

Star, Lee and Mac — Three Blight Resistant, Fresh Market Pears from New Jersey*

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Star, Lee and Mac are being introduced by the New Jersey Agricultural Experiment Station as blight resistant, good quality pears that will provide a month's harvesting period for eastern growers.

At the beginning of the century there was a profitable pear industry in New Jersey based on the export to England of fruit of the blight resistant Kieffer pear. This market was lost during World War I and never regained, presumably because of the poor quality of Kieffer fruit. Since that time, small plantings of Bartlett and other good quality *Pyrus communis* varieties have been maintained under sod culture, principally in northern New Jersey. The fruit have been sold locally. Growers who have pears have repeatedly stated that, per tree, they are the most profitable fruit that they grow. But because of the constant hazard of fire blight, pear production in New Jersey has not increased. Occasional attempts have been disastrous (1).

In the 1930's, the late Professor M. A. Blake identified an apparently fire blight resistant pear seedling, which was later designated NJ 1. This selection bore medium-sized, very short pyriform, green-skinned fruit that ripened in late fall. The flesh was coarse and juicy, not buttery, with relatively few stone cells; the texture and flavor were somewhat better than that of Kieffer. The tree and foliage of NJ 1 were intermediate between *P. serotina* and *P. communis* varieties. It was less vigorous than Kieffer and produced a more open tree. Professor

Blake assumed that NJ 1 got its fire blight resistance from *P. serotina*.

On the basis of the fire blight resistance that Professor Blake had observed, together with the blight resistance that had been found at other experiment stations (2, 3, 4), a project was approved in 1948 at the New Jersey Agricultural Experiment Station to develop high quality (equal or superior to Bartlett), fire blight resistant (equal to or more resistant than Kieffer) pears. In 1950, soon after the beginning of the pear breeding program, pollen of NJ 1 was taken to the experiment station orchard at the University of New Hampshire and used in crosses with high quality, blight susceptible varieties there. Two of the crosses made with this pollen were Beierschmidt x NJ 1 and Gorham x NJ 1. When the fruits from the controlled pollinations were harvested, the fruits of the Beierschmidt x NJ 1 cross were mixed with fruit of another cross, Beierschmidt x Clapps Favorite. A total of 1313 seeds of the Beierschmidt x NJ 1 or x Clapps Favorite progeny were germinated and 586 trees were planted in the orchard for fruiting. It is presumed that the resistant seedlings were from the cross Beierschmidt x NJ 1. Star and Lee were selected from this progeny. A total of 2350 seeds were germinated from the Gorham x NJ 1 progeny, with 1045 trees surviving for planting in the orchard. Mac was selected from this progeny.

One of the most exasperating problems associated with breeding blight resistant pears has been the lack of a

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dependable screening test. The progenies at New Brunswick have been inoculated with a bacterial suspension of the fire blight organism, using a hypodermic needle, and also with a bacterial suspension plus an abrasive, using a high pressure sprayer. Large numbers of seedlings were discarded because of severe blight infections, but there is always some doubt about the actual field resistance of the high-quality seedlings that have been selected. Up to the present time the most satisfactory test of field resistance of selected clones has been the replicated test developed by Dr. Janick (5).

Star

Star is from the cross Beierschmidt x NJ 1 made in 1950. It first fruited in 1958, and has been tested as NJ 3. Star is an above medium size, light green, pyriform pear that ripens about with Clapps Favorite. Star is the earliest ripening, good-quality variety presently available with any degree of field resistance to fire blight. It is pleasant to eat as it ripens on the tree. The flesh is white, juicy, and fine grained, but not buttery.

The original tree is a moderately strong, upright grower. It is productive. It has good pollen. On the basis of Star's performance both as a male and as a female parent in the hybridization program, it will be compatible with other varieties. On the basis of Dr. Janick's tests, it is less resistant to blight than Kieffer.

