canker-resistant bushes make it promising from North Carolina to southern New England. The one limitation is the difficulty of propagating Ivanhoe by hardwood cuttings; but propagation by softwood cuttings is easy.

NOTE: Refer to our cover for picture showing, at right, the Ivanhoe (BL-32), newly introduced in North Carolina for its high flavor, large berry and its canker-resistant bush. It is in season with Stanley, on the left.

Our next issue will carry further information on Ivanhoe blueberry.—EDITORS.

Two New Varieties of Nectarines for Virginia

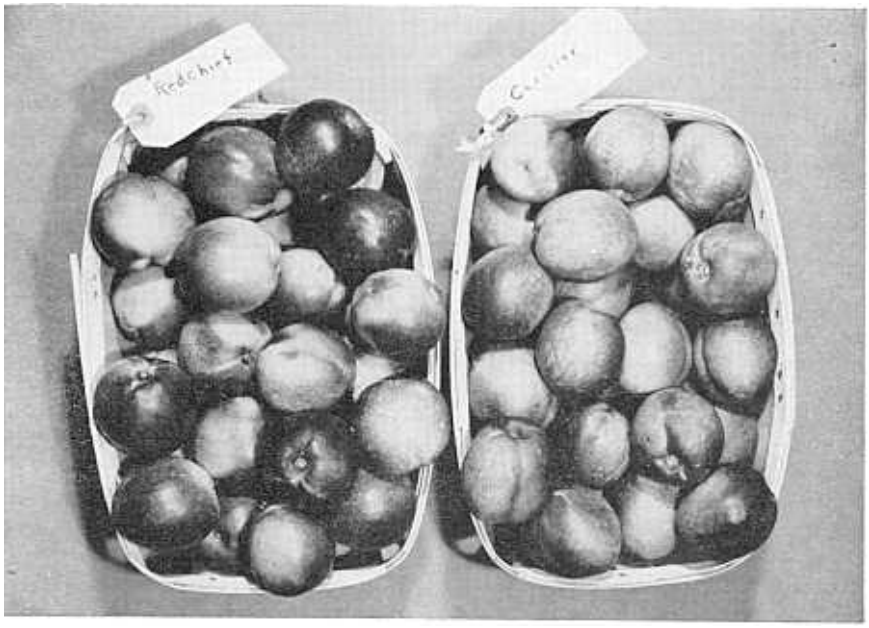
G. D. OBERLE and R. C. MOORE, Blacksburg, Virginia

Horticulturists of the Virginia Agricultural Experiment Station recently named and released two new nectarine varieties that were developed by the fruit breeding program under way at that institutions. One, a white fleshed nectarine ripening about ten days before the Elberta peach, has been named *Redchief* because of its highly colored skin. The other, a yellow fleshed nectarine ripening about eight days before Elberta, with attractive red and yellow skin color has been named *Cavalier*. Their original parents were nectarines, introduced to the United States by Department of Agriculture plant explorers. These were crossed with peaches. The resulting hybrids were self pollinated to produce segregating types of peaches and nectarines in the second generation. The original crosses were made at Blacksburg by R. C. Moore, Assistant Horticulturist of the Experiment Station in 1936.

The original trees first bore fruit in 1940. Propagations of the original trees have fruited at Blacksburg since 1947 and have borne good crops of fruit every year since then except in 1949 when the entire crop of peaches and nectarines in the Experiment Station orchards was destroyed by frost at blossom time.

The fruits of *Redchief* and *Cavalier* are highly colored and attractive. They are freestones, and have reasonably firm flesh. Both are considered to have good eating quality. Cavalier has ovate fruits that average about two inches in transverse diameter and about two and one-fourth inches in length. The ground color of its fruits is an attractive orange yellow with splashed and mottled rather dark red over much of the surface. The fruits of *Redchief* are more nearly round with the halves tending to be unequal. Average fruits are about two to two and one-eighth inches in transverse diameter and length. The ground color of *Redchief* is creamy white or ivory when fully ripe. The over color is a bright attractive red and may extend over the entire surface except near the stem. The over color is usually solid but may occur in a splashed or mottled pattern. Both varieties have attractive finish. Fruits of these vareties keep well in cold storage. Specimens harvested on August 16 and 18 were still in edible condition on October 1.

The fruit of a nectarine is essentially that of a peach but lacks the fuzz found on the skin of the peach. Many people are sensitive to the fuzz on the skin of peaches. The nectarine should be of special interest to anyone having a sensitivity of this type. They do have a distinctive flavor liked by most people. The texture too is rather distinctive in that most varieties of nectarines have a combination of slight stringiness and slight toughness.



