

'Enterprise' Apple

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Additional index words. *Malus × domestica*, *Venturia inaequalis*, fruit breeding, disease resistance

'Enterprise' is a late-maturing, attractive, red apple (*Malus × domestica* Borkh.) with excellent fruit quality combined with field immunity to apple scab incited by *Venturia inaequalis* (Cke.) Wint., a high level of resistance to cedar-apple rust incited by *Gymnosporangium juniperi-virginianae* (Schw.), a high level of resistance to fire blight incited by *Erwinia amylovora* (Burr.) Winslow, and moderate resistance to powdery mildew incited by *Podosphaera leucotricha* (En. & Ev.) Salm. The large, attractive, red fruit matures ≈ 3 weeks after 'Delicious' and retains excellent quality for up to 6 months at 1 C. The letters "pri" in the name commemorate the Purdue-Rutgers-Illinois cooperative apple breeding program.

'Enterprise' is the ninth apple cultivar developed by the cooperative breeding program of the Indiana, Illinois, and New Jersey Agricultural Experiment Stations (Crosby et al., 1992). Fruiting has been observed for 15, 4, and 3 years at Purdue Univ., Univ. of Illinois, and Rutgers Univ., respectively. 'Enterprise' is under evaluation at many locations throughout North America and Europe.

The dark-red fruit is moderately acid at harvest, and quality, in our opinion, is outstanding after 1 to 2 months of storage. This apple combines disease resistance with attractive appearance and excellent culinary and storage qualities.

Origin

In 1982, the original seedling was planted in the CL block of the apple breeding orchard on the Clark Farm tract of the Purdue Univ. Horticulture Farm; its position was row 4, tree 38 (CLR4T38) and had the designation PRI 2693-1 in our breeding records. The seedling is derived from a sib cross of two scab-

resistant selections (PRI 1661-1 × PRI 1661-2) of complex parentage made in West Lafayette, Ind. (Fig. 1). Resistance to scab is based on the *V*_g gene derived from *Malus floribunda* 821 (Crosby et al., 1992). 'Enterprise' apple breeding behavior indicates that the gene is present in the heterozygous condition (J.C.G., unpublished). The seedling was selected in Oct. 1978 by E.B. Williams, a long-time leader of the Purdue apple breeding program, and released for advanced testing under the designation Cop 30 (Korban et al., 1990). It has been evaluated at cooperating experiment stations in the United States and Europe and by private growers.

Description

'Enterprise' fruit are 70 to 76 mm in diameter (Fig. 2), round to elongated, and occasionally lopsided. The skin has a bright, glossy finish and is moderately thick and tough; 80% to 100% of the surface is medium red to slight orange, washed with green-yellow to yellow ground color. Fruit is attractive with inconspicuous lenticels. Flesh is fine-grained, pale yellow to cream-colored, firm, and crisp. Flavor is sprightly at harvest but mellows to moderately subacid after storage. It is juicy with spicy, full rich flavor. We rate quality as very good at harvest and it improves after storage. Fruit retains its characteristic flavor and texture quality for up to 6 months in storage at 1C. Season of maturity is 3 weeks after 'Delicious', 15 to 25 Oct. at Lafayette, Ind. (lat. 40°N).

The tree is moderately to highly vigorous and spreading, with a standard bearing habit and round top. Fruit is borne singly on variable-length spurs and distributed uniformly throughout the canopy. The selection has been propagated by bud grafting on seedling, EMLA

111, EMLA 7, and EMLA 9 rootstock. Flowering occurs in late midseason, with or after 'Golden Delicious'.

'Enterprise' apple has been extensively tested in the greenhouse for resistance to apple scab and in the field for resistance to other major apple diseases. Scab resistance is based on the absence of sporulation after repeated greenhouse inoculations with *V. inaequalis* races 1 through 5 using Williams' (1978) methods. There has been no evidence of infection by *G. juniperi-virginianae*. The cultivar has shown high resistance to fire blight at Lafayette and Vincennes, Ind., with only an occasional strike that was limited to first-year wood. Resistance to powdery mildew is moderate with a maximum rating of 2 in 1 year on a 0 (no infection) to 5 (severe infection) scale. Bitter pit and water core have been absent.

The following detailed description follows Zielinski (1955) and uses color designations according to the *Royal Horticultural Society Colour Chart* of 1938 and 1941.

FLOWER

Corolla: 48 mm in diameter at anthesis.
 Petals: 15 × 23 mm.
 Color: China rose o24/2 (bud) fading to white tinged with magenta rose 02712 (open flowers).

