Work is in progress to produce compact-tree mutants of Stella by ionizing radiation. Some promising mutants have been selected. They should be very valuable both for commercial plantings and home gardens. Virus free propagation material of the standard-sized Stella is available at the Research Station, Summerland, B. C.

Literature Cited

1. D. Lewis and L. K. Crowe. Structure of the incompatibility gene IV. Types of mutation in *Prunus avium* L. Heredity 8, 357-363, 1954.
2. P. Matthews and K. Lapins. Self-fertile sweet cherries. Fruit Var. & Hort. Digest 21, 36-37, 1967.
3. K. O. Lapins and Hans Schmid. Hardiness of fruit buds of sweet cherries, 1968-69. Fruit Var. & Hort. Digest 23, 49-50, 1969.

Prima—an Early Fall Red Apple with Resistance to Apple Scab[1]

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'Prima' is a new, red apple cultivar introduced from a cooperative breeding program carried out by the Agricultural Experiment Stations of Illinois, New Jersey, and Indiana, and informally cooperative with a number of other states and countries. The program was initiated in 1945 by J. R. Shay, then of Purdue University, and L. F. Hough, then of the University of Illinois. As the name implies, 'Prima' is the first cultivar to be released under this cooperative effort. The prefix PRI in the name is an acrostic formed from the three institutions involved, *viz.*, Purdue, Rutgers, Illinois. The apple was formerly designated as Co-op 2 and by its breeding number 1225-100 (3). The selection at present is widely planted under the Apple Breeders Cooperative testing program.

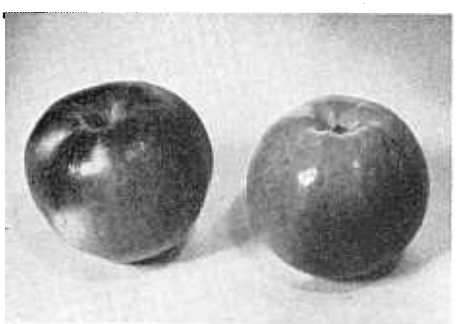

Fig. 2. Fruits of 'Prima'

The original seedling was planted in 1958 in the breeding orchard of the Department of Horticulture at the Illinois Experiment Station, Urbana, Illinois. It was produced from crossing the seedling 14-510 as the seed parent and the selection, N.J. 123249, as the pollen parent in 1957. The complete pedigree is shown in Fig. 2. 'Prima' is heterozygous for a dominant genetic factor V_f inherited from *Malus floribunda* 821 which causes it to be highly resistant to the apple scab organism, *Venturia inaequalis* (Cke.) Wint., and will only rarely

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show any evidence of infection (2). The origin of the resistant clone, $F_2$26829-2-2, dates from crosses made early in this century by Dr. C. S. Crandall at the University of Illinois (1).

The cultivar first fruited in August, 1963. The fruit has since been examined from topworked or grafted trees at Urbana and Carbondale, Illinois; Lafayette, Indiana; New Brunswick,, New Jersey and Sturgeon Bay, Wisconsin.

The tree is spreading and vigorous. It flowers in midseason, a few days before 'Golden Delicious.' The tree shows field resistance to fireblight and apple blotch.

'Prima' has excellent dessert quality, texture, and flavor. The attractive fruits have a yellow ground color with 60-80 percent bright red overcolor principally as a blush (Fig. 1). They ripen about 3 weeks before 'Jonathan' or a month before 'Delicious.' There is little tendency for the fruits to drop before maturity. The characteristic rich flavor and crisp texture is retained a month or more at 34°F. The following detailed description of the flower and fruit follows Zielinski (4) and uses the color designations according to the Horticultural Chart used by the British Colour Council in collaboration with the Royal Horticultural Society.

Flower

Pedicel: 2 cm (¾ in.) in length

Corolla: Petals 3.2 cm (1¼ in.) diameter at anthesis

Color: Solferino purple, ranging from plate 26 (tight buds) to plate 26/3 to paler in open flower.

Fruit

Shape: Slightly oblate, slightly lopsided, slightly irregular

Size: Axial diameter 6.3 to 7 cm (2½ to 2¾ in.) transverse 7 to 7.6 cm (2¾ to 3 in.)

Color: Undercolor uranium green (plated 63/2 to 63/3) ripening to yellow; overcover 60 to 95 percent, Cardinal red (plates 822 to 822/3); darker when overripe.

Skin: Smooth waxy with small to medium dots, medium tough to tough, thick. No overall russeting.

