ha; grows well in full sun; commercial potential good.

PLUM AND INTERSPECIFIC HYBRIDS

John Mark Lawton and Ksenija Gasic, Dept. of Plant and Environmental Sciences, Clemson University, Clemson, SC

Plum

Blackred VII. Red-fleshed, clingstone Asian plum. Origin: B Q Genetics, Le Grand, CA, by L.G. Bradford and J.M. Quisenberry. September Yummy × unknown. USPP 31,191; 10 Dec. 2019. Fruit: medium, 139 g; heart shaped; uniform; skin nearly full red; firm; juicy; flavor excellent, very sweet, 21 °Brix; shipping and keeping quality excellent; ripens 13-30 Sept. in San Joaquin Valley, CA. Tree: medium; vigorous; spreading; productive; flowers white, self-incompatible; leaf glads globeose.

Plumcandy XV. Red-fleshed, clingstone Asian plum. Origin: B Q Genetics, Le Grand, CA, by L.G. Bradford and J.M. Quisenberry. September Yummy × unknown. USPP 31,191; 10 Dec. 2019. Fruit: medium, 139 g; heart shaped; uniform; skin nearly full red; firm; juicy; flavor excellent, very sweet, 21 °Brix; shipping and keeping quality excellent; ripens 13-30 Sept. in San Joaquin Valley, CA. Tree: medium; vigorous; spreading; productive; flowers white, self-incompatible; leaf glads globeose.

Sulpum59. Late ripening, yellow-fleshed, clingstone Asian plum. Origin: Sun World International, Bakersfield, CA, by T.A. Bacon and T.J. Frett. PL9688B O.P. USPP 33,720; 7 Dec. 2021. Fruit: very large, 150 g; round; symmetric; skin reddish-black; firm; juicy; flavor mildly sweet, 22 °Brix; keeping and shipping quality good; ripens 5-15 Sept. in Kern County, CA. Tree: medium; upright; vigorous; moderate; productive; blooms very late; flowers light green, showy,
Self-incompatible; chilling requirement moderate, ~700 h; leaf glands globose.

**Suplum60.** Fresh market, late ripening, red-fleshed, clingstone Asian plum. *Origin:* Sun World International, Bakersfield, CA, by T.A. Bacon and T.J. Frett. 97P040-010-244 O.P. USPP 33,837; 11 Jan. 2022. *Fruit:* very large, 176 g; round; skin black; firm; texture crisp-juicy; flavor mildly sweet, acidity medium, 28 °Brix; keeping and shipping quality good; ripens 7-16 June in Kern County, CA. *Tree:* medium; spreading; vigorous; semi-upright; productive; flowers white, self-incompatible; chilling requirement moderate, 700 h; leaf glands globose.

**Suplumfiftyeight.** Red-fleshed, clingstone Asian plum. *Origin:* Sun World International, Bakersfield, CA, by T.A. Bacon. PL660RB × PL729RB. USPP 33,247; 13 July 2021. *Fruit:* large, 132 g; skin black; firm; flavor mildly sweet, 18 °Brix; keeping and shipping quality good; ripens 7-16 June in Kern County, CA. *Tree:* medium; spreading; vigorous; semi-upright; productive; flowers white, self-incompatible; chilling requirement low, 350 h; leaf glands globose.

**Suplumfiftyfive.** Red-fleshed, semi-freestone Asian plum. *Origin:* Sun World International, Bakersfield, CA, by T.A. Bacon. PL671RB × Suplumfortyfive. USPP 31,079; 19 Nov. 2019. *Fruit:* large, 128 g; skin black; firm; flavor sweet-mild, mildly tart, 17 °Brix; keeping and shipping quality good; ripens 10-20 June in Kern County, CA. *Tree:* medium; vigorous; semi-upright; productive; flowers white, self-incompatible; chilling requirement low, 300 h; leaf glands globose.

**Suplumfiftyseven.** Red-fleshed, clingstone Asian plum. *Origin:* Sun World International, Bakersfield, CA, by T.A. Bacon. Suplumfortyseven × unknown. USPP 31,889; 9 June 2020. *Fruit:* large, 140 g; skin black; flesh dark red; firm; flavor mildly sweet, 16 °Brix; keeping and shipping quality good; ripens 15-23 June in Kern County, CA. *Tree:* medium; semi-upright; vigorous; moderate; productive; flowers white, self-incompatible; chilling requirement moderate, 550 h; leaf glands globose, mostly eglandular.

**Suplumfiftysix.** Red-fleshed, semi-freestone Asian plum. *Origin:* Sun World International, Bakersfield, CA, by T.A. Bacon. Suplumtwentynine O.P. USPP 31,078; 19 Nov. 2019. *Fruit:* large, 160 g; round; skin reddish-black; firm; flavor sweet-mild; keeping and shipping quality good; ripens 7-28 Sept. in Kern County, CA. *Tree:* medium; upright; vigorous; moderate; productive; flowers white, self-incompatible; chilling requirement moderate, 700 h; leaf glands globose.

**Sweet Peketaah.** Yellow-fleshed, freestone Asian plum. *Origin:* Santiago, Chile, by R.A. Infante Espiniera. 213-UR-056 × 178-R-01. USPP 31,404; 28 Jan. 2020. *Fruit:* large, 150 g; skin purple; flesh yellowish-green; crunchy; flavor good; 20-22 °Brix; keeping quality excellent; ripens very late, 3 weeks after Engeleno in Rinconada de Maipú, Metropolitan Region, Chile. *Tree:* medium; vigorous to moderate; semi-erect; productive; blooms late; flowers white, self-incompatible; chilling requirement moderate, 550-600 h; leaf glands present.

**Victoria Myrtea.** Red-fleshed, freestone Asian plum. *Origin:* Centro de Edafología y Biología Aplicada del Segura-Consejo Superior de Investigaciones Científicas; Instituto Murciano de Investigación y Desarrollo Agrario y Alimentario, Spain, by A. Guevara, M. Nicolás-Almansa, J. Enrique Cos, J.A. Salazar, D. López, J. Egea, A. Carrillo, M. Rubio, F. García, and D. Ruiz. Black Splendor O.P. CPVO PBR applied for. *Fruit:* large, 87.6 g; slightly flattened; skin dark purple; firm; flavor excellent, 16.5 °Brix; keeping and postharvest quality good; ripens 10-20 June in Calasparra, Murcia, Spain. *Tree:* vigorous; upright to spreading; flowers self-fertile; chilling requirement low, 25 chill portions; leaf glands present.

**Waplumone.** Red-fleshed, non-melting, freestone Asian plum. *Origin:* Wawona Packing, Cutler, CA, by J.K. Slaughter and K.M. Roberts. 28H15 O.P. USPP 33,445; 7 Sept. 2021. *Fruit:* medium, 165 g; oblate; skin 25-45% dull red blush over mottled green background color; flesh pinkish white to deep red; firm; flavor excellent, balancing sweetness and acidity, 22-27 °Brix; keeping and shipping quality good; ripens 2-12 July in San Joaquin Valley, CA. *Tree:* medium; vigor moderate; upright to slightly spreading; productive; flowers white, self-incompatible; chilling requirement moderate, 500 h; leaf glands globose.

**Zhongli No. 3.** Yellow-fleshed, semi-clingstone Asian plum. *Origin:* Zhengzhou Fruit Research Institute of Chinese Academy of Agricultural Sciences, Zhengzhou, Henan, China, by Z. Huang, F. Shen, L. Xia, L. Chen, Z. Cui, and Y. Chen. Fali O.P.; crossed 2005; introd. 2019. *Fruit:* large, 98.2 ± 6.3 g; oval; bright red blush over greenish-yellow background color; sour-sweet, aroma strong, 16 °Brix; keeping quality good; ripens 20-30 July in Zhengzhou. *Tree:* vigorous; growth habit semicircular open; flowers white, self-incompatible; chilling requirement moderate, 450-500 h; leaf glands globose.

**Interspecific**

**Amigo III.** Yellow-fleshed, clingstone interspecific plum. *Origin:* Zaiger’s Genetics, Modesto, CA, by G.N. Zaiger, L.M. Gardner, and G.G. Zaiger. 276LF278 × 66268. USPP 27,294; 25 Oct. 2015. *Fruit:* large, 161.9 g; globose; exposed yellow ground color gives speckled appearance on red blush; firm; can hold firm on tree for up to 3 weeks; flavor very good, sweetness and acidity balanced, 17.6 °Brix; keeping and shipping quality good; ripens 11-21 July near Modesto. *Tree:* large; vigorous; upright; productive; flowers white, self-incompatible; chilling requirement moderate, 650 h; leaf glands globose.