Four quart baskets of nectarines grown at Blacksburg, Va., in 1952. Redchief (left) and Cavalier varieties.

The most outstanding character of *Cavalier* and *Redchief* has been their resistance to brown rot. This disease is a serious factor in the production of nectarines and is especially serious in areas having a warm humid climate such as that of Virginia. Most commercial varieties of nectarines tested at Blacksburg have rotted badly even when sprayed carefully. Commercial production of nectarines has been limited for this reason largely to areas having a dry climate. *Cavalier* and *Redchief* have shown practically no infection from brown rot at Blackburg even when allowed to reach the full ripe stage on the trees. The spray schedule applied to these trees has been the same schedule recommended for Virginia peach orchards which ordinarily require much less exacting spray schedules than nectarines.

The 1952 season at Blackburg with abundant rainfall during August provided a severe test for the brown rot escaping ability of *Cavalier* and *Redchief*. Many varieties of nectarines cracked badly and the crop of fruit was then destroyed by brown rot infection. The new V.P.I. varieties were practically untouched by these troubles.

The trees of *Cavalier* and *Redchief* are vigorous and productive. This year trees in their seventh season produced up to five bushels of fruit per tree. These varieties have thus far been tested mostly at Blackburg. Young trees have been sent to a number of Experiment Stations for testing but for the most part have not yet borne fruit. *Cavalier* has borne fruit at the Plant Industry Station at Beltsville, Maryland where its performance has been reported favorably. In view of these limited tests predictions cannot be made concerning the adaptability of these new nectarines. It appears that they may be adapted to the cooler sections of Virginia and possibly areas of other states having climate similar to that prevailing at Blackburg. Plantings

anywhere should be made on a small scale, however, until the varieties have proved themselves adapted to that area.

The Experiment Station has no trees of these new varieties available for those who may be interested in budding trees. Requests for budwood should be sent to the Department of Horticulture of the Virginia Agricultural Experiment Station. Trees of *Cavalier* and *Redchief* are expected to be available from several nurseries by the spring of 1954.

Anis and Antonovka Seedlings as Rootstocks for the Apple

W. H. UPSHALL, Vineland Station, Ontario

A very definite need has developed in Canada for a hardy rootstock to replace the reputedly tender French Crab seedlings for apple trees. In this connection, a study was initiated in 1938, at the Horticultural Station at Vineland to test the desirability of the seedlings of two hardy Russion varieties of apple, Anis and Antonovka, as rootstocks for western and southern Ontario.

The scion varieties used in this work included McIntosh, Delicious, Balwin and Northern Spy. The soil in which the budded trees were planted was a sandy loam. Trunk measurements were taken annually and their averages were used to calculate area of cross-section. Accumulated yield records were taken for each tree and, as the amount warranted it, the whole crop, or a bushel per tree, was taken for grade records. The percentage of No. 1 fruit was used as an index of quality, and the percentage of 2¾ inches and up, as an index of size.

At the end of ten years, tree size differences in the orchard between trees within each variety on the French Crab, Anis and Antonovka seedling rootstocks were small and mostly lacking in significance. The only significant difference was found between Delicious on French Crab (106 sq. cm.) and on Anis seedling (77 sq. cm.).

The same statement applied equally well on yields, although two comparisons showed significant differences, namely, Delicious on French Crab (230 lbs.) and on Anis seedlings (150 lbs.), and Northern Spy on French Crab (109 lbs.) and on Antonovka (42 lbs.).

In size and quality of fruit, the differences between rootstocks were small and of no significance.

On the whole, French seedlings had a slight advantage in size of tree and yield over the other two rootstocks.

Since the French seedlings came from a number of different sources and the Anis and Antonovka came from a single parent in each case, one would expect the latter two to give the more uniform results. As a matter of fact, however, the trees on French seedlings were less variable than those on Anis or Antonovka in this experiment. In size of tree, Antonovka seedlings induced more variability than Anis, but there was deviation from this relationship in yield.

In conclusion, one might say that under the conditions of this experiment, Anis and Antonovka seedlings had no advantage over French Crab seedlings as rootstocks. However, in areas where winter killing of roots is more of a factor, results might be quite different.

EDITOR'S NOTE: Various apples have been received from Russia bearing the "Antonovka" name. One, "Antonovka Monasir," seems immune to scab, including the "Dolgo" race.