'Co-op 25' (Scarlet O'Hara™) Apple

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'Co-op 25' is a midseason, red apple (*Malus ×domestica* Borkh.) that ripens 1 week earlier than 'Delicious', with high productivity, very good fruit quality, and excellent storage life. The tree is productive, moderately vigorous, spreading, and comes into bearing early. The fruit is 90% medium red, up to 76 mm (3 inches) in diameter when well-thinned, and is generally short-conic to round in shape (Fig. 1). The skin is smooth, slightly waxy, and semi-glossy. The fruit is delicately spicy, with a full flavor that combines sweetness and subacidity. Quality is best after 1 or 2 months in storage and has a storage life of over 7 months at 1 °C in refrigerated storage. The tree is spreading and round-topped with some tendency for tip bearing but also bears on short shoots. The fruit is resistant to preharvest drop and hangs on the tree, even when overripe. There is a slight tendency for alternate bearing.

'Co-op 25' is the 14th apple cultivar developed by the cooperative breeding program of the Indiana, Illinois, and New Jersey agricultural experiment stations (Crosby et al., 1992). It will be sold under the trademarked name Scarlet O'Hara™ to emphasize its attractive appearance and spirited qualities but, like its namesake, with some controversial characteristics. It was released with the positive support of Mr. Ed Fackler of Rocky Meadow Orchard & Nursery, New Salisbury, Ind., a nurseryman who has championed its reliability of production and high dessert qualities.

'Co-op 25' carries the genetic factor *Vf* inherited from *Malus floribunda* Sieb. 821 that renders it highly resistant to the apple scab disease incited by *Venturia inaequalis* (Cke.) Wint. Scab resistance was evaluated by controlled greenhouse inoculation tests at the seedling stage followed by 25 years of observation under natural conditions for infection in the field in West Lafayette, Ind.; Urbana, Ill.; Cream Ridge, N.J.; and in trials at sites in the

United States, Italy, France, and Australia. Based on field observations, the selection is moderately susceptible to cedar-apple rust incited by *Gymnosporanium juniperi-virginianae* (Schw.), moderately susceptible to mildew incited by *Podosphaera leucotricha* (Ell. & Ev.) Salm., and highly susceptible to fireblight incited by *Erwinia amylovora* (Burr.) Winslow. Because of an open calyx, the selection is highly susceptible to moldy core, a fungal disease of the seed cavity, often due to *Alternaria* sp., and as a result will require fungicidal sprays at bloom.

Origin

The original seedling was produced from crossing the New Jersey selection PCFW 2-

134 as the seed parent with the selection PRI 669-205 as the pollen parent in 1971 at the New Jersey Agricultural Experiment Station, a cross that produced a number of outstanding seedlings. The complete pedigree is shown in Fig. 2. The seedling was screened for scab resistance at Purdue Univ. in 1972, and was planted in a permanent field location in May 1973 at the Clark Farm in West Lafayette, Ind., where it was designated CLR20T41. The seedling was selected in 1978 by E.B. Williams and carried the progeny designation PRI 2714-4 in our breeding records. It was released for testing as 'Co-op 25' in 1984 and was described in *Purdue University Station Bulletin* 456 (Williams et al., 1984).

Description

The following is a detailed description of the flowers, fruit, tree, and leaves based on Zielinski (1955) with color designations according to the 1966 Horticultural Colour Chart issued by the Royal Horticultural Society of London.

FLOWER

Corolla:	Average 43 mm in diameter at anthesis.
Petals:	14 × 20 mm.
Color:	Solferino Purple (Plate 26/1) in the bud, fading to Solferino Purple (Plate 26/3) to white in open flowers.
Season:	Late, along with 'Rome Beauty.'

Fig. 1. Fruit and leaves of 'Co-op 25' apple.

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Fig. 2. Pedigree of 'Co-op 25' apple.

FRUIT		Core:	Distant, open, medium.
Shape:	Short-conic to round to slightly oblate, regular and slightly ribbed in cross section; slightly variable.	Carpels:	Round, emarginate to micro-nate cordate to round, ridged.
Size:	Averages 70 to 76 mm in diameter; length : width ratio is 0.81.	Seeds:	Full complement, acute, non-tufted.
Color:	Undercolor is Chartreuse Green 663/1 to Indian Yellow (Plant 6/2) fading to Yellow Ochre (Plate o7/2); blushed overcolor, 60% to 90% Currant Red (Plate 822/2 to 822/3); pattern is slightly speckled to washed.	Flesh:	Texture: Medium coarse-grained, firm, very crisp and breaking; maintains breaking texture in storage.
Skin:	Smooth, very slight wax, with inconspicuous tan to slightly russeted round lenticels; little tendency for russet, but occasional scarf skin, medium thick but moderately tough; semi-glossy, somewhat dull.	Quality:	Delicately spicy, full flavored, fruity, sweet, subacid; very good, improves to best after 1 or more months in storage.
		Color:	Buttercup Yellow (Plate 5/3).
		Maturity season:	One week before 'Delicious.'
		Keeping quality:	Improves in storage and retains quality and texture at least 7 months at 1 °C.
Stem:	Average length of 28 to 33 mm; moderately thin.	Use:	Dessert apple, appropriate for medium and long-term storage.
Cavity:	Acute to obtuse, medium to shallow depth, medium width, smooth to russeted surface.	TREE	
Basin:	Medium depth, medium breadth, rounded sides, smooth to wavy surface, and glabrous.	Vigor:	Moderate.
Calyx:	Persistent, open, lobes separated at base, narrowly lanceolate, acuminate, recurved.	Shape:	Spreading, round-topped.
Calyx tube:	Conical to funnel-shaped; occasionally open to core cavity.	Bearing habit:	Some tendency for tip bearing but also bears on short shoots; develops bourse buds, tendency for more than one fruit per cluster; bearing limbs droop under fruit load; fruits hang well on the tree even when overripe; slight tendency for biennial bearing.
Stamens:	Basal.	Branch angle:	45° to 90°.
Core-lines:	Clasping.	Pruning/training requirements:	Renewal pruning is required because of tendency for bare

wood on base of branches. The requirements are similar to those of 'Rome Beauty.'

Productivity: Heavy, with overbearing possible.

Thinning: Requires thinning to keep from overbearing; cluster should be thinned to king fruit.

Bark type and color: Current growth Maroon 1030 on distal portion. Basal portion to Willow Green 000862.

Stem: Current-year stems are very pubescent; few lenticels, moderately conspicuous, rough, white; lenticels on 2-year-old stems are larger, round, raised, tan, up to 1.6 mm; lenticels on 3-year-old wood are elongated transversely, up to 1.6 × 8 mm; lenticels on older stems are the same color as on bark, raised, corky, 6 × 9.5 mm and orange-tan.

LEAVES

Shape: Broadly ovate on new growth, ovate on older growth, compoundly serrate, occasionally simple serrate.

Availability

Budwood is available for test purposes to federal and state experiment stations from Purdue Univ., Rutgers Univ., and the Univ. of Illinois. The Purdue Research Foundation has applied for a plant patent under the name 'Co-op 25'. Trees are currently available for sale from the Rocky Mountain Orchard & Nursery Co., New Salisbury, Ind., and will be available from licensed nurseries under the name Scarlet O'Hara™, which is a trademark of the Purdue Research Foundation.

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