**Autumn Charm.** Yellow-fleshed, freestone interspecific plum. *Origin:* Zaiger’s Genetics, Modesto, CA, by G.N. Zaiger, L.M. Gardner, and G.G. Zaiger. 51ME458 O.P. USPP 27,825; 4 April 2017. *Fruit:* large, 198.8 g; elongated; skin red; firm; flavor very good, sweetness and acidity balanced, 16 °Brix; keeping and shipping quality good; ripens 7-17 Oct. near Modesto. *Tree:* large; vigorous; upright; productive; flowers white, self-incompatible; chilling requirement high, 900 h; leaf glands globose.

**Autumn Fritz.** Yellow-fleshed, clingstone interspecific plum. *Origin:* Zaiger’s Genetics, Modesto, CA, by G.N. Zaiger, L.M. Gardner, and G.G. Zaiger. 19HD447 × 31M208. USPP 27,065; 16 Oct. 2017. *Fruit:* medium, 150.5 g; globose; skin dark red; firm; flavor very good; sweetness and acidity balanced, 17 °Brix; keeping and shipping quality good; ripens 20-28 Oct. near Modesto. *Tree:* large; vigorous; upright; productive; flowers white, self-incompatible; chilling requirement moderate, 1000 h; leaf glands globose.

good, balanced, 21 °Brix; keeping and shipping quality good; ripens 2-11 Oct. near Modesto. **Tree:** large; vigorous; upright; productive; flowers white, self-incompatible; chilling requirement moderate, 750 h; leaf glands globose.

**Blackred X.** Red-fleshed, semi-freestone interspecific plum. **Origin:** B Q Genetics, Le Grand, CA, by J.M. Quisenberry and L.G. Bradford. Blackred V O.P. USPP 33,354; 17 Aug. 2021. **Fruit:** medium-large, 173 g; globose; uniform; skin dark purplish red; firm; good blend of acids and sugars, 19 °Brix; keeping and shipping quality good; ripens 29 June to 15 July in San Joaquin Valley, CA. **Tree:** small to medium; vigorous; moderate; productive; flowers white, self-incompatible; leaf glands globose.

**Candy Heart Pluerry™.** See Sweet Pixie 5.

**Dapple Delight.** Red-fleshed, clingstone interspecific plum. **Origin:** Zaiger’s Genetics, Modesto, CA, by G.N. Zaiger, L.M. Gardner, and G.G. Zaiger. 62ZB206 × 10HD820. USPP 28,368; 10 Aug. 2016. **Fruit:** medium-large, 173 g; globose; uniform; skin dark purplish red; firm; good blend of acids and sugars, 19 °Brix; keeping and shipping quality good; ripens 29 June to 15 July in San Joaquin Valley, CA. **Tree:** small to medium; vigorous; moderate; productive; flowers white, self-incompatible; leaf glands globose.

**Emerald Blush.** Yellow-fleshed, clingstone interspecific plum. **Origin:** Zaiger’s Genetics, Modesto, CA, by G.N. Zaiger, L.M. Gardner, and G.G. Zaiger. 53L666 × 46K697. USPP 27,293; 25 Oct. 2016. **Fruit:** small to medium, 102.2 g; globose; skin attractive green/yellow; firm; sweetness and acidity balanced, 18.3 °Brix; keeping and shipping quality good; ripens 16-26 June near Modesto. **Tree:** large; vigorous; upright; productive; flowers white, self-incompatible; chilling requirement moderate, 600 h; leaf glands globose.

**Flavor Baby.** Red-fleshed, clingstone interspecific plum. **Origin:** Zaiger’s Genetics, Modesto, CA, by G.N. Zaiger, L.M. Gardner, and G.G. Zaiger. 22M650 × Coparose. USPP 28,219; 25 July 2017. **Fruit:** medium, 119.3 g; globose; skin speckled red; firm; sweetness and acidity balanced, 16 °Brix; keeping and shipping quality good; ripens 1-10 July near Modesto. **Tree:** large; vigorous; upright; productive; flowers white, self-incompatible; chilling requirement low, 400 h; leaf glands globose.

**Flavor Punch.** Yellow-fleshed, clingstone interspecific plum, marketed as a Pluerry™. **Origin:** Zaiger’s Genetics, Modesto, CA, by G.N. Zaiger, L.M. Gardner, and G.G. Zaiger. Sweet Pixzee 2 × 46MB665; complex pedigree includes, plum, cherry, and peach. USPP 27,030; 9 Aug. 2016. **Fruit:** small to medium, 102.2 g; globose; skin dark red; firm; sweetness and acidity balanced, 22.5 °Brix; keeping and shipping quality good; ripens 16-26 Aug. near Modesto, CA. **Tree:** large; vigorous; upright; productive; flowers white, self-incompatible; chilling requirement high, 1000 h; leaf glands globose.

**Phloraze-290.** Yellow-fleshed, clingstone interspecific plum. **Origin:** Zaiger’s Genetics, Modesto, CA, by G.N. Zaiger, L.M. Gardner, and G.G. Zaiger. 67ZN168 × 37ZP705. USPP 32,703; 29 Dec. 2020. **Fruit:** medium to large, 162.7 g; globose; skin purple; firm; balanced sweetness and acidity, 20 °Brix; keeping and shipping quality good; ripens 4-14 Aug. near Modesto. **Tree:** large; vigorous; upright; productive; flowers white, self-incompatible; chilling requirement moderate, 700 h; leaf glands globose.

**Flavorfleece 517.** Yellow-fleshed, clingstone interspecific plum. **Origin:** Zaiger’s Genetics, Modesto, CA, by G.N. Zaiger, L.M. Gardner, and G.G. Zaiger. 165BAS16 × 19MF482. USPP 32,851; 2 Mar. 2021. **Fruit:** medium, 113.6 g; globose; skin dark red; firm; sweetness and acidity balanced, 15.3 °Brix; keeping and shipping quality good; ripens 20-30 May near Modesto. **Tree:** large; vigorous; upright; productive; flowers white, self-incompatible; chilling requirement low, 400 h; leaf glands globose.

**Flavorfleece 517.** Yellow-fleshed, clingstone interspecific plum. **Origin:** Zaiger’s Genetics, Modesto, CA, by G.N. Zaiger, L.M. Gardner, and G.G. Zaiger. Flavorosa × 63Z241. USPP 27,824; 4 Apr. 2017. **Fruit:** medium; globose; skin red; firm; low-acid, sweet, 14.2 °Brix; keeping and shipping quality good; ripens 16-26 June near Modesto. **Tree:** large; vigorous; upright; productive; flowers white, self-incompatible; chilling requirement moderate, 700 h; leaf glands globose.

**Kings Kat.** Red-fleshed, clingstone interspecific plum. **Origin:** Zaiger’s Genetics, Modesto, CA, by G.N. Zaiger, L.M. Gardner, and G.G. Zaiger. Flavorosa × 63Z241. USPP 27,824; 4 Apr. 2017. **Fruit:** medium; globose; skin red; firm; low-acid, sweet, 14.2 °Brix; keeping and shipping quality good; ripens 16-26 June near Modesto. **Tree:** large; vigorous; upright; productive; flowers white, self-incompatible; chilling requirement moderate, 700 h; leaf glands globose.

**Plumred IV.** Red-fleshed, clingstone interspecific plum. **Origin:** B Q Genetics, Le Grand, CA, by L.G. Bradford and J.M. Quisenberry. Plumsweet VI O.P. USPP 33,155; 15 June 2021. **Fruit:** medium, 164 g; uniform; oblate; skin dark purplish red; tasty blend of acid and sugar, 18 °Brix; good keeping and shipping quality; ripens 8-20 June in San Joaquin Valley, CA. **Tree:** large; vigorous; upright; productive; flowers white, self-incompatible; leaf glands globose.

**Plumred V.** Red-fleshed, clingstone interspecific plum. **Origin:** B Q Genetics, Le Grand, CA, by L.G. Bradford and J.M. Quisenberry. Plumsweet VI O.P. USPP 33,155; 15 June 2021. **Fruit:** medium, 145 g; firm; uniform; globose; skin deep purplish red over a dark red background with heavy but fine yellowish-brown freckling throughout; flavor tasty blend of acid and sugar; ripens 10-20 June in San Joaquin Valley, CA. **Tree:** medium; vigorous; upright; productive; flowers white, self-incompatible; leaf glands globose.

**Plumred XI.** Yellow-fleshed, clingstone interspecific plum. **Origin:** B Q Genetics, Le Grand, CA, by L.G. Bradford and J.M. Quisenberry. Parentage unknown. USPP 27,066; 16 Aug. 2016. **Fruit:** medium, 156 g; firm; globose to oblate; skin mostly red with moderate freckling throughout; color tasty blend of acid and sugar; ripens 10-20 June in San Joaquin Valley, CA. **Tree:** medium; vigorous; upright; productive; flowers white, self-incompatible; leaf glands globose.
Plumsweet XXII. Red-fleshed, freestone interspecific plum. **Origin:** B Q Genetics, Le Grand, CA, by L.G. Bradford and J.M. Quisenberry. **Yellow** USPP 32,189; 15 Sept. 2020. **Fruit:** medium, 148 g; uniform; globose to cordate; firm; skin two-toned, red and green; flavor sweet-tart, 24 °Brix; keeping and shipping quality good; ripens 26 June to 10 July in San Joaquin Valley, CA. **Tree:** large; vigorous; upright; productive; flowers white, self-incompatible; leaf glands globose.

