

a mixture of pine bark, expanded shale and sand. We place them in full sun (except for some white variegated conifers) on gravel under Rainbird impulse sprinklers until sold. Fertilizing is accomplished by Osmocote 18-5-11 incorporated in the mix and supplemental liquid injection through the waterline. We use Ronstar<sup>1</sup> for weed control as we find that it does not damage the variegated foliage. We did find injury when we used Lasso. The majority of these dwarfs make a salable one gallon plant in 1 to 2 years from rooted cuttings.

Many people have said one cannot make much money growing dwarf or unusual conifers due to their slow growth rate. We feel that this is not wholly true if one is brave enough to ask a compensating price. We also feel that this line of plants helps attract customers to our nursery to buy the more conventional plants along with the dwarf and unusual. Aside from the financial return, dealing with these little specimens makes the nursery business more fascinating and challenging.

---

<sup>1</sup> Ronstar is the trade name for oxadiazon, 2-tert-butyl-4-(2,4-dichloro-5-isopropoxyphenol)-delta 2, -1,3,4-oxadiazoline-5-one.

#### REFERENCES CITED

1. Bloom, Adrian. 1972. *Conifers For Your Garden*. Sachets Floraisse. N.Y. Brooklyn Botanic Gardens.
2. Brooklyn Botanic Gardens. 1965. Dwarf Conifers, A Handbook on Low and Slow Growing Evergreens. *Plants and Gardens*. Vol. 21, No. 1. N.Y. Brooklyn Botanic Gardens.
3. Brooklyn Botanic Gardens, 1969. Handbook on Conifers. *Plants and Gardens*. Vol. 13, No. 2. N.Y. Brooklyn Botanic Gardens.
4. Harrison, Charles R. 1975. *Ornamental Conifers. Know Your Garden Series*. Welling-Sydney-London. A.H. and A.W. Reed.
5. Ouden, P. Den and B.K. Boom. 1965. *Manual of Cultivated Conifers*. The Hague/Martinus Nijhoffer.
6. Wyman, Donald. 1975. *Dwarf Shrubs*. N.Y. Macmillan.

#### PROPAGATION OF *CORNUS FLORIDA* CULTIVARS BY CUTTINGS

CARL BAUER

Phytotektor, Inc.  
Huntland, Tennessee 37345

Last year at the IPPS, Southern Region, meeting I gave a paper on producing dogwood, *Cornus florida*, by cuttings, which dealt mainly with producing dogwood by softwood cuttings. This paper is published in the Proceedings (1). Since that

time we have had another year's experience with propagating dogwood by cuttings.

Although most of our work has been with softwood cuttings, I think we should get into the Proceedings our experience with dormant cuttings since we have seen no papers on this subject. Dormant cuttings have one distinct advantage over softwood cuttings in that no special protection is required during the winter. However, after our experience during 3 years' work, we have decided to give up on this approach. At best we were able to get only about 30% of the cuttings to root as compared to 85% from softwood cuttings.

Our procedures were as follows:

1. Cuttings were taken in mid-winter when completely dormant. This is a must. Cuttings taken a little early or a little late produced leaved in the spring and then died.

2. Cuttings were stuck in ground beds consisting of soil, finely ground pine bark, and coarse sand.

3. During the winter cuttings were syringed lightly about once a week. As soon as the cuttings produced leaves in the early spring, they were placed under intermittent mist until rooted.

4. Cuttings were wounded and given a quick dip in 2 percent (20,000 ppm) IBA solution.

5. By late May all cuttings were rooted or dead, and the mist was removed.

6. Cuttings were grown undisturbed in beds and made 4 to 6 inches of growth during the summer. Since the cuttings had made new growth during the summer, no winter protection was required. They were dug as dormant liners and planted in the field during the following spring.

We had hoped to use hardwood cuttings, but after four years experimenting with rooting dogwood we have finalized our procedures using softwood cuttings. Perhaps the two most important findings are: (1) Young cuttings must have winter protection, and (2) they will not transplant successfully until they have made some new growth. In the past we have used heated houses for winter protection. This year we are going to use Microfoam, produced by Dupont, for our winter protection. I might add that we have had no experience with this material but, based on other experiments, we feel fairly sure that it will work.

