

‘Co-op 39’ (CrimsonCrisp™) Apple

Jules Janick

Department of Horticulture and Landscape Architecture, Purdue University,
625 Agricultural Mall Drive, West Lafayette, IN 47907-2010

Joseph C. Goffreda

Department of Plant Biology and Pathology, Rutgers, The State University of
New Jersey, New Brunswick, NJ 08903

Schuyler S. Korban

Department of Natural Resources and Environmental Sciences, University of
Illinois, Urbana IL 61801

‘Co-op 39’ (CrimsonCrisp) is a midseason, high-quality, scab-immune, red apple (*Malus × domestica* Borkh.) that has excellent appearance, outstanding flavor, and very crisp flesh (Fig. 1). The fruit is medium sized. The apple does not abscise when mature and continues to have excellent quality for over 4 weeks on the tree. The tree carries the *V_f* gene, derived from *Malus floribunda* Sieb., clone 821, for resistance and exhibits field immunity to apple scab incited by the US races of the fungal pathogen *Venturia inaequalis* (Cke) Wint.; reaction to race 6 and 7 is unknown. A plant patent has been applied for under the name ‘Co-op 39’, but trees will be marketed under the trade-marked name CrimsonCrisp™ to emphasize its red color and crisp flesh. The fruit should be well suited to both home gardens and commercial orchards. ‘Coop 39’ is the 18th apple cultivar developed by the cooperative breeding program of the Indiana, Illinois, and New Jersey experiment stations (Janick, 2003).

Origin

The original seedling was derived from a cross between two breeding selections made in 1971 at the Rutgers Fruit Research and Development Center, Cream Ridge, N.J. The seedlings was screened for scab resistance at Purdue University in 1972 by E.B. Williams and planted at the Clark Farm Tract of the Purdue University Horticultural Research Farm, West Lafayette, Ind.,. Fruit of this seedling was first observed on September 18, 1979, and the seedling was propagated by grafting on ‘M.7’ and ‘MM.111’ rootstock for further evaluation under the location designation CLR 20T14, and given the progeny number designation PRI 2712-7. The selection has been widely evaluated at a number of locations including Lafayette Ind., Cream Ridge, N.J., and Urbana Ill., under the designation Co-op 39 (Goffreda et al. 1995). It was included in the NE 183 test among 20 states in the U.S. and three provinces in Canada, and has been grown under test at Bologna and Cuneo, Italy, and at Villers-Cotterêts and Angers, France. The pedigree of ‘Co-op 39’ is diagrammed in Fig. 2.

Description

The following description of flowers, fruits, tree, and leaves contains color designations according to the Horticultural Colour Chart issued by the Royal Horticultural Society of London (2001).

FLOWER

Size and fragrance: medium, corolla 46 mm in diameter; fragrance slight.
Petal shape: ovoid to round, 23 mm long.
Petal color: red purple (65C) in bud to white (N155A) when expanded.
Stamen: 10 mm long, red purple to white.
Pistil: stigma 5 mm long, styles fused, color green yellow (1B).
Flowering season: flowers midseason after ‘Golden Delicious’.

FRUIT

Size: medium, up to 76 mm diameter.
Shape: oblate to round, symmetrical, length: diameter ratio 0.92.
Pedicel: short, 11.8 mm in length, and 3.5 mm in diameter.
Locules: small, closed, seeds adhere to carpel wall.

Skin: medium thick, glossy, not waxy in storage.

Lenticels: inconspicuous, red purple (61D).

Over color: red purple ranging from 60A to 60-D, 95 to 100% coverage at maturity.

Ground color: red purple group (60C); undercolor at calyx end green yellow group (1B).

Flesh color: yellow (4D).

Acidity at maturity: 0.63 g malic acid/100 mL juice.

Firmness: 7 to 10 kg·cm⁻².

Soluble solids: 13.5% to 16.5% Brix.

Flavor: rich, subacid.

Texture: very crisp and breaking, somewhat hard, moderately juicy.

Aroma: slight.

Core: 22.3 mm in width, 27.42 mm long, calyx tube 4.3 mm in length, closed, and core lines are weakly defined.

Seed: two per cell, acute, 10.0 × 4.4 mm; greyed red (178B).

Maturity date: 15 Sept. at West Lafayette, but can be picked into October.

Keeping quality: excellent keeping quality for at least 4 months at 1 °C.

Usage: dessert apple.

TREE

Vigor: moderate to low.

Shape: round.

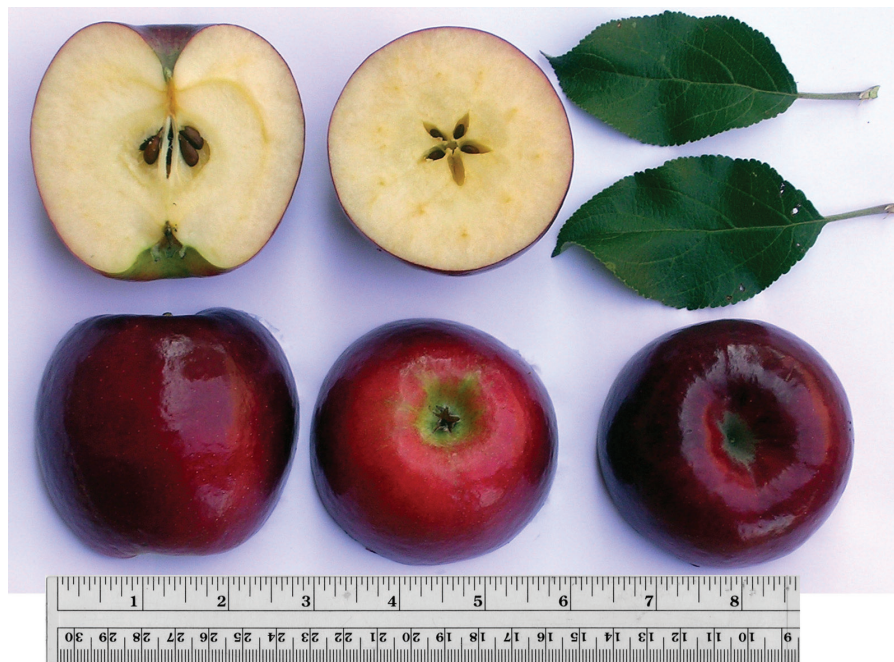
Branches: upright, 40 to 45° degree branch angle; 1-year-old wood is thin.

