Tree fruits are usually propagated by budding or grafting on seedling rootstocks but such seedlings tend to show more or less variability in many characteristics, including resistance to nematodes and diseases.

Sometimes individual seedlings or clones are found that are free from or have marked resistance to such pests. Certain seedlings or clones used as rootstocks may impart either a dwarfing effect or cause increased growth and tree size. To retain valuable characteristics of rootstocks it is necessary—in most cases—to propagate them vegetatively rather than by seed.

Some vegetative propagation methods—layering, suckers, or division—permit small scale reproduction but are often not suitable for the commercial nurseryman who requires plant production in quantities of thousands or hundreds of thousands.

Although propagation by cuttings is the vegetative method most generally used—for large scale production of nursery plants on their own roots—cuttings of most tree fruit species are so difficult to root that the method is little used for such plants.

The advent of mist propagation makes it possible to root cuttings of a number of the difficult-to-root tree fruit species.

With the mist propagation method, leafy, softwood cuttings taken from young shoots in the spring are rooted under mist sprays, applied intermittently in such a manner as to keep the leaves of the cuttings continually wet.

In addition to the mist sprays, the cuttings are treated with root-inducing hormone chemicals. Trials with various growth-regulators—singly and in combinations—have failed to show any to be superior to indolebutyric acid. Commercial preparations with the active ingredient dispersed in talc are available but—sometimes—better results are obtained by the so-called concentrated-solution-dip method. Just before the cuttings are inserted in the rooting medium their basal ends are dipped for about five seconds in an approximate 4,000 ppm—parts per million—solution of indolebutyric acid made by dissolving a level one-fourth teaspoon of the pure crystals in three and one-third fluid ounces of 50% alcohol. Isopropyl alcohol can be used satisfactorily. The solution should be kept tightly sealed and stored in the dark.

An out-of-door mist propagating bed equipped with electric soil cables for bottom heat. This is set up to supply continuous mist. An intermittent mist bed would have a solenoid valve, operated by a time clock, in the water supply line.
in the usual propagating beds, but under mist no difficulty was encountered in preventing wilting.

Wounding the base of cuttings by stripping off leaves, cutting out slices of bark or making slits in the bark with a knife point will markedly stimulate adventitious root production in some plants. Wounding by knife slits was tried on the cuttings in the 1955 tests but no particular benefit seemed to appear.

After the cuttings were rooted the flats were moved to hardening-off beds where the amount of mist applied was gradually lessened until the plants would survive without it. The cuttings were left in the flats—but watered about every three weeks with a nutrient solution—until they were dug preparatory to planting out in the nursery row. This system was not entirely satisfactory because many of the rooted cuttings were dead by the time they were dug.

**Tests in 1956**

The 1956 tests included various fruit-tree rootstocks—listed in the table at the foot of this page—in which there is interest in vegetative propagation. The Old Home, Old Home 50, and P-87 pear varieties are noted for their resistance to fire blight and for their habit of producing desirable body or intermediate stocks for topworking commercial pear varieties. Rooted cuttings of these would furnish blight-resistant roots and, at the same time, body stocks for the blight-susceptible commercial varieties. Fairly good rooting percentages with adequate quantities of roots were obtained with all the species except Pyrus calleryana.

Indolebutyric acid at three different concentrations was applied by the concentrated-solution-dip method. The cuttings were started in early June and dug in mid-September. Rooting was generally completed after six weeks and the remainder of the time the cuttings were in the hardening-off bed, where the mist was gradually reduced until eliminated. In almost every case there were cuttings which had rooted but subsequently died before digging. It seems important to discontinue the mist as soon as possible after rooting.

While many fruit species apparently can be propagated by leafy softwood cuttings under mist—particularly if treated with a root-promoting hormone—not all species respond to this tech-

Continued from preceding page
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1957 PEST CONTROL GUIDE FOR ALFALFA HAY, Leaf. 85.

CUTTINGS
Continued from page 4

Northern Spy, East Malling IX and East Malling XVI apple, Texas almond, peach-almond hybrid, and Farmingdale pear.

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For research on control of mites and insects affecting deciduous fruit crops

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For study on effects of sweetness on the consumers acceptance of apricots, pears and peaches
Sugar Research Foundation, Inc. $2,000.00
For study on effects of sweetness on the consumers acceptance of apricots, pears and peaches
Syntex Animal Products $1,500.00
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For soil and fertilizer research on vegetable crops in southern California
Chemagro Corporation $3,000.00
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Shell Chemical Corporation $3,000.00
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