Beginning next year I expect at least 50 percent of our dogwood production to be on their own roots and this number will increase annually until our entire production is changed

over. We now have 25,000 cuttings in our 12 by 98 foot house. Our detailed procedure will be as follows:

1. Softwood cuttings will be rooted in the summer from June 15 to August 15 in ground beds under intermittent mist.

2. Only tip cuttings 4 to 5 inches long will be used with about half of the leaves cut away. Second cuttings will root but will give crooked trees, eliminating the advantage of the straight trees that are not easily obtained by grafting.

3. All cuttings will be wounded and treated with a quick dip in 2 percent IBA, which we mix.

4. Winter protection will be accomplished by sealing the beds air tight with Dupont Microfoam after dormancy.

5. Liners will be potted in the spring after they have made some new growth. As soon as the plants are well established in the pots, usually a month later, they will be transplanted to the fields.

6. Most liners will be dug in the field and sold as bare root liners during the second year.

Field budding is the normal procedure for propagating dogwood in Tennessee. Now that we have considered all known factors, we feel that production of dogwood on its own roots will produce a superior plant at less cost.

#### LITERATURE CITED

1. Bauer, Carl. 1977. Producing dogwood by cuttings. *Proc. Inter. Plant Prop. Soc.* 27:238-240.

#### QUESTION PERIOD FOLLOWING PROPAGATION FORUM

WILEY ROACH: Question for Nick Hand. Have you had any experience with rooting the Taiwan or the common lilac?

NICK HAND: We have had no experience with Taiwan lilac but have rooted common lilac, *Syringa vulgaris*.

VIVIAN MUNDAY: Question for Nick Hand. When do you take most of your cuttings?

NICK HAND: We take most of the cuttings around April 15, using 5 to 6 inch cuttings from the plants in the field. Later we go back over and take a second cutting. The cuttings that are stuck at that time will grow until December. We then dig, box and store them in cold storage until they are planted in the spring.

VIVIAN MUNDAY: So your cuttings are coming from plants that will be salable?

NICK HAND: The stock that is ready for sale is what we are using for cuttings.

DICK AMMON: Question for Nick Hand. I would like for you to tell me something about grafting lilac onto green ash.

NICK HAND: It is easy. We changed from privet to green ash, *Fraxinus pennsylvanica*, to avoid suckering. Ash seem to act as a nurse graft. We bench graft in February.

LYNN TABER: Question for Dick Ammon. How are the maples handled after the graft is made? Are they put into a structure, or is material packed around them? What is the procedure after the grafting takes place?

DICK AMMON: From what I have seen most of them are put into a poly tent until they harden and there is some callus. This is the way we do it. We make sure there is a good callus before we take the plastic off.

WAYNE SAWYER: Question for Carl Bauer. Have you experimented with ground heat? You said rooting did not occur until soil temperature reached 70 degrees. If you kept the soil at 70 degrees all the time, could you cut down this production period of 2 years?

CARL BAUER: You probably could, but I don't think you could justify production costs. Without heat, the cuttings usually root uniformly. By waiting until the soil warms naturally, we obtain a uniform crop. I think heating would accelerate the growth, but the cost would not be justified.

MIKE HALLUM: Question for Carl Bauer: I would like to ask if you use any fungicides in preparation of cuttings.

CARL BAUER: I think it would probably be a good practice to use a solution of captan prior to sticking. We have done this. We are not sure whether or not it is absolutely necessary. This is the only preparation we use.

## **PINE BARK IN POTTING MIXES, GRADES AND AGE, DISEASE AND FERTILITY PROBLEMS**

RAYMOND L. SELF

*Ornamental Horticulture Field Station*

*Auburn University Agricultural Experiment Station*

*Mobile, Alabama 36608*

Pine bark (phloem and cork cells) is produced by vascular cambium and cork cambium. Vascular cambium is the 2 to 4 cell layer which separates the phloem from the wood (xylem). The living part of the phloem consists primarily of food trans-