

# 'Co-op 33' (Pixie Crunch™) Apple

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'Co-op 33' (Pixie Crunch™) is a midseason, high-quality, scab-immune, red apple (*Malus ×domestica* Borkh.) that has excellent appearance (Fig. 1). It ripens 1 week before 'Delicious'. The fruit is small to medium in size and has a crisp texture with outstanding flavor that will appeal to children and adults alike. The apple does not abscise when mature, and maintains edible quality on the tree for over 4 weeks. The tree contains the *V*<sub>1</sub> gene for resistance derived from *Malus floribunda* Sieb. clone 821 and exhibits field immunity to apple scab incited by the fungal pathogen *Venturia inaequalis* (Cke.) Wint. The apple patented as 'Co-op 33' will be sold under the trade-marked name Pixie Crunch™ to emphasize its crisp flesh and moderate size. It is well suited for home gardens but should be suitable for commercial orchards that locally market their fruit and especially those that deal in U-pick operations. 'Co-op 33' is the 17th apple cultivar developed by the cooperative breeding program of the Indiana, Illinois, and New Jersey Experiment stations (Janick, 2002).

## Origin

The original seedling was derived from a cross made in 1971 at the Cream Ridge Research and Development Center, Rutgers Univ. Seedlings were screened for scab resistance at Purdue Univ. in 1972 and the seedling planted at the Clark Farm Tract of the Purdue Univ. Horticultural Research Farm, West Lafayette, Ind. It was selected in 1978 by E.B. Williams and tested as CLR19T60 and given the designation progeny number PRI 2712-1 in our breeding records. It was selected for advanced testing under the designation 'Co-op 33' (Crosby et al., 1993). It has been evaluated at Purdue Univ., both at Lafayette and at Vincennes, Ind., Rutgers Univ., and the Univ. of Illinois. It has been grown under test in Europe, including Bologna, Italy, and Angers, France. The pedigree of 'Co-op 33' is diagrammed in Fig. 2.

## Description

The following is a detailed description of the flowers, fruit, tree, and leaves with color designations according to the Horticultural Colour Chart issued by the Royal Horticultural Society of London (2001).

## FLOWER

Size and fragrance: Medium, corolla ≈46–52 mm in diameter, fragrance slight.

Petal shape: Ovoid to round, typically 17–24 mm long.

Petal color: Red purple (N57B to 62D) (unopened bud) to white (N155A) on both sides when expanded.

Stamen: 8–9 mm long, white in color, arranged in a single row, pollen yellow orange (17C).

Pistil: Stigma ≈10 mm long, style fused at base, yellow green (150D), tinged at tip with red purple (68B), pubescent.

Flowering season: Flowers in midseason along with 'GoldRush'.

## FRUIT

Shape: Round-oblate, symmetrical, length : diameter ratio between 0.8 and 0.9, no ribbing or calyx lobes.

Size: Small to medium, 56–63 mm long and 66–74 mm in diameter.

Pedicle: Medium length, 18 mm in length, 1.5 mm diameter, green (142C).

Locules: Small, closed, seeds free from carpel at maturity.

Skin: Thin and glossy with no tendency to become waxy or oily in storage.

Lenticels: Inconspicuous, rough and red-purple (61A).

Color: Green-yellow (149) to yellow ground with a red purple washed overcolor (61A and B), 90% to 100% coverage at maturity; no russet.

Acidity at maturity: 0.3 g/100 mL as malic acid.

Firmness: 7.5–10.0 kg, averaging 8.6 kg.

Soluble solids: 11.9% to 12.6%, averaging 12.3%.

Flavor: Rich, complex mixture of sweet and tart.

Texture: Crisp and breaking, juicy.

Flesh color: Yellow-white (158A).

Aroma: Slight.

Core: 22 mm width, 25 mm length, calyx tube closed ≈5 mm long, core lines weakly defined.

Seed: 1 to 2 seeds per cell, acute, ≈8.6 mm long, 4.8 mm wide; grey orange (166A).

Maturity date: In 2001 from Sept. 12 to 18, but abscission is delayed and can be picked into October.

Keeping quality: Fruit remains fresh for ≈2 weeks at room temperature, maintains excellent quality for ≈2 months in refrigerated storage at 1 °C.



Fig. 1. 'Co-op 33' (Pixie Crunch™) apple.

