

Propagating Blueberries from Hardwood Cuttings

By Charles A. Doehlert



NEW JERSEY AGRICULTURAL EXPERIMENT STATION
RUTGERS UNIVERSITY — THE STATE UNIVERSITY OF NEW JERSEY
NEW BRUNSWICK, NEW JERSEY

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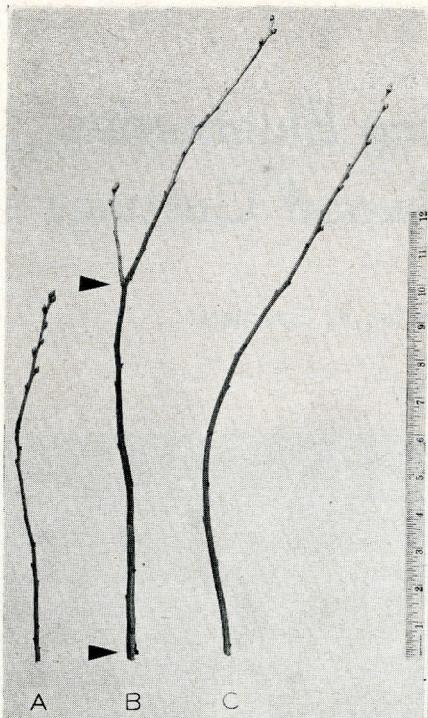


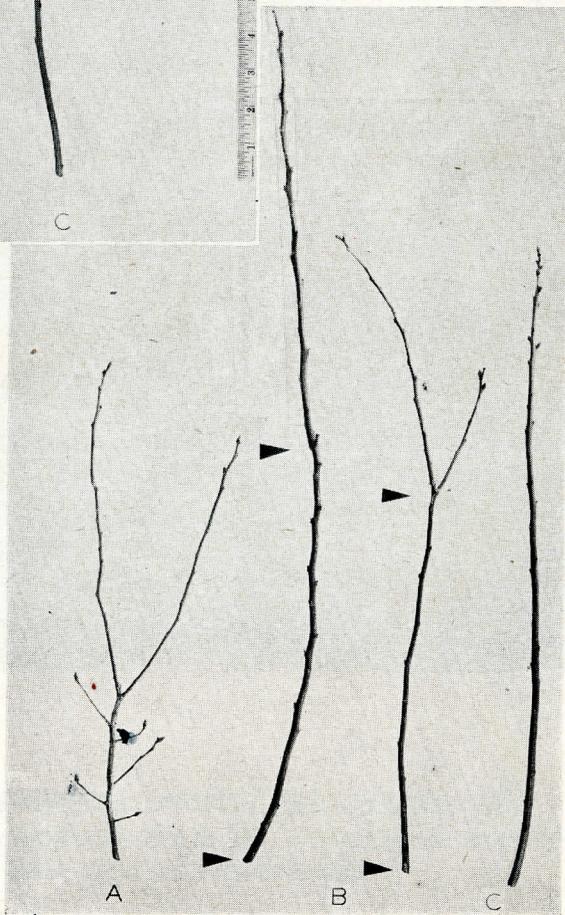
Fig. 1. Various types of new growth.

A. Too slender for good cuttings. (Stout basal portion of *Rancocas* specimen is 2 seasons old and therefore unsuited for cuttings.)

B. Excellent whips. Stout, firm wood between arrowheads makes the best cuttings.

C. Late, poorly ripened growth. Undesirable for cuttings. This wood is pliable and pithy. It may show some browning in the pith. Leaf buds are very small.

Rancocas



PROPAGATING BLUEBERRIES FROM HARDWOOD CUTTINGS*

CHARLES A. DOEHLERT

Cranberry and Blueberry Research Laboratory

With careful attention to detail, it is usually possible to rear 60 to 85 percent of the cuttings into strong plants. The June variety is the notable exception to this rule.