Branch color: 1-year-old, greyed purple (N186A); 2-year-old, brown group (N200B); pubescence observed on 1-year-old wood only.

Bearing habit: standard nonspur, some biennial bearing if overcropped.

Disease resistance: resistant to apple scab, susceptible to cedar apple rust [*Gymnosporangium juniperi-virginianae* (Schw.)] and fireblight [*Erwinia amylovora* (Burr.) Winslow].

Fig. 1. ‘Coop 39’ (CrimsonCrisp) apple.



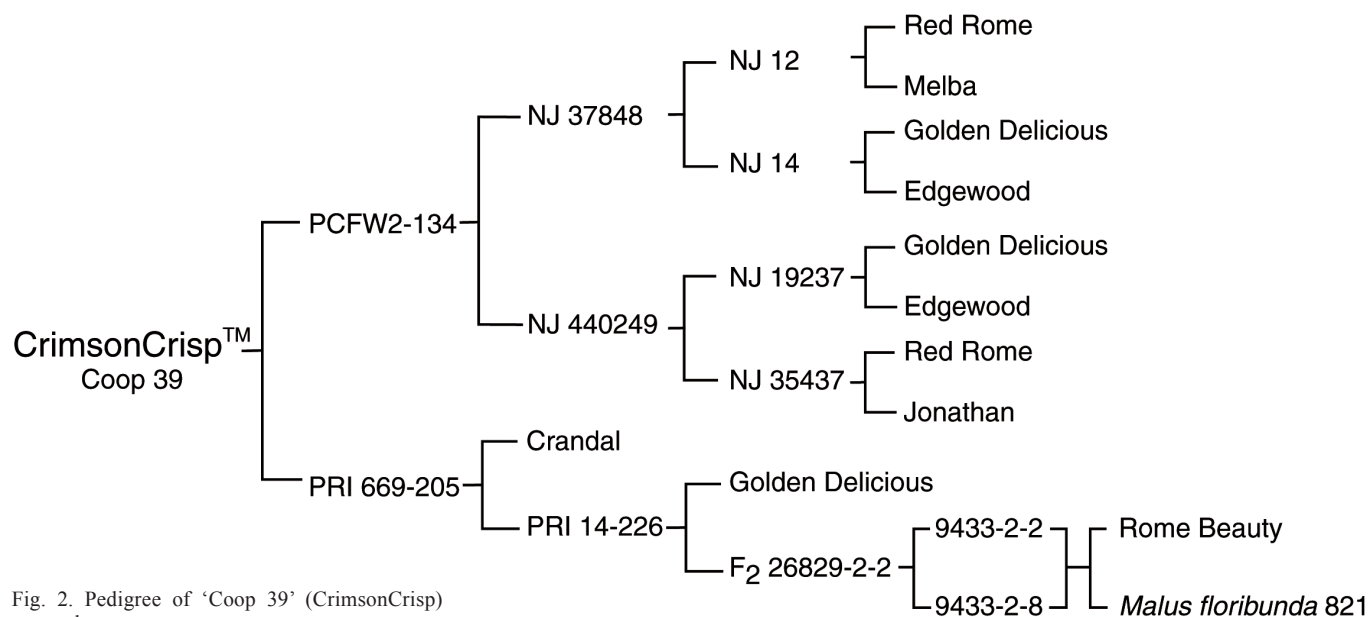


Fig. 2. Pedigree of 'Coop 39' (CrimsonCrisp) apple.

LEAF

Texture and sheen: medium, dull.
Size: 82.8 length × 51.6 width.
Petiole: 23.1 mm.
Margin: serrate.
Shape: acuminate.
Color: adaxial upper yellow green group (146A), abaxial 147D.
Pubescence: none.

Availability

CrimsonCrisp is licensed to Adams County Nursery, Inc., (26 Nursery Road, P.O. Box 108, Aspers, PA 17304; www.acnursery.com) in the U.S.; and to Pépinières Valois, Château de Noue, 02600 Villers-Cotterêts, in France. Plant patent is pending.

Literature Cited

- Goffreda, J.C., A.M. Voodeckers, S.S. Korban, S.M. Ries, and J. Janick. 1995. Co-op 39-44: Six disease-resistant apple selections released for advanced testing. NJAES Res. Rpt. Ser. R-12001-2-95.
Janick, J. 2002. History of the PRI apple breeding program. Acta Hort. 595:55-59.
Royal Horticultural Society. 2001. RHS colour chart. Royal Hort. Soc., London.