**Sangria Red.** Red-fleshed, clingstone interspecific plum. **Origin:** Zaiger’s Genetics, Modesto, CA, by G.N. Zaiger, L.M. Gardner, and G.G. Zaiger. Bella Jewel × 76MA153, USPP 32,878; 9 Mar. 2021. **Fruit:** medium to large, 107.9 g; globose; skin reddish purple; firm; flavor good, 12 °Brix; keeping and shipping quality good; ripens 30 May to 9 June near Modesto, CA. **Tree:** large; vigorous; upright; productive; flowers white, self-incompatible; leaf glands reniform.

**Sangria Red-2.** Red-fleshed, clingstone interspecific plum. **Origin:** Zaiger’s Genetics, Modesto, CA, by G.N. Zaiger, L.M. Gardner, and G.G. Zaiger. Bella Jewel × 76MA153, USPP 33,444; 7 Sept. 2021. **Fruit:** medium, 110.7 g; globose; skin reddish purple; firm; flavor good, 13 °Brix; keeping and shipping quality good; ripens 28 May to 7 June near Modesto. **Tree:** large; vigorous; upright; productive; flowers white, self-incompatible; chilling requirement moderate, 650 h; leaf glands reniform.

**Sherri’s Flavor.** Yellow-fleshed, freestone interspecific plum. **Origin:** Zaiger’s Genetics, Modesto, CA, by G.N. Zaiger, L.M. Gardner, and G.G. Zaiger. 63EG291 O.P. USPP 29,882; 27 Nov. 2018. **Fruit:** large, 161.9 g; firm; globose; skin dark purple; flavor very good, balanced, 17.5 °Brix; keeping and shipping quality good; ripens 30 June to 10 July near Modesto. **Tree:** large; vigorous; upright; productive; flowers white, self-incompatible; chilling requirement moderate, 800 h; leaf glands reniform.

**Sunset Plapple.** White-fleshed, clingstone interspecific plum. **Origin:** Zaiger’s Genetics, Modesto, CA, by G.N. Zaiger, L.M. Gardner, and G.G. Zaiger. 20M57 × 54ZD402. USPP 29,881; 27 Nov. 2018. **Fruit:** medium to large, 168 g; globose; skin mottled red; firm; flavor very good, balanced, 22 °Brix; keeping and shipping quality good; ripens 11-21 Sept. near Modesto. **Tree:** large; vigorous; upright; productive; flowers white, self-incompatible; chilling requirement moderate, 650 h; leaf glands reniform.

**Sweet Kashel.** Red-fleshed, clingstone interspecific plum. **Origin:** Zaiger’s Genetics, Modesto, CA, by G.N. Zaiger, L.M. Gardner, G.G. Zaiger. 74LW472 O.P. USPP 30,010; 28 Dec. 2018. **Fruit:** large, 139.2 g; globose; skin speckled red; firm; flavor very good, balanced, 16 °Brix; keeping and shipping quality good; ripens 25 June to 5 July near Modesto. **Tree:** large; vigorous; upright; productive; flowers white, self-incompatible; chilling requirement moderate, 700 h; leaf glands globose.

**Sweet Pixie 3.** Yellow-fleshed, clingstone interspecific plum. **Origin:** Zaiger’s Genetics, Modesto, CA, by G.N. Zaiger, L.M. Gardner, and G.G. Zaiger. Sweet Pixie O.P.; pedigree is [plum × cherry] × [cherry]. USPP 27,165; 20 Sept. 2016. **Fruit:** small to medium, 51.1 g; globose; skin attractive dark red; firm; flavor very good, balanced, 17.6 °Brix; shipping and keeping quality good; ripens 13-23 July near Modesto. **Tree:** large; vigorous; upright; productive; flowers white, self-incompatible; chilling requirement high, 900 h; leaf glands globose.

**Sweet Pixie 5 (Candy Heart Pluerry).** Semi-red-fleshed, clingstone interspecific plum. **Origin:** Zaiger’s Genetics, Modesto, CA, by G.N. Zaiger, L.M. Gardner, and G.G. Zaiger. 301LP509 × 1A77; complex pedigree includes plum, cherry, and apricot. USPP 28,308; 22 Aug. 2017. **Fruit:** medium, 82.4 g; slightly elongated; skin attractive red; firm; flavor very good, balanced, 23.1 °Brix; keeping and shipping quality good; ripens 12-22 Aug. near Modesto. **Tree:** large; vigorous; upright; productive; flowers white, self-incompatible; chilling requirement moderate, 750 h; leaf glands globose.

**Zoe Kat.** Yellow-fleshed, clingstone interspecific plum. **Origin:** Zaiger’s Genetics, Modesto, CA, by G.N. Zaiger, L.M. Gardner, and G.G. Zaiger. 53ZB678 × 305LN566. USPP 26,953; 19 July 2016. **Fruit:** large, 156.2 g; globose; skin reddish blue; firm; flavor good, balanced, 17 °Brix; keeping and shipping quality good; ripens 4-14 Aug. near Modesto. **Tree:** large; vigorous; upright; productive; flowers white, self-incompatible; chilling requirement high, 800 h; leaf glands globose.

**Sweet Bettzee.** Yellow-fleshed, clingstone interspecific plum. **Origin:** Zaiger’s Genetics, Modesto, CA, by G.N. Zaiger, L.M. Gardner, and G.G. Zaiger. 67MD537 × 74MF200. USPP 28,136; 27 June 2017. **Fruit:** large, 142 g; globose; skin attractive dark red; firm; flavor excellent, balanced, 20.2 °Brix; keeping and shipping quality good; ripens 22 June to 2 July near Modesto. **Tree:** large; vigorous; upright; productive; flowers white, self-incompatible; chilling requirement high, 800 h; leaf glands globose.

**RASPBERRY**

**Michael Dossett, BC Berry Cultivar Development, Abbotsford, BC**

**BC92915 (Squamish).** Early-season florican-fruited red raspberry for fresh and processing. **Origin:** Agriculture and Agri-Food Canada, Agassiz Research and Development Centre, Agassiz, BC, Canada, by H.A. Daubney and C. Kempler. Malahat × BC 86-41-15; crossed 1992; selected 1995; tested as BC 92-9-15; introd. 2014. Canadian PBR 4978; 12 Jan. 2015. USPP 28,444; 26 Sep. 2017. **Fruit:** large, long; medium-dark red; flavor aromatic and slightly sweet; easily removed from receptacle; good cohesion; recommended for machine harvesting for processing or fresh use; ripens early, a few days after Malahat. **Plant:** vigorous; resistant to North American aphid (Amphorophora agathonica) vector of raspberry mosaic virus complex; susceptible to Raspberry bushy dwarf virus (RBDV); moderately field tolerant to root rot (Phytophthora rubi).

**Bountiful.** Late-season primocane-fruited red raspberry for fresh market. **Origin:** Plant Sciences, Watsonville, CA, by S.W. Adams. **Elegance** × PS-3636; selected 2009; introd. 2014. USPP 27,582; 24 Jan. 2017. **Fruit:** midsize; conical; light red; moderately glossy; releases easily from receptacle. **Plant:** canes semi-upright; moderately resistant to yellow rust (Phragmidium rubi-idaei); moderately susceptible to powdery mildew (Podosphaera aphanis var. aphanis).

**Crimson Treasure.** Mid-late season primocane-fruited red raspberry for fresh market. **Origin:** Cornell University, Geneva NY, by C.A. Weber. **NY02-57 × Rafzaqu;** selected 2012; tested as NY12-30; introd. 2018. USPP 32,799; 9 Feb. 2021. **Fruit:** medium-large; longer than broad; bright red with fine drupellets; firm; flavor acidic; begins ripening with Heritage and continues over 10-week period. **Plant:** canes sturdy, upright, medium-height; extensive branching and high number of fruiting laterals; primocane and florican crops have similar yield and fruit size.

**DrissRaspEighteen (Reyna)**. Midsseason primocane-fruited red raspberry for fresh market. **Origin:** Driscoll’s, Watsonville, CA, by L. Gutierrez, K. Rak, L.M. Rodriguez, J. Heilig, and M.D. Vitten. **DrissRasp12 × DrissRasp13;** selected 2015, introd. 2020. USPP 33,723; 7 Dec. 2021. **Fruit:** midsize; conical; medium purplish-red;
glossy; firm; separate easily from receptacle. **Plant:** growth habit semi-upright; spines sparse.