Choosing Good Wood Is of First Importance

Firm, well-rounded (plump) sturdy shoots of the past summer's growth furnish the cutting wood. The portion bearing only leaf buds is selected. If cutting wood is scarce, sections with occasional fruit buds are used and the fruit buds are rubbed off.

Shoots from which cuttings are to be made are commonly 12 to 30 inches long and are referred to as "whips." These whips may or may not have fruit buds at the tip but they must be well-hardened. Slender shoots, as well as poorly hardened, pithy growth made during late summer should be avoided. These types of wood are illustrated in figure 1. Browning of the pith is a sign of inferior wood and is most likely to occur in poorly hardened growth.

Wood from diseased or insect-infested plants should be shunned. If stunt disease is present in a field and the location of every diseased plant is not exactly known, look elsewhere for cutting wood. If a careful inspection has been made during the growing season to locate all plants showing stunt disease, it is probably safe to take cutting wood at a distance of 50 feet from the nearest diseased plant.

The ideal procedure is to take the cutting wood from the parent plant between March 15 and April 10, make the cuttings, and set them directly in the propagating bed. This can be done when operations are small. But when large amounts of wood must be gathered and made up into cuttings, or when wood is purchased and must be obtained far in advance, storage for a considerable time becomes necessary. Under these conditions the gathering of cutting wood is frequently begun in February. Unless cold storage is used, gathering earlier than February is not advisable. Storage exposes the material to its first serious hazard, that of drying out or of molding and blackening.

Stored Wood Should Be Cool and Moist

If kept cool (35-40 degrees F.), moist, and well aerated, the whips retain life and vitality very well. A light freezing does no harm, but may necessitate greater watchfulness against drying out of the wood. The whips may be stored in clean boxes with loose, moist, but not soggy sphagnum moss. The box should allow for ventilation through the cracks in the bottom and

*Revision of Circular 490.

sides. Or a pile of whips arranged with moss on a dry, clean floor or platform is very satisfactory. Use only new moss, and keep the storage room clean and well ventilated to prevent growth of molds.

If storage is in boxes, line the bottom and sides of each with a 2-inch layer of moss. Lay the whips flat to a depth of 4 to 8 inches, and cover the whole mass with a loose layer of sphagnum, 5 or 6 inches thick. Keep the moss from drying by an occasional light sprinkling over the top. Rest the boxes on some sort of supports rather than flat on the floor, and leave spaces between them for ventilation. Inspect the contents of the boxes often enough to check against overwatering and molding. In case of long storage, it is advisable to dump the boxes once in 3 weeks and repack. This airs the material thoroughly and provides an opportunity for inspecting the wood and loosening the moss.

Make Cuttings at Latest Date Practical

Making cuttings is a time-consuming job. Because whips keep better in storage than do cuttings, this operation is usually delayed as long as possible. But it is important to avoid the more serious mistake of not being ready at "setting-out" time.

Cut the whips into pieces 3 to 4½ inches long, using sharp pruning shears, or a good knife, which will make a clean cut without mashing or tearing the bark (fig. 2). It is best to make the top cut just above a leaf bud. With the difficult-rooting variety, June, it is important to make the bottom cut close below a bud.

Examination of the whips often shows that the upper portion is of late growth, and the wood here is not so round, stout, or firm as the lower sections, as shown in figure 1. That portion of the whip will not root readily and should be discarded.

When making cuttings it is best to work in a fairly cool place free from wind or strong drafts, which would have a drying effect. Take only a few whips out of the storage box at a time. Then as soon as 50 cuttings (a convenient handful and a good counting unit) are complete, tie them into a bundle with all buds pointing the same way, and repack them in the moss. At no time should the wood be allowed to dry. Label the bundles and the box clearly as to variety.

If cuttings begin to turn black, discard them. Treat the good cuttings promptly with Semesan and repack in new, clean moss under cooler and drier conditions.

