

The following short papers by Albert Bremer, Michael Byers, Nancy Gillian, Ron Fox and Bill Molter, Jon Prickerill, Mark Richey, and Fred Bauer were part of a **Plant Propagation Problems and What We Have Learned** panel moderated by Dale Deppe.

Drought Stress on Scion Wood

Albert Bremer

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Generally our budwood is cut from local nursery stock blocks. However, during the summer of 1991 our nursery obtained its budwood from central Illinois which was in the midst of a drought. This created a number of unforeseen problems.

Rootstocks which were to be budded grew very well that summer in Michigan and averaged 3/8 inches in diameter. The small drought-stressed sticks received from Illinois were immediately chip budded. When the small scion wood buds from the drought-stressed stock block were conventionally grafted, cambial contact between the graft surfaces was insufficient or non-existent. To overcome this problem, scion buds were placed on the rootstock graft area at an angle to permit at least minimal cambial contact. The buds were then completely covered with poly tape.

After six weeks buds appeared healthy. However, another inspection in December showed more than half of the buds dead. An attempt to rebud the unsuccessful grafts was planned for the spring. This rebudding would prove to be another mistake.

Dormant budwood unaffected by drought, was cut in January and placed in cold storage for use in the spring. Two major problems occur with spring rebudding. Live bud eyes have their understock tops removed to force new growth. Budded understock with dead buds and existing tops are then chip budded on the opposite side of the rootstock. A narrow poly tie which exposes the bud eye to open sunlight is used so growth can occur. This process is very time consuming and requires skilled labor at a time when other tasks in the nursery are far more important.

The second problem with spring rebudding is that all trees in the same row do not require grow straits, limbing, and staking at the same time. There are two groups of plants at different stages of growth. Many trees lose their central leaders, for they are tied too late in the season. The final result is a large number of trees rejected at harvest time.

Propagation of *Cotinus coggygia* 'Velvet Cloak'

Michael L. Byers

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Our first experience with propagating *Cotinus coggygia* 'Velvet Cloak' was in 1989. Cuttings were taken in late August, treated with 5,000 ppm IBA in talc, and stuck in a peat : perlite mix (1 : 1, v/v) with intermittent mist. Every cutting rotted within 14 days. In 1990 we collected cutting wood that was just completing a

growth flush in early July and treated it the same as previously. Fifty-seven cuttings rooted out of 231 stuck. The cuttings that did not root had rotted at the base very shortly after being stuck. Realizing that excess water was detrimental, we stuck the next years crop in sand (#400 silica sand) to minimize moisture retention. There was a marked decrease in the amount of rotting, but very little rooting occurred. We believe the coarseness of the sand caused the cuttings to produce excessive callus, but no roots. In February 1991, we stuck hardwood cuttings taken from bareroot plants. They were stuck in 92 cell plug trays using a peat moss and styrofoam mix (1 : 1, v/v). Cuttings were treated with 2,500 ppm K-IBA solution and given 55°F forced-air bottom heat. The cuttings rooted 82% in eight weeks. Successful rooting was also achieved in June 1991 with softwood cuttings in a peat and styrofoam mix, 5,000 ppm IBA talc, but with only hand misting. In January 1992, we repeated our hardwood procedure with favorable results. We are confident that with proper attention to cutting wood maturity, rooting medium, and soil moisture, these systems will continue to work well for us.

Propagation Methods at Berthold Nursery

Nancy Gillian

Berthold Nursery, Woodstock, Illinois

I would like to share with you the hardwood and softwood propagation methods we use at Berthold Nursery which is located in Woodstock, Illinois, on approximately 400 acres.

We start our season with hardwoods, doing approximately 5 to 6 thousand cuttings. Cuttings are taken December through March when the outside temperature is above freezing. We propagate plants such as dogwood, privet, spirea, honeysuckle, and currant by this method.

Until a couple of years ago all our hardwoods were lined directly into the field after they were fully callused in our cooler. However, after returning from our 1989 I.P.P.S. meeting in Toronto Canada, I wanted to try a technique I saw being used at Canon Nursery. They were sticking their hardwoods into media in 5-gal cans, and keeping them in their container area. This idea appealed to me. I like this method because I can control their environment. I also have easier access in the spring and can keep an accurate check on rooting success. This allowed me to better schedule my softwood cutting propagation. When its time to line them out into the field these plants do not have to be harvested first. The planting crew can take the cans to the field at planting time, separate them there, use what they need, and return the unused plants to the container area for later planting.

My first attempt in a 8-gal container was fairly successful. However, because I put 100 cuttings per can the plants were too small. The second season I cut the number in half and that gave us fuller plants. This year was my third try and I liked what I saw. We had better than 80% take in most plants. However, because we are conservative, we still line some of all hardwood propagated plants into the field. As we become more confident of our container propagation method, we plan on eliminating direct field production all together.

Our primary propagation method is by softwood cuttings. We do about 100,000 cuttings per season. We begin softwood production in early May, as soon as I see that