

By the end of the first growing season we will have plants from 12 to 36 inches in height, depending on how good a growing season we have had. If we have a good stand of buds and have done a good job of growing, we may have 3 to 6 salable plants to a linear foot of row.

When the trees have lost most of the leaves and are well ripened and dormant, usually mid-December, we run the digger. If we are going to harvest all the plants, we will use a slight lifter on the digger blade. We prefer to get the digger under the plants and let them sit where they are. Then we can bring them in for grading as needed. They store better in the ground than in a storage house.

We usually grow a small percentage of our dogwood on one year transplanted seedlings, lined out in the spring and budded that summer. Usually the transplanted seedlings can be budded earlier, they are insurance against a seedling failure, they grow a heavier tree in one year, and they can accept bigger budwood. On the other hand, they require staking which is expensive, they are more expensive to line out, they give a lower percent of "takes", and they do not make as smooth a tree at the bud union as a dogwood budded on a field-grown seedling.

The basic techniques described above have been field proven over many years by the production of hundreds of thousands of dogwoods in middle Tennessee.

PRODUCING DOGWOOD BY CUTTINGS

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We have been rooting dogwoods in the nursery for three years. Initially we were prompted by lack of competent budders. Also, we felt that rooting would possibly reduce some of the disease and virus problems, since there is no man-made wound. Rooting also appeared to be the logical answer since we are in the business of producing liners, and 95% of our other liners are from cuttings. I began by reading everything I could find on the subject. The best paper that I found was a graduate paper by Mr. Morris of Eva Nurseries, Eva, Alabama, which was written while he was a student at Auburn. I would like to state in the beginning that while we have been very successful in the rooting of dogwoods, we have developed no new technique.

Most of our work has been with softwood cuttings of current year's growth. Our work has been confined to cultivars that we normally produce: *Cornus florida rubra*, and *C. florida* cul-

tivars: 'Cherokee Chief', 'Cherokee Princess', 'Cloud Nine' and 'First Lady'. We have done no work on *Cornus florida* because rooting would never be more efficient than seed production. Cuttings can be taken any time from mid-June until late September. The best cuttings are produced from stock plants that have been heavily pruned and fertilized. Tip cuttings are best. Second cuttings will root and are about 85% as efficient as tip cuttings. The use of second cuttings normally produces crooked trees since an existing bud takes over and forms the leader. This defeats the purpose of putting the dogwood on its own roots — to get a straight tree. We like a cutting five to six inches long with at least three leaves cropped to half a leaf.

Dogwoods respond to heavy dosages of IBA. Our best results have been with a 2% quick dip. However, I have seen good results using Hormodin No. 3. Wounding cuttings is not absolutely essential, but we have adopted it as a standard practice. I believe that it is helpful, especially on the red cultivars as they are a little more difficult than pink or white.

Dogwoods will root in almost any medium. Peat pots were unsatisfactory since they fell apart. I prefer dirt beds which contain our native clay soil, finely ground pine bark and coarse sand. We have used a peat and sand mixture, which is all right for rooting, but it is not as good as the soil mixture for growing on. We build a bed right on top of the clay soil. The soil is broken up 12 inches deep, then bark and sand are added to give, ideally, a mix of not over 60% bark, 20% clay and 20% sand. The average rooting time is six weeks; some roots appear in three weeks. The mist interval is 5 to 10 seconds every 10 minutes.

Young liners need some winter protection as the roots must not be allowed to freeze. After plants have broken dormancy and made new growth, freezing is no longer a problem. Winter protection can be provided by a cold frame or plastic house with sufficient heat or sufficient insulation to prevent freezing. Normally, light splitting of the bark is not serious.

Rooting dogwoods is no problem for us, and I believe almost anyone can do it with reasonable success. There is very little difference among cultivars, although reds are slightly more difficult. The big problem is getting the plant to the field, which is all a matter of timing. It appears that the dogwood cannot be successfully transplanted until it has broken dormancy and made some new growth. In this respect I believe that it is similar to the carlesi type viburnums. I have seen about 90% fatality of plants that were rooted in the bench and immediately potted. For best results the plants should be potted after new growth begins or allowed to grown an additional year in the beds. Even with the problems that we have experienced, I

still think that rooting dogwoods is practical and believe that within 2 or 3 years we will be producing all of our dogwoods from cuttings.

DOGWOOD LINER TO FINISHED PLANT

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As the speakers before me have attested, there are different ways to produce white and pink dogwood liners. Once at the liner stage, there are different ways to produce the finished plant. At Ingleside Plantation Nurseries we line out about 5,000 pinks and 10,000 whites each year, which are handled just alike.

We try to plant our dogwood liners around March 15 while they are still dormant. The best size liner is at least 12 inches in height, but not taller than 24 inches. Planting is done with a "homemade" one-row planter. Dogwood liners are planted in rows which are 6 feet wide. Plants are spaced either 18 or 24 inches apart within the row, 18 inches if they are to be grown for larger lining out stock, 24 inches if they will be sold as 4/5, 5/6 and 6/8 foot trees. Liners which are planted 18 inches apart are grown for two or three years until they are 4/5, 5/6 and 6/8 feet. Then they are dug bareroot and transplanted in 10 or 20 feet rows during December, January or February. Dogwoods in 10 feet rows are spaced 3 to 4 feet apart, yielding trees for B&B digging which are slender 6/8's, 8/10's and 10/12's. Liners in 20 foot rows are planted 4 to 5 feet apart. They yield the same height trees, but they have broader heads.

Cultivation begins in the spring as soon as it is feasible and continues into late fall when the ground gets too wet. We try to cultivate all dogwoods once every week. One row cultivators are used until the trees get too tall for the tractor to go over. We then use Ford 3000's, which are 48 inches wide and can go between the rows using discs, rakes or rotavators. Cultivation helps control weeds between the rows and also, we think, helps make moisture available to the plant. Our observations seem to indicate that keeping the soil worked improves rain penetration, and under dry conditions brings more moisture into the root zone. Although dogwood will not tolerate "wet feet", irrigation is important. We use portable 6-inch pipe with Rainbird sprinklers.

We fertilize in the early spring with 16-8-8 or 20-10-10 at 500 pounds per acre. In the early fall we fertilize again using 5-10-10 at 500 pounds per acre.