

nounced the recipient for 1995 at that meeting. Our honoree this year is well known to many of us in the Eastern Region. He has been a member for 36 years and we recognize him from his many contributions in the form of papers to our meetings. He is widely known for his research in the fields of micropropagation and juvenility. Although he has never served the Eastern Region as an officer, we can't thank him enough for he was the person who assembled our 30 year index for Volumes 1 to 30. Anyone who has ever tried to locate propagation information in our Proceedings is well aware of the benefits of the index.

It is my pleasure to announce the 1995 recipient of the International Award of Honor, Dr. Richard Zimmerman. As part of the award, Volume 45 of the I.P.P.S. Combined Proceedings will be dedicated to Dr. Zimmerman.

Thank you Dr. Zimmerman for all you have done.

Putting Roots on Shrub Roses

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Bailey Nurseries propagation facility, (Nord Farm), has been in production for about 14 years. At present, we have 13 acres under plastic for the propagation of woody, perennial, and annual plants. Each house is filled and emptied at least two times per year.

Most propagation is carried out in ground-level sandbeds. The sand which is mined on the premises is 20 to 24 in. deep and drainage tile is used to enhance drainage. The sandbeds are leveled, watered, and treated with vapam before cutting propagation. Cuttings can be stuck about 2 weeks after the vapam treatment.

Rose cuttings are taken from our container production beds or flown in from Arizona where we field grow shrub roses on contract. From our container production, we try to get as long a cutting as possible, (usually about 5 in.), and trim off the flower heads and strip the bottom leaves. This yields a fairly skinny cutting about 4 in. long. We allow 3 to 4 weeks between cutting harvests from the containerized roses.

Prepared cuttings are placed in poly boxes, moistened, and stored in a 45F cooler with an air-over-water humidity system. We pre-dip the roses in 1000 ppm K salt of IBA—this is a 2-sec quickdip, and then they are put back into the cooler until planting. Cuttings are kept in the cooler a maximum of 6 days before sticking in the propagation house.

The cuttings from Arizona come from field-grown roses. In the Arizona environment the roses grow very rapidly and we are able to take a 7- to 8-in. cutting. After trimming off the top 3 in., we are left with a thicker-stemmed 4- to 5-in. cutting to root. Cuttings from the field-grown plants are cooled, wrapped in moist newspaper, placed in poly bags, boxed with dry newspaper surrounding the bag as insulation, and then flown out in the early morning, same-day air. When we receive these cuttings, we cool them down, pre-dip them in hormone, and then stick the cuttings in the greenhouse. These cuttings produce a stronger rooted liner and root at a little higher percent. The use of cuttings from Arizona allows us to grow our container plants larger since we are not cutting them back as often to obtain the cutting numbers we need.

In the greenhouse, we use a dibbler to make holes and set the spacing. Spacing for roses is set at 2-5/8 in. × 2-5/8 in.—this allows for growth after the cuttings are rooted. Cuttings are watered in after sticking and misted with a traveling irrigator using 80-01 nozzles at 14-in. spacing which provides 1/10 gal per min. Plants are kept on the moist side during the first 3 days and a foliar fungicide is also applied during this time. After this, we get the foliage as dry as possible in the evening without causing any visible stress—this allows us to keep the cuttings dry all night. In the morning we keep the cuttings dry as long as possible before starting the mist cycle. We greatly reduce our fungal disease problems with this schedule. Low-volume fans are also used to keep the air moving around the cuttings.

For approximately the first 2 weeks in the propagation house, cuttings are given a heat treatment. We close the doors and vents around 5:00 PM on sunny days so the heat builds up in the sand. This procedure also allows us to turn the mist off earlier because the humidity builds up.

Most shrub rose cultivars root quickly and evenly with roots visible 7 to 10 days from sticking. Cuttings can be taken off mist anywhere from 20 to 30 days from sticking depending on cultivar and rooting conditions. As roots emerge mist is cut back gradually until it is turned off.

When cuttings begin rooting, they are fertilized 2 times per week with 200 ppm 20N-20P-20K fertilizer. Once cuttings are off mist they receive constant fertilization with 200 ppm nitrogen from a 20N-20P-20K fertilizer. When most cuttings have grown about 3 in., we cut them back with a mower which is mounted on a frame that can roll up and down the greenhouse. The first cut is about 1 in. above the original cutting, each cut after that is a little higher up.

Pest and disease control on shrub roses requires a weekly spray schedule. We spray for various foliar fungal diseases, mites, and aphids.

In early September, the rooted cuttings receive about 3 to 4 applications of 4N-25P-35K fertilizer and then all fertilizing is stopped for the rest of the season.

The plants are dug bare root in November and stored in pallets in a cooler kept at 34F with close to 100% humidity supplied by an air-over-water system. These plants are graded into large, small, and restick, and then roll-wrapped with sphagnum peat in bundles of 100. The bundles are stored in a freezer at 28F. On average, we end up with a success rate of 85% on shrub roses after the grading process is completed. Most of these rooted cuttings are planted in containers or lined out in the Arizona fields. We are also beginning to sell any surplus liners.

Shrub roses are easy to propagate and grow but, of course, there are a few cultivars—such as *Rosa* 'Agnes', *R. ×harisonii* 'Harrison Yellow', and *R. foetida* 'Persiana' (syn. 'Persian Yellow')—that are difficult to propagate from softwood cuttings. We are presently looking into propagating these by tissue culture.

Bailey's currently sells about 50 cultivars of shrub roses and plans to gradually expand this through our rose breeding program in Oregon as well as new introductions from other sources.