Years of observation have shown that a Semesan dip for 2 to 5 minutes (2 level teaspoons of plain Semesan per gallon of water) will give good protection against molding and blackening of the cuttings. This may be done when the cuttings are first made and again as the bed is being set out. On frequent occasions when severe mold has appeared on stored cuttings, the Semesan dip has stopped the further spread of mold and good plants have been reared from the cuttings.

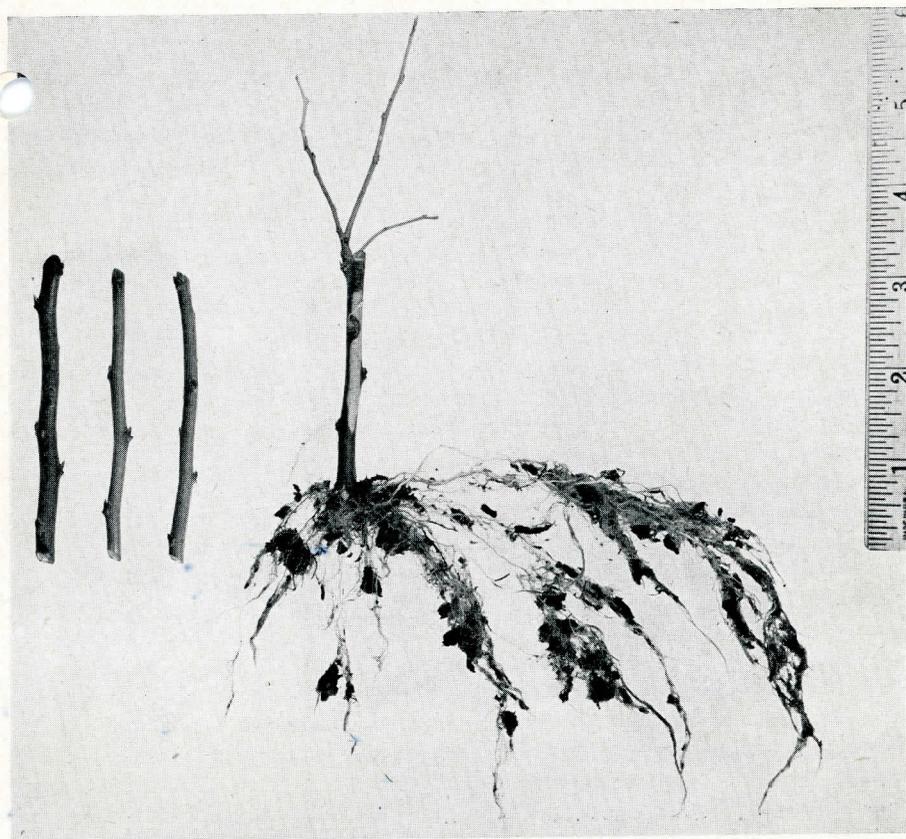


Fig. 2. Before and After

Build Propagating Beds on Porous, Well-Drained Ground

The bed should be well drained, well aerated, and have half normal sunlight or a little more. It also should be protected from insect or other animal attack. Locations infested with termites should be avoided, since termites will attack cuttings if other food material is not conveniently available.

Each bed should be a convenient size, such as 4 feet wide, with the sides boarded up to about 8 inches, and the length governed by the general layout and ease of watering. Hardware cloth, $\frac{1}{8}$ or $\frac{1}{4}$ -inch mesh, or fly screen placed in the bottom and cleated to the side boards will keep out white grubs, moles, and mice. Mice have not been known to disturb beds from above. Ordinary black japanned screening will be effective for a year, if adequately supported.

To assure good drainage, locate the bed on high ground. Arrange for bottom aeration and drainage by using a screen bottom supported by a layer

of new cedar poles or strips of other material which will hold the bottom an inch or 2 above ground. A bed of this type in a home garden is shown in figure 3. The bed may have a board bottom and be elevated a few inches above the ground. In this case the cracks between the board should occur about every 4 inches and be about $\frac{1}{4}$ -inch wide. Only by such measures as these can the propagator protect his plants from excess moisture caused by rainy weather or overzealous watering.

