is applied to the furrow. The seeds are then covered with well-decayed hardwood sawdust, which is available in our area.

Germination usually begins between April 1 and 15, depending on weather conditions. This is the most critical time in the life of the germinated dogwood seed. It has been our experience that the embryo is lost if water puddles over it more than 24 hours. We ordinarily do not irrigate during germination unless conditions are extremely dry and topsoil begins blowing. Blowing soil damages seedlings.

Another method that has been used successfully in the past is the stratification of the seed by January 15 in equal parts of sand and sawdust. The seeds are mixed into this mixture and stored in steel barrels at 40°F for 60 to 75 days. The seeds are then removed by use of a 1/4 inch screen before germination begins. The seeds not used in the year of collection are stored in clean lardstands, sealed with heavy tape and placed in cold storage at 34 to 36°F, which insures seed for the next year in case of seed failure due to natural causes. Seeds can be stored up to 3 years without appreciable decrease in germination.

The tiny seedlings are then cultivated, sprayed, fertilized and hoed if necessary, according to good cultural practices. We apply Enide 50w after weeds have germinated. Paraquat can be used over the entire area prior to seed germination. Kerb and Princep, in combination, can also be used.

Seedlings that come up in the spring can be budded in early August.

PROPAGATION OF DOGWOOD SEEDLINGS IN CONTAINERS

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Recently we have experimented with growing dogwood seedlings in small tube containers, hoping to improve the percentage of livability by taking the seedling to the field in its own pot. Two types of container-trays were used. One is heavy black plastic with 101 round cavities 1/2 inch by 4 inches, with 4 holes in the bottom of each cavity. The same type is currently being made with ridges to prevent roots from spiraling, as was the case in our smooth round tubes. The second type tray is made of styrofoam and has square cavities with one hole in the bottom of each cavity.

The mix was 2/3 finely ground pine bark and 1/3 sand, fumigated prior to filling the containers. Flats were filled by hand and shaken down to get an even compaction of the mix.

Three cleaned seeds were sown in each cavity about November 1. The container-trays were then placed on raised benches in open plastic houses. The house was left uncovered to provide cold stratification, then covered about March 1 as seedlings started to germinate. This prevented damage to the newly germinated seedlings from a late spring frost.

Fertilization with Peters' 20-10-10 at 150 ppm was started when the seedlings were 8 inches tall and continued every 10 days to 2 weeks during the growing season. Some of the seedlings were 18 inches tall when planted in the field in September. The same planting procedure was used as with our bare root seedlings.

Containerized seedlings had less than 50% live compared to 70 to 80% live of bare root seedlings. The most startling thing, however, was the growth following budding; the maximum size of the budded containerized seedlings was not as large nor was it as heavily rooted as the bare root seedlings.

What conclusions can be drawn from this experiment? First results were poor, but changes that should improve quality and percent of livability will be tried next year. One of the problems was that the plant was in the container entirely too long. As soon as there are enough roots to hold the ball together, seedlings should go immediately to the field. Roots never broke out of the original tight spiralled small ball. No attempt was made in the field to break open the ball during transplanting. We believe this practice would help.

In the field, transplanted containerized seedlings were very dry in the root ball, even after heavy rain. Next year we plan to add clay to the mix, making it more compatible with the soil where the transplant will be growing.

Another point is that the plants growing in test tube containers are not easy to water. A traveling boom watering system would be essential for large scale production.

A good source of additional information is: Tinus, Richard W., William T. Stein and William E. Balmer, Eds. *1974 Proceedings of the North American Containerized Forest Tree Seedling Symposium*. Great Plains Agricultural Council, Pub. 68. Lincoln, Neb.