Lee

Lee is from the same cross and was selected in the same year as Star. It has been tested as NJ 4. Lee ripens just after Bartlett. It is a medium-sized, short-pyriform pear (See front cover) that will ripen on the tree to a light yellow. Lee is pleasant to eat when ripened on the tree. It has pleasant texture and flavor comparable to Bartlett. The flesh is slightly cream-colored.

The original tree is a moderate grower; it has kept a central leader with fairly open branching. It has good pollen. On the basis of Lee's performance both as a male and as a female parent in the hybridization program, it will be compatible with other varieties. It is later blooming than Bartlett. The original tree of Lee has been satisfactorily productive, even though it is not growing in a favorable site in the seedling orchard. On the basis of Dr. Janick's test, it is as blight resistant as Kieffer.

Mac

Mac, tested as NJ 6, is from the cross of Gorham x NJ 1. It first fruited in 1958. The fruit is acute-pyriform and only medium in size. Mac ripens to a straw-yellow on the tree. It ripens about with Gorham, or two weeks after Bartlett. The flesh of Mac is creamy white and of a fine texture that is nearly buttery. The fruit quality is quite comparable to Gorham at its best. There never has been any indication of astringency in the skin of Mac as there may be with Gorham.

The original tree is below medium in vigor. It has a central leader with open branching. It has good pollen. On the basis of Mac's performance both as a male and as a female parent in the hybridization program, it will be compatible with other varieties. Mac has not been as consistently fruitful as Star or Lee. Again, the original tree of Mac is not growing in a favorable site in the seedling orchard. The blight resistance has not been as thoroughly tested as that of Star and Lee; but it is apparently as resistant as Kieffer. Certainly, it is the best quality blight resistant pear variety that has been selected so far.

Since Star, Lee and Mac are resistant enough to be grown commercially in New Jersey, and since they develop good quality on the tree, they should provide the beginning of a new fresh market pear industry in the east. They

should be particularly valuable where they can be marketed directly through roadside stands, and provide practically a month of tree-ripe pears.

As a sufficient volume of fruit becomes available for storage and after-ripening studies, after-ripening and storage procedures may be developed that will allow these varieties to reach even better quality and texture.

Since blight resistant varieties, of good quality were lacking, there was little grower interest in rejuvenating the pear industry in New Jersey during the first decade after the initiation of the project. Consequently, there seemed to be reason to question the appropriateness of continuing a major research project that might take a quarter of a century to develop adapted varieties. During the past decade the administration of the New Jersey Agricultural Experiment Station has been much concerned about this project.

Prime Gold, a Promising New Apple*

Prime Gold is a new apple variety discovered in a Golden Delicious orchard belonging to Bud Hoekman, Zillah, Wash., in the Fall of 1965. It grew from the rootstock of a Golden Delicious tree which had died back during the winter of 1965.

The fruit of Prime Gold has a clear yellow skin, white lenticels and a heavy wax coating. It has white flesh of excellent dessert quality. It is reported to be bruise and russet resistant, and free of bitter pit. Prime Gold ripens earlier than Golden Delicious, and is a late keeper. It does not tend to shrivel in storage like Goldens. Preliminary tests indicate that its processing quality is equal to or better than Golden Delicious.

ect. These varieties are named for the dean and directors in recognition of their continuing concern.

Trees of Star, Lee and Mac are available through the New Jersey Apple Institute, R. D. 3, Princeton, New Jersey 08540.

Literature Cited

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The original ten-year old tree appears winter hardy, and becomes dormant earlier than Red or Golden Delicious, making it less susceptible to early freezes. Prime Gold forms a tree about $\frac{3}{4}$ the size of a Golden, and is described as semi-spurred. Its main branches tend to form wide angles with the trunk.

Trees may be obtained from the Prime Gold Nursery, sole propagator of this promising new apple.

Washington Plum

J. F. Anderson, of the University of Massachusetts at Amherst, reports that the old European plum variety, Washington, has been very productive at Amherst. And, although it is not especially attractive, has an excellent flavor, and should not be overlooked.

*Based on information received from James Ballard, Yakima County Agent and Cal Bosch, Editor of Goodfruit Grower, and a brochure published by the Prime Gold Nursery.