FRUIT

Shape: Slightly oblate to somewhat truncate; occasionally oblique to lopsided on young trees, but round to elongate and regular on older trees; length: width ratio = 0.91.
 Size: Average diameter, 70 to 76 mm.
 Color: Saffron yellow (plate 7/2) undercolor; 95% cardinal red (plate 82/2) overcolor fading to orange (plate 12/1) when shaded; blushed.
 Skin: Smooth and glossy, moderately tough, medium thick; bloom is scant, but fruit becomes waxy after 4 months of storage; inconspicuous, smooth, round, white dots.
 Stem: Short, medium thick.
 Cavity: Acute, medium depth, medium width, smooth surface.
 Basin: Medium depth, broad breadth, rounded sides, smooth surface.
 Calyx: Persistent, partly closed, erect to recurved.
 Calyx tube: Urn shaped.
 Stamens: Basal.
 Core-lines: Meeting.

Received for publication 28 Oct. 1993. Accepted for publication 26 Jan. 1994. Journal paper 13,996 of Purdue Univ. Agricultural Expt. Station. The cost of publishing this paper was defrayed in part by the payment of page charges. Under postal regulations, this paper therefore must be hereby marked *advertisement* solely to indicate this fact.

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Fig. 1. Pedigree of 'Enterprise' apple.

Core: Median, closed, small.
 Carpels: Round, emarginate, smooth.
 Seeds: Full compliment, acuminate, nontufted.

Flesh:
 Texture: Medium-grained, firm, crisp, and breaking at harvest; mellows to firm and crisp after storage.
 Color: Lighter in hue than Aureolin (plate 3/3).
 Quality: Very spicy, rich, and sprightly acid at harvest, peak quality after 1 month in storage.

Maturity season: 15 to 25 Oct. at West Lafayette, Ind.; 3 weeks after 'Delicious'.

Keeping quality: Superior; retains quality and texture up to 6 months at 1 C in regular storage.

Use: Winter dessert apple, appropriate for medium- and long-term storage.

TREE

Form and habit: Spreading, round-topped, vigorous, standard bearing habit; fruit borne singly on variable-length spurs, hangs well on the tree even when over-ripe; annual bearing.

Leaves: Ovate; serrate to double serrate margin; apex acute to acuminate, base acute to round, length: width ratio = 1.60. Leaf petioles show slight anthocyanin pigmentation, sometimes intense at the base.

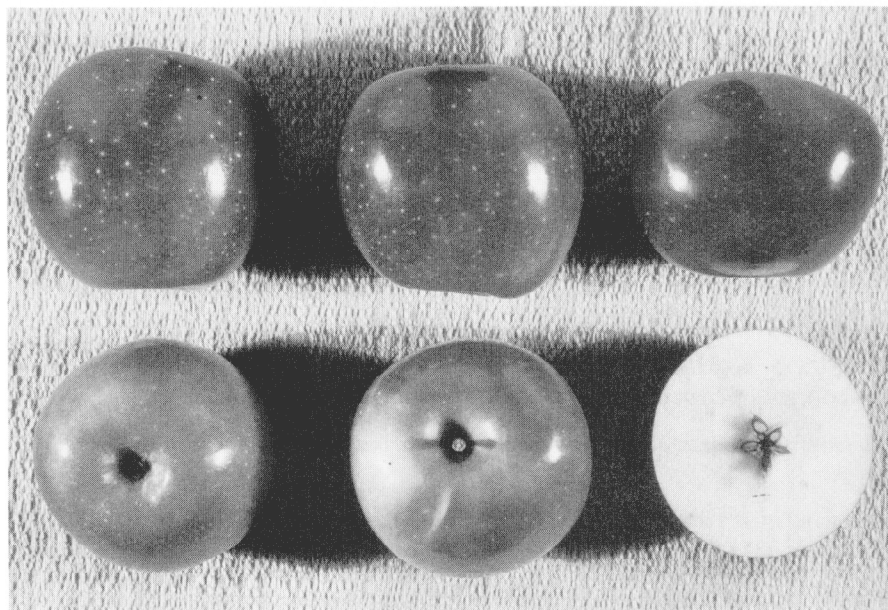


Fig. 2. 'Enterprise' apple fruit

Availability

Budwood is available for test purposes at federal and state experiment stations. Trees will be available from licensed nurseries in 1994. The Purdue Research Foundation has applied for a plant patent under the name Co-op 30.

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