**DrisRaspTen (Sunrise™).** Early-season primocane-fruiting raspberry with multicolored blush fruit for fresh market. **Origin:** Driscoll’s, Watsonville, CA, by B.K. Hamilton, C.D. Fear, and M.D. Vitten. Driscoll Estrella × Driscoll Maravilla; selected 2011; introd. 2016. USPP 28,775; 19 Dec. 2019. **Fruit:** large; firm; multicolored, blushed with orange-red at the base of the style and yellow further away from the style, accentuated by exposure to sun. **Plant:** vigorous; canes semi-upright; produces few primocanes.

**Endurance.** Late-season primocane-fruiting red raspberry for fresh market. **Origin:** Plant Sciences, Watsonville, CA, by S.W. Adams. Grandeur × 04.3891; selected 2010; tested as PS-08.056-18; introd. 2019. USPP 33,735; 14 Dec. 2021. **Fruit:** medium-large; conical; medium-red, with moderate gloss; separates from receptacle very easily; flavor fair. **Plant:** vigorous; semi-upright; spines moderately dense, dark purple; moderately resistant to yellow rust and powdery mildew.

**Gleam.** Early-season primocane-fruiting red raspberry for fresh market. **Origin:** Plant Sciences, Watsonville, CA, by S.W. Adams. PS-1852 × Radiance; selected 2007; introd. 2014. USPP 27,586; 24 Jan. 2017. **Fruit:** medium-large; conical; light-medium red; flavor very good; releases easily from receptacle. **Plant:** growth habit upright; spines moderately dense; moderately resistant to yellow rust; moderately susceptible to powdery mildew.

**Imagine.** Early midseason primocane-fruiting red raspberry for fresh market. **Origin:** Plant Sciences, Watsonville, CA, by S.W. Adams. 04.3942 × Grandeur; selected 2010; introd. 2018. USPP 30,817; 20 Aug. 2019. **Fruit:** medium-large; shape blunt conic; medium-dark red; drupelets large; release from receptacle somewhat difficult; ripens early midseason. **Plant:** canes upright, with strong waxy coating; spines dense, purple; moderately resistant to yellow rust and powdery mildew.

**Intrepid.** Primocane-fruiting red raspberry for fresh market. **Origin:** Plant Sciences, Watsonville, CA, by S.W. Adams and S.M. Ackerman. PS-1049 × PS-1764; selected 2004; introd. 2014. USPP 27,504; 27 Dec. 2016. **Fruit:** small-medium; uniform; conical; light red; high gloss; releases easily from receptacle; flavor poor. **Plant:** canes upright; moderately waxy; spines sparse, pigmentation absent; moderately resistant to yellow rust; moderately susceptible to powdery mildew.

**Juliet.** See PBBRasp1348.

**Majestic.** Midseason primocane-fruiting red raspberry for fresh market. **Origin:** Plant Sciences, Watsonville, CA, by S.W. Adams. Grandeur × 04.3891; selected 2012; introd. 2017. USPP 31,716; 5 May 2020. **Fruit:** midsize; uniform; glossy; medium red; releases easily from receptacle. **Plant:** vigorous; produces many canes; spines moderately dense, dark purple; moderately resistant to yellow rust.

**NN08002 (Wake™ Haven).** Early-midseason floricane-fruiting red raspberry for processing. **Origin:** Pacific Berries, Lynden, WA, by M.J. Stephens. Wakefield × NR14; crossed 2006; selected 2008; introd. 2016. USPP 28,934; 6 Feb. 2018. **Fruit:** medium-large; conical; medium-light red; very firm; flavor good, slightly acidic; easily removed from receptacle; recommended for machine harvesting for processing; ripens ~1 week before Meeker, over extended season. **Plant:** vigorous; primocanes upright; laterals long, sagging; may carry resistance to Raspberry bushy dwarf virus (RBDV); field tolerance to root rot moderate.

**Nobility.** Early-season primocane-fruiting red raspberry for fresh market. **Origin:** Plant Sciences, Watsonville, CA, by S.W. Adams. 04.3721 × Radiance; selected 2011; tested as PS-09.082-06 and PS-8206; introd. 2018. USPP 32,269; 6 Oct. 2020. **Fruit:** midsize; conical; medium red; glossy; flavor very good; releases easily from receptacle. **Plant:** growth habit upright; internodes short; spines long, medium dense.

**Ovation.** Midseason primocane-fruiting red raspberry for fresh market. **Origin:** Plant Sciences, Watsonville, CA, by S.W. Adams. PS-3721 × Grandeur; selected 2010; introd. 2014. USPP 27,585; 24 Jan. 2017. **Fruit:** midsize; conical; color medium red; gloss moderate; flavor excellent; separates easily from receptacle. **Plant:** canes vigorous, upright; spines sparse; produces many primocanes; moderately resistant to yellow rust; moderately susceptible to powdery mildew.

**Pacific Centennial.** See PBBRasp1381.

**Pacific Gema.** Midseason low/no chill primocane-fruiting red raspberry for fresh market. **Origin:** Pacific Berry Breeding, Salinas, CA, by E. Thompson and J.R. Clark. Pacific Deluxe × 414a; selected 2010; introd. 2015. USPP 28,080; 6 Jun. 2017. **Fruit:** medium-large; conical; firmness moderate; color medium-dark red; gloss high; flavor sweet, aromatic. **Plant:** vigorous, thorny, high number of flowers per inflorescence; less susceptible to RBDV than Pacific Deluxe.

**Pacific Starlet.** Mid-late-season, low chill primocane-fruiting red raspberry for fresh market. **Origin:** Pacific Berry Breeding, Salinas, CA, by E. Thompson. Chance seedling, parentage unknown; selected 2010; introd. 2015. USPP 28,046; 23 May 2017. **Fruit:** large; very firm; gloss high; light red, non-darkening; flavor less acid than Pacific Deluxe. **Plant:** susceptible to yellow rust; moderately tolerant to root rot.

**PBBRasp1348 (Julieta).** Early-season low/no chill primocane-fruiting red raspberry for fresh market. **Origin:** Pacific Berry Breeding, Salinas, CA, by E. Thompson. Pacific Gema × E10-22, selected 2013; introd. 2017. USPP 29,368; 6 Dec. 2018. **Fruit:** large; broad conical; moderately firm; light red, non-darkening; glossy; ripens early. **Plant:** very vigorous; produces many suckers; canes heavily branched; susceptible to yellow rust; moderately tolerant to root rot.

**PBBRasp1381 (Pacific Centennial).** Mid-late season low/no chill primocane-fruiting red raspberry for fresh market. **Origin:** Pacific Berry Breeding, Salinas, CA, by E. Thompson. Pacific Gema × Pacific Starlet; selected 2013; introd. 2017. SPP 29,369; 6 Dec. 2018. **Fruit:** very large; very firm; light-medium red; detaches easily from receptacle. **Plant:** very vigorous; producing many suckers; field tolerance to yellow rust good; moderately tolerant to root rot.

**Reyna™.** See DrisRaspEighteen.

**Squamish.** See BC92915.

**Sunshine™.** See DrisRaspTen.

**Vision.** Early midseason primocane-fruiting red raspberry for fresh market. **Origin:** Plant Sciences, Watsonville, CA, by S.W. Adams. Grandeur × 04.3814; selected 2011; introd. 2018. USPP 31,505; 3 Mar. 2020. **Fruit:** medium-large; broad conical; color light red; gloss low; flavor fair; releases easily from receptacle. **Plant:** canes upright;
spines moderately dense, purple; foliage glossy; moderately resistant to powdery mildew.

Wake® Haven. See NN08002.

RED BAYBERRY (Myrica rubra Sieb. et Zucc., Chinese bayberry, yangmei)
Yunfei Chen, Calmei, Fremont, CA

David Karp, Dept. of Botany and Plant Sciences, University of California, Riverside, CA

Biqi (苯 phạm). High-yielding tree with good adaptability. Origin: Cixi, Zhejiang, China; introd. to California 2013. Fruit: large, 20-25 g, with some fruits exceeding 30 g; shape slightly squarish; skin deep red to purple; flavor sweet-tart; 12-15 °Brix in California; seed small; ripens June in central California; storage and transportation resistance medium. Tree: vigorous; semi-fruit; leaves oblanceolate, often round at tip; flower dioecious, pollinated by wind; yield high; USDA Zone 9, potentially tolerating Zone 8.