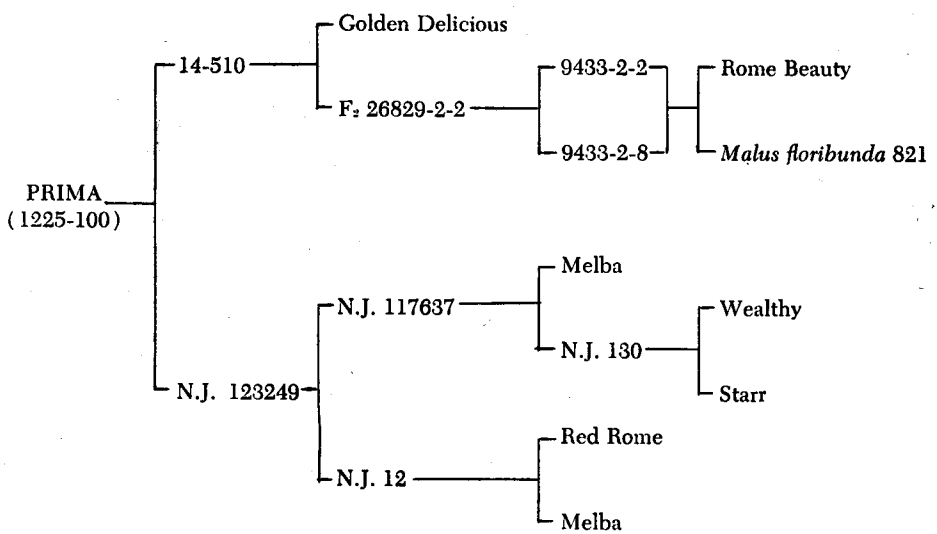

Figure 2. Pedigree of PRIMA.

Stem: 2 cm (¾ in.) medium thickness
Cavity: Acute, deep, medium width, russetted
Basin: Shallow to medium and broad
Calyx: Persistent, closed, recurved
Calyx tube: Funnel-shaped, closed
Stamens: Marginal
Core lines: Clasping, turbinate
Core: Median, partly closed, small
Carpels: Ovate, mucronate, smooth
Seeds: Acute, not tufted
Flesh: Texture: Medium grained, crisp, juicy. Quality: Excellent; sub-acid, rich flavor. Color: Empire yellow (plate 603/3). Aroma: Very pleasant.
Maturity season: 4 weeks before 'Delicious'
Keeping quality: Retains quality and textured a month or more at 34°F.
Use: Excellent dessert apple

'Prima' is expected to be adapted to the Midwest and northern areas. Trees will be available from qualified commercial nurseries. Application has been filed for a public use patent.

Literature Cited

1. Dayton, D. F., J. R. Shay and L. F. Hough. 1954. Apple breeding for scab resistance. Fruit Vars. and Hort. Dig. 9:12-13.
2. Williams, E. B., D. F. Dayton and J. R. Shay. 1966. Allelic genes in *Malus* for resistance to *Venturia inaequalis*. Proc. Amer. Soc. Hort. Sci. 88:52-56.
3. Williams, E. B., Jules Janick, F. H. Emerson, D. F. Dayton, J. B. Mowry, L. F. Hough, and Catherine Bailey. 1967. Five scab resistant apple selections released for grower testing. Purdue A.E.S. Res. Progress. Rept. 271.
4. Zielinski, Q. B. 1955. Modern Systematic Pomology. Wm. C. Brown Co., Dubuque, Iowa.

Montmorency Cherry Selections

R. F. CARLSON*

Summary

Fifteen Montmorency cherry clones have been selected, propagated and planted since 1966. These were selected because of the apparent need of the industry for improved tart cherry strains or varieties. The selected strains show improved characteristics such as added vigor, mor bearing surface, differences in flowering dates, and higher yield potential.

To-date, 318 trees of ten Montmorency clones have been planted at three locations—two in the Michigan's northwest cherry producing area, and at the Horticultural Research Center of Michigan State University, near East Lansing. In 1970, trees of these and an additional five selections will be planted at a fourth location.

Performance data for these first generation trees will be available later, since several years of evaluation are still required to determine if one or more clones are worth releasing to the industry.

Introduction

Although Michigan is the leading cherry producing state, it has only one main tart cherry variety—the Montmorency. Over the years, this variety has satisfied the industry with its good vigor, health, productivity and fruit quality. However, over the years, it also has been exposed to several factors such as climatic and soil variations, insects and diseases, and to variable "bud-stick" sources in nursery tree production. All of these and other factors have contributed to a gradual and general decline of the variety expressed in the form of variation in tree vigor and decrease in fruit yields and quality. Since improved horticultural practices have

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