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## 'Co-op 29' (Sundance™) Apple

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'Co-op 29' (Sundance™) is a late-season, high-quality, disease-resistant, yellow apple (*Malus ×domestica* Borkh.) with attractive appearance (Fig. 1). It ripens 2-1/2 weeks after 'Delicious' (Fig. 1). The fruit is large in size and has outstanding spicy flavor and crisp texture. The apple does not drop when mature, and maintains edible quality for over 7 months in refrigerated storage. The tree contains the  $V_f$  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. In addition, the tree exhibits resistance to cedar-apple rust incited by *Gymnosporangium juniperi-virginianae* (Schw.) and fireblight (*Erwinia amylovora*), and has moderate resistance to powdery mildew [*Podosphaera leucotricha* (Ell & Ev.) Salm]. The apple, patented under the name 'Co-op 29', will be sold under the trade-marked name Sundance™ to emphasize its yellow color and occasional blush. It is well suited for home gardens and commercial orchards. 'Co-op 29' is the 16th 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 1964 at the Cream Ridge Research and Development Center, Rutgers Univ., was screened for scab resistance at Purdue Univ. in 1965 and the seedling planted at the Hensley Block at the Purdue Univ. Horticultural Research Farm, West Lafayette, Ind. It was selected in 1972 by E.B. Williams and tested as HCR14T125 and given the designation progeny number PRI 2050-4 in our breeding records. It was selected for advanced testing under the designation Co-op 29 (Korban et al., 1990). 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 29' 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: Medium, corolla ≈49 mm in diameter.  
Petal shape: Ovoid to round, typically 17–24 mm long, fragrance slight.  
Petal color: Pink-red (49A) (unopened bud) to white (N155A) on both sides when expanded.  
Stamen: 7–9 mm long, white in color, arranged in a single row, white.  
Anthers: Yellow-orange (17C).

Pistil: 7–9 mm long, style fused at base, yellow green (154C).

Flowering season: Flowers in midseason slightly later than 'Delicious' or 'GoldRush'.

### FRUIT

Shape: Round-conic, symmetrical, length : diameter ratio 0.89, no ribbing or calyx lobes.

Size: Large, 68 mm height, 77 mm in width.

Pedicle: Short, 18 mm and thick 2 mm, green-yellow (161A).

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, appears as minute round dots, yellow-green (149C).

Color: Green-yellow (1C), occasional mottled orange-red blush (N34D).

Russet: Characteristic russet in basin, can radiate to side of fruit.

Acidity at maturity: 0.439 g/100 mL as malic acid.

Firmness: 7.4–8.9 kg, averaging 7.8 kg.

Soluble solids: 11.0% to 13.9%, averaging 12.4%.

Flavor: Spicy citric flavor.

Texture: Crisp, medium juicy.

Flesh color: Yellow-white (158D), browns on exposure to air.

Aroma: Very slight.

Core: Median, 22 mm width, 23 mm length, calyx tube closed, ≈3 mm, core lines long, core lines are weakly defined.

Seed: 1 to 2 seeds per cell, acute, ≈8.6 mm long and, 4.8 mm wide; grey-red (178B).

Maturity date: In 2001, from 10–17 Oct. in West Lafayette, Ind., but abscission is delayed and can be picked into November.

Keeping quality: Fruit remains fresh for ≈1



Fig. 1. 'Co-op 29' (Sundance™) apple.

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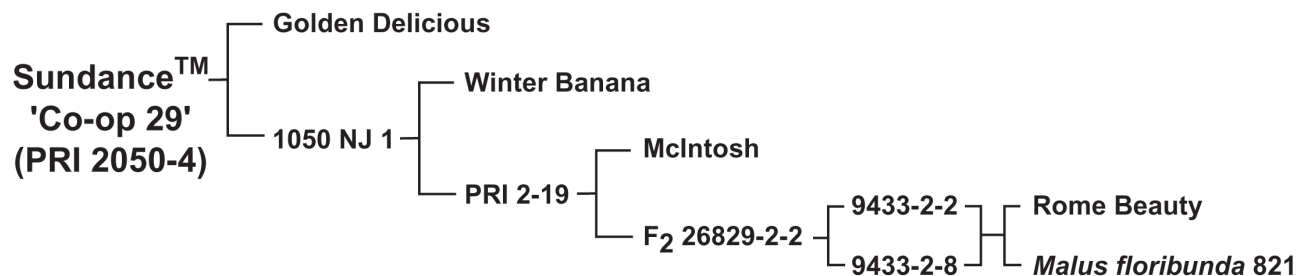


Fig. 2. Pedigree of 'Co-op 29' (Sundance™) apple.

week at room temperature, maintains excellent quality for 7 months in refrigerated storage at 1 °C.

Usage: Particularly good for eating out of hand; juice, sauce, butter.

#### TREE

Vigor: Moderate.

Shape: Upright.

Branches: 30° to ≈35°, becomes wider at top due to crop load.

Branch color: One-year-old branches are greyed red (178B), 2-year-old branches are grey green (100A). New wood exhibits pubescence, grey green (192D).

Bearing habit: Slightly biennial.

Disease and insect resistance: Resistant to apple scab, fireblight incited by *Erwinia amylovora*

(Burr.) Winslow et al., and cedar-apple rust [*Gymnosporangium juniperi-virginianae* (Schw)]; moderately tolerant to powdery mildew [*Podosphaera leucotricha* (Ell & Ev.) Salm.]

#### LEAF

Texture and sheen: Medium thick and dull.

Size: Length ≈65–107 mm, averaging 88 mm.

Petiole: Length ≈35 mm.

Margin: Serrate.

Shape: Acute.

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

Pubescence: Adaxial, fine on young leaves; abaxial side has some white pubescence.

#### Availability

Sundance™ 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 U.S. Plant Patent no. 13,819.

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