Dongkui (东魁). Moderately vigorous tree producing large, late-ripening fruit. Origin: Taizhou, Zhejiang, China; introd. to California 2013. Fruit: large, 20-25 g, with some fruits exceeding 30 g; shape slightly squarish; skin deep red to purple; flavor sweet-tart; 13-15 °Brix in California; seed large; ripens June to July in central California; storage and transportation resistance medium. Tree: vigorous; medium; spreading; leaves broadly oblanceolate, large, usually pointed at tip; flower dioecious, efficient pollination by wind; yield medium-high; USDA Zone 9, potentially tolerating Zone 8.

Fenfong (粉红). Vigorous tree producing light-colored fruits. Origin: Zhejiang, China; introd. to California 2013. Fruit: midsize, 10 g; spherical; cream with pink to red hues at harvest, deep red when fully ripe; flavor tart and resinous when harvested, sweet when fully ripe, 12 °Brix in California; seed medium; ripens late June in central California. Tree: vigorous; semi-fruit; leaves narrow oblanceolate, often pointed at tip; flower dioecious, pollinated by wind; yield high; fruit drop heavy before full ripeness, requiring harvest at less ripe stage; USDA Zone 9, potentially tolerating Zone 8.

Francine. Vigorous tree producing large, late-ripening fruit. Origin: Fremont, CA, by Y.F. Chen. Probably Dongkui O.P., obtained 2011; introd. 2020. Fruit: large, similar to Dongkui; more spherical than Dongkui; skin deep red to purple; flavor sweet-tart, similar to but slightly less good than Dongkui, 12-14 °Brix in California; seed large; ripens early July in central California. Tree: vigorous, more vigorous than Dongkui; spreading; leaves oblanceolate, large, usually pointed at tip; flower dioecious, pollinated by wind; yield medium-high; USDA Zone 9, potentially tolerating Zone 8.

N1MR06. Red bayberry with red-black skin and sweet pink-red flesh. Origin: University of Queensland, Gatton, Australia, by D.C. Joyce. Parentage unknown, selected 2008 from seedlings grown at Maroochy Research Facility, Nambour, Queensland from outcrossed seed collected from China. Australian PBR 5452; 8 June 2017. USPP 27,322; 1 Nov. 2016. Fruit: size uniform, diameter 21.4 mm, 5.87 g; spherical; skin very dark, red-black, moderately knobby; flesh firm, pink-red, 12 °Brix, TA 1.41%; resinous taste absent; seeds 1; ripens early, early-mid November; decay after 15 d at 5 °C slight. Tree: vigorous; growth habit semi-fruit; compact; height 3.6 m, width 3.4 m; leaves oblanceolate; flower dioecious; yield medium; USDA Zone 9, potentially ranging from 8 to 10.

N1MR07. Large red bayberry with red skin and pink-white flesh. Origin: University of Queensland, Gatton, Australia, by D.C. Joyce. Parentage unknown, selected 2008 from seedlings grown at Maroochy Research Facility, Nambour, Queensland from outcrossed seed collected from China. Australian PBR 5454; 8 June 2017. USPP 27,320; 1 Nov. 2016. Fruit: spherical, uniform, diameter 22.3 mm, 7.15 g; skin red, moderately knobby; flesh soft to medium, pink-white, 12.4 °Brix, TA 1.08%; resinous taste absent; seeds 1; ripens midseason, mid-late November; decay after 15 d at 5 °C severe. Tree: vigorous; semi-fruit; height 3.5 m, width 4.45 m; leaves oblanceolate; flower dioecious; yield high; USDA Zone 9, potentially ranging from 8 to 10.

N1MR09. Large red bayberry with pale red skin and sweet pink-white flesh. Origin: University of Queensland, Gatton, Australia, by D.C. Joyce. Parentage unknown, selected 2008 from seedlings grown at Maroochy Research Facility, Nambour, Queensland from outcrossed seed collected from China. Australian PBR 5454; 8 June 2017. USPP 27,321; 1 Nov. 2016. Fruit: diameter 24.7 mm, 9.15 g; spherical; skin pale red, moderately knobby; flesh firmness medium, pink-white, 12.8 °Brix, TA 1.25%; resinous taste absent; seeds 1; ripens early, mid-November; decay after 15 d at 5 °C moderate. Tree: vigorous to medium; spreading; height 5.35 m, width 3.4 m; leaves oblanceolate; flower dioecious; yield medium; USDA Zone 9, potentially ranging from 8 to 10.

STRAWBERRY

Beatrice Amyotte, AAFC, Kentville Research and Development Centre, Kentville, NS, Canada

Glenn S. Cole, Dept. of Plant Sciences, University of California, Davis, CA

Kim S. Lewers, USDA-ARS, Genetic Improvement of Fruits and Vegetables Laboratory, Beltsville, MD

A13-07 (A13 07; Shyra®). Short-day strawberry adapted to Mediterranean climates. Origin: Masiá Ciscar, Andalucía, Spain, by E. Masía Serrador. Uncontrolled cross, seeds collected 2014; selected 2015. CPVO PBR 54168; 20 Jan. 2020. USPP 33,285; 27 July 2021. Fruit: very large, 35-50 g; conic, reniform; skin gloss medium, orange red (RHS 33A); flesh orange red (RHS 33B), firm; flavor sweet; achenes at surface; ripens early. Plant: vigorous; yield 960 g/plant; growth habit semi-fruit, medium density.

A13-26 (A13 26; Calderón®). Short-day strawberry adapted to Mediterranean climates. Origin: Masiá Ciscar, Andalucía, Spain, by E. Masía Serrador. Uncontrolled cross, seeds collected 2013; selected 2014. CPVO PBR 53646; 7 Oct. 2019. USPP 32,137; 1 Sept. 2020. Fruit: very large, 35-50 g; conic to cordate; skin gloss high, vivid red, very firm; flesh reddish orange (RHS 40A), medium firm; juiciness moderate; flavor sweet, low-acid, highly aromatic; achenes inset; ripens early; stores 8-10 d. Plant: vigorous; yield 715 g/plant; growth habit upright, semi-compact, high density.

A13-29 (A13 29; Palmeritas®). Short-day strawberry adapted to Mediterranean climates. Origin: Masiá Ciscar, Andalucía, Spain, by E. Masía Serrador. Uncontrolled cross, seeds collected 2013; selected 2014. CPVO PBR 53650; 7 Oct. 2019. USPP 32,078; 18 Aug. 2020. Fruit: very large, 35-50 g; conic to cordate; skin gloss high, orange red (RHS N34), very firm; flesh orange red (RHS 33B), medium firm; juiciness moderate; flavor sweet, low-acid, highly aromatic; achenes at surface; ripens early; stores 8-10 d. Plant: vigorous; yield 1,003 g/plant; growth habit upright, semi-compact, high density.

A13-71 (A13 71; Cleopatra®). Dayneutral strawberry adapted to Mediterranean climates. Origin: Masiá Ciscar, Andalucía, Spain, by
A13-72 (A13 72; Chelsea™). Short-day strawberry adapted to Mediterranean climates. **Origin:** Masía Cisar, Andalucía, Spain, by E. Masia Serrador. Uncontrolled cross, seeds collected 2013; selected 2014. CPVO PBR 53649; 7 Oct. 2019. USPP 32,112; 25 Aug. 2020. **Plant:** vigorous; stolons abundant, 30-60/plant; yield 327-349 g/plant; growth habit globose, medium density; resistant to anthracnose crown rot and powdery mildew (*Podosphaera aphanis*, formerly *Sphaerotheca macularis*). **Fruit:** flavor sweet, slightly acidic; calyx medium; achenes highly resistant to anthracnose crown rot and powdery mildew (Phytophthora cactorum). **CIVR621 (Cantus®).** Everbearing strawberry adapted to Southern Europe. **Origin:** Consorzio Italiano Vivaisti, San Giuseppe di Comacchio, Ferrara, Italy, by M. Leis and A. Martinelli. Nabilì × Cleary, crossed 2009; selected 2011. CPVO PBR 54639; 16 Mar. 2020. USPP 29,793; 6 Nov. 2018. **Fruit:** large, length 50 mm, width 35 mm; conic, slight variability; skin red (RHS 44A); light red (RHS 34B); firm; flavor good; good aroma and sugar content; calyx slightly raised, strongly adherent; achenes highly resistant to anthracnose crown rot (Phytophthora cactorum). **Plant:** vigor medium; stolons abundant, 15-25/plant; yield 600-800 g/plant; growth habit; tolerant of root diseases, highly resistant to powdery mildew, generally resistant to leaf and root diseases.
areas. Origin: Consorzio Italiano Vivaisti, san Giuseppe di Comacchio, Ferrara, Italy, by M. Leis and A. Martinelli. R6R11-26 × 3E4L-1, crossed 2011; selected 2013. CPVO PBR 57350; 15 Feb. 2021 (surrendered 3 Dec. 2021). USPP 32,193; 15 Sept. 2020. Fruit: large, 18 g; uniform conic; skin red (RHS 45A); flesh orange red (RHS 34B); firm; flavor very sweet with lovely aroma; calyx large, at fruit surface, strongly adherent; achenes inset; begins to ripen very early. Plant: vigor strong; stolons abundant, 30/plant; yield 700-800 g/plant; growth habit upright, medium density, flowers level with canopy; tolerant of most common diseases.