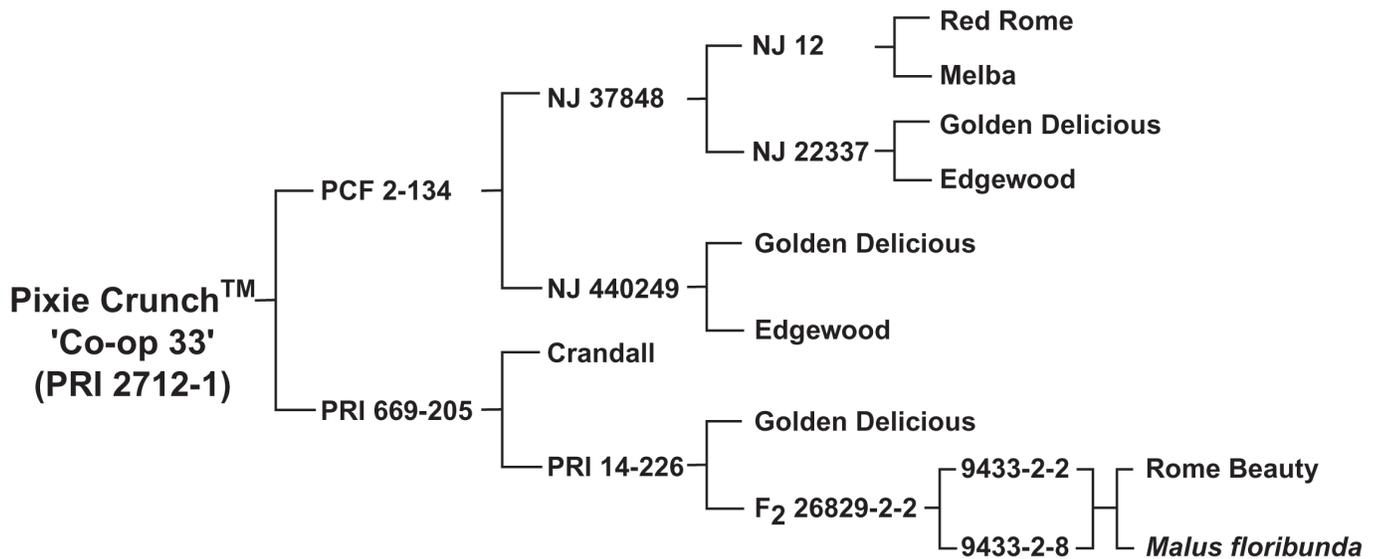


Fig. 2. Pedigree of 'Co-op 33' (Pixie Crunch™) apple.

Usage: Particularly good for eating out of hand; tree suitable for home gardens and U-Pick operations.

#### TREE

Vigor: Moderate.

Shape: Spreading.

Branches: 45° to ≈55° along the entire height of the tree.

Branch color: One-year-old branches are grey purple (183A), 2-year-old branches are grey brown (1299B). New wood exhibits pubescence but not older wood.

Bearing habit: Standard non-spur type, some tendency toward biennial bearing if over cropped.

Disease and insect resistance: Resistant to apple scab; moderately resistant to fireblight incited by *Erwinia amylovora* (Burr.) Winslow, and

frogeye leafspot [*Physalospora obtusa* (Schw.) Cke.], susceptible to powdery mildew [*Podosphaera leucotricha* (Ell & Ev.) Salm.], and cedar-apple rust [*Gymnosporangium juniperi-virginianae* (Schw.)]; slightly susceptible to apple maggot (*Rhagoletis pomonella*).

#### LEAF

Texture and sheen: Moderately thick and dull.

Size: Length ≈66–97 mm, averaging 79 mm.

Petiole Length ≈30 mm.

Margin: Serrate.

Shape: Acute.

Color: Adaxial, yellow-green (147A); abaxial yellow green (148A).

Pubescence: Adaxial is nonpubescent, abaxial has some white pubescence.

#### Availability

Pixie Crunch™ is licensed in the United States by Gardens Alive! Inc, and is presently available from Gurney's Seed and Nursery Co. (phone 513/354-1491) and Henry Fields Seed and Nursery Co. (phone 513/354-1494) and is protected by plant patent number 13,871.

#### Literature Cited

- Janick, J. 2002. History of the PRI apple breeding program. *Acta Hort.* 595:55–59.
- Crosby, J.A., J. Janick, P.C. Pecknold, S.S. Korban, S.M. Ries, J. Goffreda, and A. Voordeckers. 1990. Co-op 32 to 38. 1993. Seven disease resistant apple selections released for advanced testing. *Purdue Univ. Sta. Bul.* 658.
- Royal Horticultural Society. 2001. RHS colour chart. Royal Hort. Soc., London.