An excellent rooting mixture is made by mixing horticultural peat moss and standard concrete sand, half and half. Preparatory to mixing, the dry baled peat may be broken up easily by rubbing it through a coarse screen (2 meshes to the inch). The mixture is placed in the bed to a depth of 6 or 7 inches. Since dry peat moss does not wet easily, the bed is hosed down frequently over a period of at least a week. If speed is necessary, use hot water. The sand is a useful ingredient because it makes the bed more permeable to water and it improves drainage and aeration. The bed need be only 5 inches deep after settling.

The entire series of beds may be covered with a lath house about 7 feet high (see cover illustration). This is made of ordinary plaster lath or shingle lath spaced to cut off half the light. The space between plaster lath should be equal to or slightly greater than the width of the lath. Because the thicker wood makes more shade, shingle lath should be spaced 25 percent wider. Woven picket fence also can be used. Shade from buildings or trees is undesirable.

An improvement over the lath house is the hinged shade, as shown in figure 3. This is hooked upright in cloudy or rainy weather and is removed entirely when the cuttings are well rooted. The shading material is plastic screening, either "natural" color or green, or cheesecloth, or tobacco cloth. The shading material is placed a foot or a little more above the surface of the bedding material. A band of screening closing the space between the bed frame and the shade is valuable for keeping out rabbits, cats, and drying winds.

Set Out the Bed When Freezing Weather Is Past

In southern New Jersey cuttings should be set in beds about April 1, before the buds enlarge so much that they may be injured by the necessary handling. In common storage this swelling is likely to occur about April 15.

Push the cuttings into the bed in a vertical position, in rows 2 inches apart, with the individual cuttings 2 inches apart in the row. Closer spacing is often used but this encourages fungus disease. Leave only the top bud of the cutting above the surface or even with the surface of the soil. Pointing these top buds to the south will insure an even distribution of foliage and shoots, which is advantageous but not necessary. After sticking in the cuttings, water the bed enough to set the cuttings firmly in place.

Some propagators put the cuttings in at an angle of about 45 degrees but this seems to produce no better rooting. Moreover, this method requires longer cuttings and results in crooked plants which are hard to transplant