Cordial. Short-day strawberry adapted to Maryland. Origin: USDA-ARS, Beltsville, MD, by K.S. Lewers and J.M. Ems. B1893 × B1805, crossed 2011; selected 2013; tested as B2360. USPP 33,636; 16 Nov. 2021. Fruit: medium to large, 18-31 g, length 42 mm, width 48 mm; conic to globose conic; skin glossy vivid red to strong red (RHS 44A, RHS 45A); flesh vivid reddish orange (RHS 33A, RHS 33B) and yellowish white (RHS 155D); very firm, fine textured; juicy; flavor moderately sweet (7.6-9.3 °Brix, pH 3.79, TA 0.93 g/100ml), aromatic; calyx medium to large, set at surface, reflexed to spreading, strongly adhering; achenes at surface; ripens late; stores very well, degraded fruits at 1 week 26%, at 2 weeks 50%. Plant: vigor moderate to strong; stolons adequate, 9/plant; yield high, 789 g/plant; growth habit compact upright globose, density open, flowers below to above canopy; fruitsing trusses prostrate; tolerant to rain and anthracnose fruit rot; moderately resistant to bacterial angular leaf spot (Xanthomonas fragariae), powdery mildew, leaf scorch (Diplocarpon earliianum), and leaf blight (Paraphomopsis obscurans, formerly Phomopsis obscurans).

Cleopatra®. See A13-71.

Dahlia. Short-day strawberry adapted to protected culture in the Netherlands and similar growing regions. Origin: Flovo Berry Holding, Ens, the Netherlands, by M. Suiker. 03-08-01 × 07-46-01, crossed 2016; selected 2017, Balm, FL. USPP 33,451; 7 Sept. 2021. Fruit: large, 23-27 g; medium conic to cordate; skin glossy medium red; flesh medium red; firm; flavor similar to Florida127, with higher acidity; calyx medium, at fruit surface; achenes inset; ripens early. Plant: vigor low to medium; stolons slightly lower in abundance than commercial Florida standards; yield high, comparable to Florida Brillance; growth habit upright, compact, flowers level with or slightly above canopy.

Daniel. Partially remontant strawberry adapted to the Sharon coastal plain in Israel and similar climatic regions. Origin: Efraim Yosef, Hod Hasharon, Israel, by E. Yosef. EF-58 × EF-63, crossed 2014; selected 2015; tested as EF-165. CPVO PBR applied for. USPP 31,451; 18 Feb. 2020. Fruit: medium to large, 28 g; uniform conic; skin glossy, red (RHS 42A, RHS 44A), fading to orange red (RHS 43B); flesh orange red (RHS 34C); very firm; flavor moderately sweet; achenes inset; ripens early. Plant: vigor medium; yield 500 g/plant; growth habit globular.

Dickens. Late-midseason, short-day strawberry adapted to perennial matted row and annual plasticulture production in temperate climates. Origin: Cornell University, Ithaca, NY, by C.A. Weber. Jewel × Clancy, crossed 2000; selected 2002, Geneva, NY; tested as NY02-56. USPP 32,535; 1 Dec. 2020. Fruit: large; wide conical, similar to Clancy; skin medium dark red; flesh medium red; firm; flavor good; ripens late midseason, with Jewel and Clancy. Plant: vigor strong; stolons abundant; yield high; growth habit spreading; resistant to powdery mildew.

Eves Delight 2. Dayneutral strawberry adapted to the United Kingdom and similar growing regions. Origin: Edward Vinson Ltd., Faversham, Kent, United Kingdom, by P.E. Vinson. EZ05 × GB96, crossed 2013; selected 2014. CPVO PBR applied for. USPP 32,418; 3 Nov. 2020. Fruit: medium to large, length 50 mm, width 40 mm; uniform conic; skin red (RHS 44A, RHS 44B); flesh medium red (RHS 34A), paler near center (RHS 36C); firm; moderately juicy; flavor sweet, low-acid; calyx midsize, at fruit surface, strongly adherent; achenes deeply inset; ripens early. Plant: vigor strong; yield 105 fruits/plant; growth habit semi-upright, low to medium density, compact, flowers level with canopy.

Falco. Short-day strawberry adapted to protected culture in the Netherlands and similar growing regions. Origin: Flovo Berry Holding, Ens, the Netherlands, by M. Suiker. 00-102-99 × 007-110-07, crossed 2011; selected 2012. CPVO PBR applied for. USPP 32,620; 15 Dec. 2020. Fruit: large, 22 g; globose conic to conic; skin glossy red (RHS 45A); flesh orange red (RHS 34C); firm; flavor moderately sweet, slightly acidic; calyx small; achenes inset; ripens midseason. Plant: vigor medium to strong; yield 750 g/plant; growth habit flattened globular.

FL 16.30-128 (Medallion™, Florida Medallion®). Short-day strawberry adapted to West Central Florida. Origin: University of Florida, Wimauma, by V. Whitaker. FL 13.27-142 × FL 12.90-53, crossed 2016; selected 2017, Balm, FL. USPP 33,451; 7 Sept. 2021. Fruit: large, 16-20 g; medium conic to cordate; skin white; flesh medium red; firm; flavor similar to Florida127, with higher acidity; calyx medium, at fruit surface; achenes inset; ripens early. Plant: vigor low to medium; stolons slightly lower in abundance than commercial Florida standards; yield high, comparable to Florida Brillance; growth habit upright, compact, flowers level with or slightly above canopy.

FL 16.78-109 (Pearl™, Florida Pearl®, Pink-A-Boo®). White-fruited, short-day, partially remontant strawberry adapted to West Central Florida. Origin: University of Florida, Wimauma, by V. Whitaker. FL 12.90-109 × FL 14.29-62, crossed 2016; selected 2017, Balm, FL. USPP 33,477; 14 Sept. 2021. Fruit: large, 16-20 g; medium conic to cordate; skin white with pink blush and red achenes; flesh white red; firmness medium; flavor sweet, low-acid; calyx midsize, at fruit surface; achenes slightly inset. Plant: vigor medium; stolons slightly more abundant than commercial Florida standards; growth habit moderately compact, round, flowers level with or slightly below canopy; moderately resistant to powdery mildew and charcoal rot (Macrophomina phaseolina).

Florida Medallion®. See FL 16.30-128.

Florida Pearl®. See FL 16.78-109.

Lady Isabella. Dayneutral strawberry adapted to the United Kingdom. Origin: S & A Soft Fruits, Herefordshire, United Kingdom, by I. Georghegan. SA40 × SA23; selected 2013; tested as RD072-004-2012. UK PBR applied for. CPVO PBR 58358; 17 May 2021. USPP 31,699; 31 Mar. 2020. Fruit: medium to large, 17-22 g; conic to cordate; skin red (RHS 44A); flesh firm; flavor sweet; calyx raised; achenes slightly inset; ripens early. Plant: vigor medium; yield greater than Lady Emma; growth habit open; resistant to powdery mildew.

Limvalnera. Dayneutral strawberry adapted to protected cultivation in Southern Europe. Origin: Asparagus Beheer, Horst, the Netherlands, by J. Vromans. Primoris × Ventana, crossed 2011; selected 2012, Lepe, Spain. CPVO PBR 51745; 11 Mar. 2019. USPP 31,774; 19 May 2020. Fruit: large, 30 g; long conic; glossy, skin medium red (RHS 42A, RHS 42B); flesh light red (RHS 40B); firm; flavor pleasant, sweet, balanced; calyx small; achenes at surface; begins to
**Magnum**. See Marionnet 97.

**Malga (SG134)**. Dayneutral strawberry adapted to Northern Italy and similar growing regions. **Origin**: New Fruits SAS, Verona, Italy, by Z. Franco. Irma × SG8, crossed 2008; selected 2011. CPVO PBR 46252; 15 June 2017. **Fruit**: large, length 50 mm, width 40 mm; long conic; red (RHS 44A); flesh orange red (RHS 30B); medium firm; flavor better than Portola; calyx small, slightly raised; achenes inset; stores minimum 6 d. **Plant**: yield high; growth habit upright, medium density, flowers above canopy.

