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EMPIRE, A High Quality Dessert Apple

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Empire first appeared in the markets in the early 1970's. It is a medium-sized, attractive, dark red apple, and has excellent eating quality. In the orchard, the tree is highly productive and easy to handle. Consumers and apple growers are both enthusiastic about this new variety.

ORIGIN OF EMPIRE

Since 1887, the experiment station at Geneva has had an extensive hybridization program to develop improved apple varieties for the grower and the consumer. Empire is a new variety which emerged from this breeding program.

Empire originated in 1945 from a batch of open-pollinated seeds collected from McIntosh fruits born in a Claverack, New York, orchard containing only McIntosh and Delicious. Empire fruits and trees have characteristics closely resembling those of both McIntosh and Delicious, indicating with virtual

certainty that Delicious is the pollen parent. A population of 1,199 seedlings from this cross were field planted in 1947; 7 years later they began to produce fruits. In 1954, one outstanding seedling was selected for further evaluation while most of the others were discarded. This selection, N.Y. 45500-5, was propagated in the nursery on Mailing Merton 106 rootstocks; trees were planted in the orchard for further evaluation. In 1966, after 12 years of additional observations, it was introduced as Empire.

The name was selected by the Apple Variety Committee of the New York State Horticultural Society. In response to a general soliciting for possible names, more than a hundred were suggested. Reduced to 21 suitable candidates, the list was sent, along with a detailed description and a color photograph, to 50 chain store produce buyers. "Empire" received the most votes, and the Apple Variety Committee recommended this as its name. It is named for New York, the Empire State.

EMPIRE'S IDEAL FRUIT COLOR AND QUALITY

The picture shows that Empire is a beautiful apple. It is 90 per cent very dark red, distinctly striped, and very attractive.

Empire ripens 2 weeks after McIntosh, with Delicious, an average of October 8 at Geneva. The fruits are medium in size, mostly 2 5/8 to 2 7/8 inches in diameter. This lack of large fruit size may be its most serious limitation, but fruit sizes are much more uniform than those of most varieties. Fruit size is quite adequate on vigorous young trees which are not over cropping. The shape is roundish and sometimes quite irregular, similar to McIntosh shape. The skin is covered with a heavy coat of waxy bloom. The fruits hang well to the tree after they ripen.

The flesh of Empire fruits is whitish cream in color, but when harvested immature, the flesh has a distinctly greenish tinge. The flesh is firm, of medium grain, very crisp, tender, very juicy, subacid, and aromatic. Compared with McIntosh, Empire ripens 2 weeks later, fruits hang better to the tree after



they ripen; they are redder, and the red is a darker shade; fruits are firmer; the flesh is slightly more yellowish; the eating quality is much better, and the storage life is longer.

At 31°F., Empire fruits keep in good marketable condition about as long as Delicious, generally until March.

EMPIRE TREES IN THE ORCHARD

Empire trees are medium-sized, vigorous, upright-spreading, round-topped, and somewhat dense. Trees have the specially desirable characteristic of setting fruits evenly spaced, without clustering, along the sides of 2-, 3-, and 4-year-old branches. Crotch angles are wide. The classic central leader tree form is easily achieved if the leader is not permitted to bear fruits on 2-year-old wood near the top.

A yield study made by a commercial apple grower, William Blackburn, Medina, New York, showed that Empire trees bear heavy, annual crops. Another yield study made by R. L. Norton, fruit extension specialist, Rochester, New York, showed that Empire trees out yielded Golden Delicious and McIntosh, both of which are very productive varieties. He also showed that Empire is very suitable for high-density apple orchards.

Empire trees bloom early, often more than a day before Delicious. The variety is diploid, and its pollen has produced good fruit sets in controlled cross pollinations, indicating that the pollen is viable.

Empire produces viable blossoms from spurs, from terminal buds, and, on rootstocks such as Mailing 9, M.26, and MM.106, from axillary buds on 1-year-old wood. These axillary buds open several days later than the spurs, so frost hazard is substantially reduced.

Empire is apparently about as susceptible to fire blight and to collar rot as its McIntosh parent. As on McIntosh, fire blight is usually not a serious problem directly on Empire, but the disease may attack rootstocks such as M.9 and M.26. Similarly, collar rot may affect rootstocks, particularly MM.106 and MM. 104. Empire is unusually susceptible to woolly apple aphids, and special sprays may be required.

In a survey of plant pathologists made by Dr. Herb S. Aldwinckle of this Station (Plant Disease Reporter 58:625, 696, and 819, 1974), Empire was considered to be less susceptible to apple scab than McIntosh and Cortland but more susceptible than all other commercially important varieties. Empire rated about as susceptible to powdery mildew as McIntosh but clearly less susceptible than Rome, Jonathan, or Cortland. The survey and experimental research indicate that Empire is slightly less resistant to cedar apple rust than

Delicious and McIntosh, but slightly more resistant than Cortland and much more resistant than Golden Delicious or Rome. Experiments indicate that Empire is more susceptible to fire blight than Delicious but less susceptible than McIntosh, Cortland, Rome, and Jonathan.

Aldwinckle states that "susceptible varieties will not necessarily become heavily infected in all years in all locations. In some areas, fire blight or cedar apple rust is rarely a problem even on very susceptible varieties. There are recommended spray programs for all of these diseases."

CONSUMER ACCEPTANCE

A New England consumer expert said that "My family always has liked McIntosh best of all, but now that we have tried Empire, we will always buy it." With its redder color, Empire has greater consumer eye appeal than McIntosh.

Because of its uniform, medium fruit size and firm flesh, Empire is well suited for marketing in polyethylene bags.

APPLE GROWER EVALUATION

In 1974, R. L. Norton made a survey of apple varieties sold as nursery trees by three leading fruit tree nurseries in western New York. More trees of Empire were sold by these nurseries than all other varieties except Delicious. Growers who have Empire trees of fruiting age are very enthusiastic.

In 1974, the U. S. Department of Agriculture market reports began listing Empire as a commercially important apple variety.

All measures of judgment appear to indicate that Empire has excellent features for the grower. It is being widely planted. Although its full range of adaptation has not yet been defined, in the Champlain Valley in northeastern New York, it has looked less promising than in western New York. In Arkansas and Virginia, Empire has often acquired less adequate color, compared with dark-colored Delicious sports. However, Empire has been found to be commercially useful in a broad area and is suggested for extensive trial.

SOME NURSERIES WHICH SELL EMPIRE TREES

Trees of Empire can be purchased from the Fruit Testing Association Nursery, Inc., NYSAES, Geneva, New York 14456, as well as from many commercial nurseries.



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