

nitrogen is kept low. Plants are either grown in Anderson band pots, or Anderson 2-, 3-, or 4-inch square side-draining pots, which are recycled back into the growing operation after planting or selling the plants directly to clients. During the second season in the ground, top dressing with low nitrogen fertilizer takes place. Generally little or no chemical treatments are needed with these plants. Occasional top dressing of beds with mulches is needed, and only applied when necessary.

Successful Techniques for Overwintering Rooted Cuttings[®]

Jim Hallene

Prides Corner Farms, Lebanon, Connecticut 06249 U.S.A.

One of the most challenging tasks facing any nursery person is to successfully overwinter newly propagated plants. Prides Comer Farms propagates and grows a very large selection of woody ornamentals, as well as many perennials and grasses. Today I would like to give you a brief overview of how we overwinter woody ornamentals. Cuttings are stuck throughout the year but there are three primary times during which most of our propagation is done. The largest volume is done as softwood cuttings taken from liners or container-grown plants during the months of June and July. These cuttings include taxa of deciduous shrubs, such as, *Viburnum*, *Cotoneaster*, *Daphne*, *Clethra*, and *Forsythia*, and many others, and all are rooted under intermittent mist. They are stuck in a peat and Styrofoam medium and standard talc hormones used. A second major propagation period is in October, at which time propagation of broadleaf *Rhododendron*, *Pieris* cultivars, and *Euonymus fortunei* cultivars are done. The third major period for propagation occurs from early January until mid February and this includes evergreens such as *Chamaecyparis*, *Microbiota*, and *Ilex* as well as small leaf *Rhododendron* and more *Pieris* if needed. All cuttings are treated with talc hormones and stuck into flats of the peat and Styrofoam medium. As rooting occurs and plants are weaned from the mist they are fertilized with 200 ppm nitrogen at least every other watering. As these cuttings grow they are sheared in the propagation trays if needed until being potted.

The potting of the previous year's liners begins in the spring, about 15 May. Space in the liner houses becomes available to start potting the rooted cuttings that were stuck in January. Most cuttings are potted into trays holding 18 plants in 3-inch cells, using a peat, bark, and Styrofoam medium. Plants of genera and similar growing requirements are grouped together and placed in the same liner houses as much as possible. I will go into more details on this later.

Presently at Prides Comer there are 45 liner houses holding an average of 25,000 plants each. All of these houses have the capability of being heated and ventilated as needed. Many of the larger houses have rollup sides and cuttings potted in May and June are placed in these houses to be grown over the summer. However, most of the cuttings are from the softwood propagation in June and July and they are potted beginning in early August. The following is a very general listing of the plant groups that we try to pot together.

- 1) Large deciduous shrubs (*Viburnum*, *Buddleja*, *Cornus*, *Hydrangea*, *Weigela*, etc.)
- 2) Medium deciduous shrubs (*Hibiscus*, *Cotoneaster*, *Deutzia*, *Berberis*, etc.)
- 3) Conifers (*Chamaecyparis*, *Microbiota*, etc.)
- 4) Evergreen shrubs (*Ilex*, *Euonymus*, etc.)
- 5) Lepidote *Rhododendron* (P.J.M. Group, 'Olga', 'Purple Gem', etc.)
- 6) Elepidote *Rhododendron* ('Nova Zembla', 'English Roseum', 'Grandiflorum', etc.)
- 7) Azaleas, *Pieris*, *Kalmia*, etc.

Some of these species fill entire houses and are not usually grouped with other plants. This would include such plants as *Spiraea*, *Berberis*, evergreen azalea, and others. A grouping that works well is to alternate deciduous azaleas and *Vaccinium* cultivars. These plants have similar cultural requirements (same fertilizers, same spray program) and the added benefit is that there is now a clear difference between similar-looking cultivars.

When you combine these plant groupings with four different regimes in the overwintering houses it can be complicated. The four types of houses are double-cover clear poly, double cover with white poly over clear, herbicide-free houses either clear or white, and forcing greenhouses. One or two houses are for the plants that have a tendency to suffer from herbicide injury, such as, *Kerria*, *Spiraea nipponica* 'Snowmound', and *Hydrangea paniculata* cultivars. No herbicide is used in these houses. White poly over a clear poly sheet is used for plants requiring less fluctuation in winter temperatures, longer cold periods, or to keep plants dormant longer in the spring. Some examples of plants for white houses would be *Hydrangea macrophylla* cultivars, *Berberis* cultivars, *Clethra*, and *Kalmia*. White plastic houses maintain more uniform winter temperatures and typically the outside layer of white is cut off around mid March, however, it can be left on longer to keep plants dormant. It is critical to remove the white poly as soon as plants show new growth. These groups of plants occupy 10 to 12 houses every year. However, the majority of rooted cuttings are potted and overwintered in double-covered clear-poly houses. Our ability to heat or ventilate these houses gives us great flexibility in ensuring successful overwintering of these plants. Heaters are normally set at 28°F in the houses and fans ventilate at 55°F. Winter temperatures in eastern Connecticut can go to -10°F and a frozen crust on top of the trays is common. All houses have minimum temperature alarms and occasionally require late night or early morning trips to the nursery. The fourth type of house is the main propagation house itself. After summer propagation is finished and the cuttings are potted most of this house is empty. In November and December this house is filled with rhododendrons and azaleas potted from summer cuttings. This house is kept cool (40°F) until late February, at which time the heat is turned up and it becomes a forcing house.

Every year just before these new liners are taken to one of the potting buildings they are evaluated for any winter losses, uniformity of the crop, size, and general plant health. Recent years have seen the inclusion of more plants into white houses and a few more into herbicide-free houses. Overall, one or a combination of these methods produces excellent results in overwintering many species of woody ornamentals.