**Malling Centenary**. Short-day strawberry adapted to Kent, United Kingdom and similar growing regions. **Origin**: National Institute of Agricultural Botany, East Malling Research, East Malling, Kent, United Kingdom, by A. Whitehouse, A. Johnson, and D. Simpson. SDBL102 × EM13315, crossed 2005; selected 2006; tested as EM1764. CPVO PBR 40671; 20 Apr. 2015. **Fruit**: medium to large, 26.7 g, length 37-43 mm, width 37-39 mm; uniform conic to globose conic; skin moderately glossy vivid red (RHS 45A); flesh vivid reddish orange (RHS 41A) and strong yellowish pink (RHS 38A); firm, cavity 12 mm wide; flavor moderately sweet, 7.0-7.5 °Brix, pH 3.54; calyx medium to large, inserted, reflexed, weakly adhering; achenes inset; ripens June; stores 10 d. **Plant**: vigorous; stolons few, 1-4/plant; yield high to very high, 1,468 g/plant; growth habit semi-upright, high density, flowers above canopy; fruiting trusses prostrate; moderately rain tolerant.

**Marionnet 97 (Magnum)**. Short-day, partially remountant strawberry adapted to central France and similar growing regions. **Origin**: SCEA Marionnet, Soings en Sologne, France, by L. Chaussett. Darselect × Alba, crossed 2007; selected 2009. **Fruit**: large to very large, length 40-50 mm, width 40 mm; conic, somewhat variable; skin medium red; flesh medium red; firm; calyx medium, raised, strongly adherent; achenes at surface; ripens early. **Plant**: vigorous; stolons plentiful; growth habit upright, medium to high density, flowers below canopy; resistant to powdery mildew.

**Marionnet 99 (Marigquette)**. Dayneutral strawberry adapted to central France and similar growing regions. **Origin**: SCEA Marionnet, Soings en Sologne, France, by L. Chaussett. Muir × Charlotte, crossed 2006; selected 2007. **Fruit**: large; conic, somewhat variable; skin medium red; flesh light to medium red; medium firm to firm; flavor sweet; calyx large, raised, strongly adherent; achenes at surface; begins to ripen very early to early. **Plant**: vigorous; stolons medium to strong; growth habit semi-upright, medium to high density, flowers level with canopy.

**Medallion™**. See FL 16.30-128.

**Niña**. Short-day strawberry adapted to West Central Florida. **Origin**: Strawberry Sciences, Hillsborough Country, FL, by K.M Blaker, M.D. Nelson, S.M. Ackerlan, and D.S. Nelson. San Andreas × BG-4,370, crossed 2010; selected 2012; tested as SB_10_86-107. USPP 33,475; 14 Sept. 2021. **Fruit**: large, 32-37 g; cordate; skin red (RHS 46B); flesh medium red (RHS 46B); firm; flavor good; calyx at fruit surface; achenes at surface or slightly inset; ripens early. **Plant**: vigorous; stolons medium, 118-129 stolons/m²; yield 397-471 g/plant; growth habit upright, high density, flowers level with or slightly below canopy; moderately resistant to fusarium wilt (Fusarium oxysporum).

**Palmeritas**. See A13-29.

**Pearl™**. See FL 16.78-109.

**Persephone**. Dayneutral strawberry adapted to coastal Central California. **Origin**: Sweet Darling Sales, Aptos, CA, by J. Larse. 108080 × 107801; tested as 110195. USPP 33,227; 6 July 2021. **Fruit**: medium to small, 26.7 g, length 37-43 mm, width 37-39 mm; uniform conic to globose conic; skin moderately glossy vivid red (RHS 45A); flesh vivid reddish orange (RHS 41A) and strong yellowish pink (RHS 38A); firm, cavity 12 mm wide; flavor moderately sweet, 7.0-7.5 °Brix, pH 3.54; calyx medium to large, inserted, reflexed, weakly adhering; achenes inset; ripens June; stores 10 d. **Plant**: vigorous; stolons few, 1-4/plant; yield high to very high, 1,476 g/plant; growth habit semi-upright, density light to medium, flowers above canopy; fruiting trusses prostrate; rain tolerance moderate.


**Pinta**. Short-day strawberry adapted to West Central Florida. **Origin**: Strawberry Sciences, Hillsborough Country, FL, by K.M Blaker, M.D. Nelson, S.M. Ackerlan, and D.S. Nelson. Red Merlin × BG-5,321, crossed 2012; selected 2014. **Fruit**: large, 30-31 g; cordate; skin red (RHS 46A); flesh medium red (RHS 45A); flavor good; calyx at fruit surface; achenes at surface or slightly inset; ripens early. **Plant**: vigorous; stolons adequate to plentiful, 151-161 stolons/m²; yield 337-385 g/plant; growth habit slightly upright, medium density, flowers level with or slightly above canopy; resistant to fusarium wilt.

**Rikas FNM**. Dayneutral strawberry adapted to southern Spain and similar growing regions. **Origin**: Fresas Nuevos Materiales, Gibraleon, Huelva, Spain, by A. Refoyo Perez. E64 × 86N; tested as A13-27N-3. CPVO PBR 57814; 6 Apr. 2021. **Fruit**: large, 28 g, conic; skin glossy light red (RHS 33A); flesh light red (RHS 33C), firm; flavor sweet; calyx midsize; achenes at surface; begins to ripen with San Andreas; stores 10-12 d. **Plant**: vigorous; yield 1,000 g/plant; growth habit upright, flowers level with canopy; moderately resistant to powdery mildew, verticillium wilt (Verticillium dahliae) and phytophthora crown rot, relatively tolerant to aphids and spider mites.

**Santa Maria**. Short-day strawberry adapted to West Central Florida. **Origin**: Strawberry Sciences, Hillsborough Country, FL, by K.M Blaker, M.D. Nelson, S.M. Ackerlan, and D.S. Nelson. Red Merlin × BG-5,321, crossed 2012; selected 2014. **Fruit**: large, 31-33 g; cordate; skin red (RHS 46A); flesh medium red (RHS 46B), firm; flavor good; calyx at fruit surface; achenes at surface or slightly inset; ripens early. **Plant**: vigorous; stolons medium to strong; stolons plentiful, 183-194 stolons/m²; yield 370-404 g/plant; growth habit upright, medium density, flowers level with canopy; resistant to fusarium wilt.

**SG134**. See Malga.
Shyra®. See A13-07.

Sierra. Short-day, fully remontant strawberry adapted to coastal Northern California. Origin: Lassen Canyon Nursery, Santa Cruz, CA, by J. Bagdasarian, N. Pinkerton, and T. Stegmeir. Lucia × Emilia, crossed 2013; selected 2014. USPP 33,284; 27 July 2021. Fruit: very large, 32 g; conic; skin red (Pantone 185C); flesh light red (Pantone 032L); firm; flavor sweet, 6-13 °Brix; achenes slightly inset; ripens midseason. Plant: vigorous medium; yield 1,760 g/plant; growth habit semi-upright, flowers level with or slightly above canopy; tolerant to fusarium wilt and verticillium wilt.

Swteol. Short-day strawberry adapted to Southern Europe. Origin: Hargreaves Plants, Cesena, Italy, by D. Bernardini. NF 101 × NF 302, crossed 2005; selected 2005. CFVO PBR 5533; 4 May 2020 (terminated 23 Nov. 2020). USPP 30,736; 23 July 2019. Fruit: very large, 30 g; conic; skin medium red (RHS 46B); flesh reddish (RHS 44C) on the outside, slightly orange (RHS 29B) near center; medium to firm; flavor very sweet; achenes inset; ripens midseason. Plant: vigorous medium; stolons abundant, 54/plant; growth habit semi-upright; yield high, 2078 g/plant; growth habit upright with flowers above the canopy; highly resistant to fusarium wilt and phytophthora crown rot; susceptible to fusarium wilt and to charcoal rot.

UDC Finn. Extreme day-neutral strawberry for the summer plant regions of the southern and central coast of California. Origin: University of California, Davis, by S. Knapp and G. Cole. Cabrillo × 08C150P009; crossed 2012; selected 2016; introd. 2021. USPP 34,242; 17 May 2022. Fruit: medium to large, 25 g, similar to Pollensa; conic; skin medium red (RHS N45B); very firm, sweet, 8.9% SSC, 0.72% TA; achenes indented; harvest August to end of December, 75% production by late October. Plant: vigorous medium; yield moderate, 676 g/plant; growth habit semi-upright with flowers above the canopy; moderately susceptible to fusarium wilt; moderately susceptible to verticillium wilt and to phytophthora crown rot, and susceptible to fusarium wilt.

UDC Mojo. Extreme day-neutral strawberry for the summer plant regions of the southern and central coast of California. Origin: University of California, Davis, by S. Knapp and G. Cole. 07C203P001 × 08C150P009; crossed 2012; selected 2016; introd. 2021. USPP 34,265; 24 May 2022. Fruit: medium to large, 26.8 g, larger than Monterey; rare; skin vivid red (RHS 46B); firm; flavor sweet, 8.8% SSC, 0.77% TA; achenes indented; harvest medium early, 5-10% production by late February. Plant: vigorous medium; yield high, 830 g/plant; growth habit semi-upright with flowers at same level of canopy; highly resistant to fusarium wilt; moderately resistant to phytophthora crown rot; moderately susceptible to charcoal rot; susceptible to verticillium wilt.