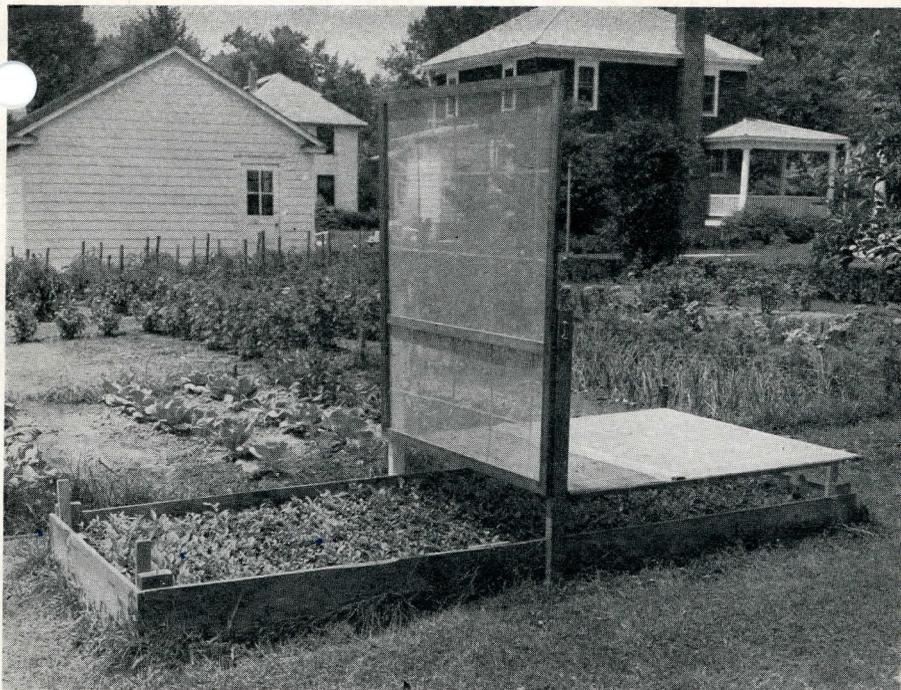


Fig. 3. To insure bottom aeration, drainage, and protection from pests, a layer of cedar poles was first laid on the ground and upon these, ordinary fly-screening. The side boards should not reach the ground and thus shut off bottom ventilation.

without occasional injury to the tops. The use of hormones or root-promoting chemicals has not been found particularly helpful.

A convenient water supply is essential. Sometimes two waterings a day are necessary. Very often every second day is sufficient during clear weather. At other times a week or more may pass without need for watering. A good propagator, however, looks over his beds every day. The commonest causes of failure are a few hours of hot, drying weather when the bed has not been adequately watered, and periods of several days when the bed is waterlogged.

If the preceding directions for making the bed are followed, it will be possible to water liberally at any one time and be protected from saturation by the bottom screen drainage. It is safe to wait until some portions of the bed show a slight surface drying of the peat moss before watering again.

A grower should be able to tell by the feel of the bedding material when it is properly damp. Cuttings are sometimes killed by hot water coming from a hose that has been lying in the sun. From May 1 to late June the cuttings are in full leaf and have no roots. This is the critical period and success depends on faithful and careful watering. During this period, watering with a fine spray 2 or 3 times during hot days will prevent wilting, cool the foliage, and still not waterlog the beds.

Use of Hot-bed Heating Cables

Bottom heat, obtained with the common electric hot-bed heating cables has induced earlier rooting and increased the number of cuttings with strong roots in tests at the Washington Agricultural Experiment Station, Pullman, Wash. The average bottom temperature held in the experiments was 70° F. The Washington Station recommends maintaining the heat through April and May. One New Jersey grower has used this method with good results.

Growth of Plants in the Propagating Bed

The cuttings develop leafy stems 1 to 3 inches long during May. In June stem growth stops and root formation starts. After the root growth becomes established, the tops start new terminal growth about July 1. The first greening of the tip bud, which heralds this second growth, is the sign that rooting has been accomplished.

Strong growth of roots and tops can be obtained by the use of a fertilizer solution. Use a commercial 15-30-14 or 13-26-13 starter mixture, 1 ounce to 2 gallons of water. Apply this amount with a sprinkling can to 50 square feet of bed just before a regular watering. Do not apply during hot sunshine.

Make the first application when the cuttings have begun to root and repeat weekly until mid-August. When using proprietary mixtures with hose applicators, 3 ounces of actual nitrogen is enough for 1000 square feet at each application.

Store the granular starter mixture in an air-tight container since it absorbs moisture from the air. Purchase early in the spring before the dealers close out the item.

Handling the Rooted Plants

The plants are usually left in the propagating bed over winter, but they may be set in nursery rows in the fall. For fall planting, September is the best time, as vigorous root growth can be made during the mild autumn weather. Later plantings risk injury from winter-heaving.

If the cuttings are not to be transplanted until spring, the propagating bed may well be covered during the winter with a light mulch of pine needles. This is not necessary, however, if the plants are strong and well rooted.

Mound soil around the sides of the bed to shut off the bottom ventilation and prevent excessive freezing.

The rooted cuttings are commonly moved to the nursery in the spring. The nursery should be in a location that would be suitable for commercial blueberry culture. Here the rows may be 18 inches apart and the cuttings set out 1 foot apart in the row. In a month the roots will have become established and the regular blueberry fertilizer (8-8-8) can be applied at the rate of 1 pound to 250 feet of row. The fertilizer treatment may be given twice more at intervals of 1 month.