UDC Moxie. Day-neutral strawberry adapted to the California central coast. Origin: University of California, Davis, by S. Knapp, G. Cole, D. Shaw and K. Larson. UCD Royal Royce × 07C092P003; crossed 2011; selected 2012; introd. 2019. USPP 32,984; 20 April 2021. Fruit: very large, 35 g, bigger than Monterey; conic; skin vivid red (RHS 45A); very firm, juicy, 7.6% SSC, 0.83% TA; achenes indented; harvest medium early to end of September, 15% production by late April. Plant: vigorous medium; yield high, 2183 g/plant; growth habit semi-upright with flowers at or above the canopy. Has reduced runner production in berry growing season; moderately susceptible to verticillium wilt and to phytophthora crown rot; susceptible to fusarium wilt and to charcoal rot.

UDC Valiant. Day-neutral strawberry adapted to all coastal growing regions of California, especially adapted to organic culture. Origin: University of California, Davis, by S. Knapp, G. Cole, D. Shaw, and K. Larson. Merced × 07C092P003; crossed 2011; selected 2012; introd. 2019. USPP 32,966; 13 April 2021. Fruit: medium to large, 28.5 g, similar to Frontera; long conic; skin vivid red (RHS 45A); very firm, juicy, 7.6% SSC, 0.83% TA; achenes indented; harvest mid-February to end of September, 15% production by late April. Plant: vigorous moderate; yield high, 2078 g/plant; growth habit upright with flowers above the canopy; moderately susceptible to fusarium wilt and to phytophthora crown rot; susceptible to fusarium wilt and to charcoal rot.

UDC Victor. Short-day strawberry adapted to coastal Southern California and partially remontant in cool environments of coastal Central California. Origin: University of California, Davis, by S. Knapp, G. Cole, D. Shaw, and K. Larson. 08C182P002 × 08C138P002; crossed 2011; selected 2012; introd. 2019. USPP 32,950; 6 April 2021. Fruit: medium to large, 25.6 g, similar to Petaluma; short to medium conic; skin vivid red (RHS 46B); very firm, flavor sweet, 8.5% SSC, 0.73% TA; achenes indented; harvest medium late, 5-10% production by late February. Plant: vigorous medium; yield moderate, 749 g/plant; growth habit semi-upright with flowers at same level of canopy; highly resistant to fusarium wilt; moderately resistant to phytophthora crown rot; moderately susceptible to charcoal rot; susceptible to verticillium wilt.

UDC Warrior. Short-day strawberry adapted to coastal Southern California. Origin: University of California, Davis, CA by S. Knapp, G. Cole, D. Shaw and K. Larson. 05C165P001 × 04C076P004; crossed 2008; selected 2009; introd. 2019. USPP 32,950; 6 April 2021. Fruit: medium to large, 25.6 g, similar to Petaluma; short to medium conic; skin red (RHS N34A); moderately firm, flavor sweet, 8.5% SSC, 0.73% TA; achenes slightly indented; harvest medium early, 15-20% production by late February. Plant: vigorous medium; yield moderate, 794 g/plant; growth habit semi-upright with flowers at same level of canopy; highly resistant to fusarium wilt; moderately resistant to charcoal rot and phytophthora crown rot; susceptible to verticillium wilt.

Verdi. Short-day strawberry adapted to the Netherlands and similar growing regions. Origin: Fresh Forward Holding, Eck en Wiel, the Netherlands, by E.J. Meulenbroek. E2008-001 × E2006-367, crossed 2011; selected 2012. CPVO PBR 57813; 6 April 2021. USPP 33,202; 9 June 2021. Fruit: medium to large; conic; skin glossy, reddish orange (43A); flesh light reddish orange (35B); firm; flavor pleasant, balanced, nice aroma; achenes slightly raised to at surface; ripens early; stores 7-10 d. Plant: vigorous medium; growth habit upright; resistant to phytophthora crown rot, powdery mildew, and verticillium wilt.

Xante®. See CIVR333.

Yakima. Short-day strawberry adapted to coastal Central California. Origin: Sweet Darling Sales, Aptos, CA, by J. Larse. Aida × Lili; tested as 109733. USPP 32,800; 9 Feb. 2021. Fruit: medium to large, 33 g, length 53 mm, width 43 mm; long conic and long wedge; skin glossy vivid red (RHS 45A); flesh vivid red (RHS 44A) and strong red (RHS 41B); medium firm to firm; flavor moderately sweet to very sweet (7-14 °Brix, pH 3.33); calyx medium to large, set at surface, reflexed, moderately adhering; achenes inset; stores 5-10 d. Plant: vigorous strong; stolons few, 1-3/plant; yield high, 721 g/plant; production by late April. Plant: vigorous high; yield high, 2183 g/plant; growth habit semi-upright with flowers at or above the canopy. Has reduced runner production in berry growing season; moderately susceptible to verticillium wilt and to phytophthora crown rot; susceptible to fusarium wilt and to charcoal rot.
growth habit upright, density medium, flowers above canopy, fruiting trusses prostrate; rain tolerance moderate to high; resistant to fusarium wilt and anthracnose fruit rot.

SUGAR APPLE

David Karp, Dept. of Botany and Plant Sciences, University of California, Riverside, CA

Leah Reese. Large, symmetric fruit with excellent flavor and very low fiber content. Origin: University of Florida, Tropical Research and Education Center, Homestead, FL, by J.H. Crane. Chance seedling obtained from mass selection from progenies of half siblings; selected 2011. Fruit: large, mean parameters: longitudinal diameter 119.5 mm, equatorial diameter 116.2, 638.7 g; symmetric, broadly cordate; peel mammillated, light green, with individual areoles slightly separated and faintly outlined in yellow-white; pulp 50.4% of fruit mass, creamy white, with almost no stone cells; sweet, 25.5 °Brix, 5.0 pH, acidity 0.228 g citric acid/40 g of pulp, TSS/TA ratio 119; % fruit set. Tree: midsize; canopy globose; hand pollination in Florida results in low blight incidence. Nut: 14.1 g; broadly ovate, lightly grooved, 58% kernel. Nut: 8.1 g, easily removed in halves, very high proportion of extra-light color. Tree: Vigor and habit similar to Chandler; bears on terminals and laterals; protandrous; yield high; harvest similar to Durham; occurrence of blight low.

Walnut

Pat J. Brown, Walnut Improvement Program, University of California, Davis, CA


Walnut Rootstock

Pat J. Brown, Walnut Improvement Program, University of California, Davis, CA

Grizzly™. See Cliff Clone.


ADDENDA AND REVISIONS

APPLE

Gala 0502. Marketed as KingGala™ (List 50).
Harley05. Marketed as Mondaju™ and Roxy™ (List 50).
NY56. Marketed as Cordera™ (List 50).
PremA129. The Dazzle™ trade name for this cultivar is registered, not ™ (List 50).
Seaton99. Marketed as Berica™ (List 50).
WUR37. Marketed as Freya™ (List 50).

AVOCADO

AO.06. USPP application abandoned; 2 Dec. 2016 (List 50).
BL 5-552 (5-552). USPP 33,534; 5 Oct. 2021 (List 50).

BLACKBERRY

Cado. USPP 33,115; 1 June 2021 (List 50).

BLUEBERRY

Colossus. USPP 33,802; 4 Jan. 2022 (List 50).
FC13-122. USPP 31,822; 2 June 2020 (List 50).
FF03-015 (CristinaBlue™). Marketed in 2022 as ValentinaBlue™ (List 49).
Magnus. USPP 32,181; 15 Sept. 2020 (List 50).
Optimus. USPP 32,028; 4 Aug. 2020 (List 50).
Wayne. USPP 32,182; 15 Sept. 2020 (List 50).

CITRUS

C37. Marketed as Juicy Crunch™ (List 50).
M 4. USPPV 202000500; 30 July 2021 (note that this cultivar applied for and was granted US plant variety protection, not a plant patent, for which it was stated as applying in List 50).
Tif12-16. Marketed as Grand Frost™ (List 50).
Tif3-46. Marketed as Sweet Frost™ (List 50).
WG 02. Marketed as Aroena™ (List 50).

KIWIFRUIT

Cristal. USPP application abandoned; 21 Feb. 2019 (List 50).

PLUM


STRAWBERRY

NCS 10-038. Listed as Liz in List 50, but NCS 10-038 is the official cultivar denomination established by USPP 32,705 (29 Dec. 2020); Liz is a synonym.
NCS 10-156. Listed as Rocco in List 50, but NCS 10-156 is the official cultivar denomination established by USPP 32,432 (10 Nov. 2020); Rocco is a synonym.