

Winter Propagation and Liner Bed Production of Conifers

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Whenever we look to new and innovative techniques in plant propagation, we must always consider the principles involved. Those are to provide the optimum conditions and environment for plant growth and development while being as efficient and economical as possible. At Ridge Manor Nurseries we utilize a method for production of *Taxus*, *Thuja*, and *Juniperus* which is not new, in fact it is quite old. It is, however, very economical for us and I wish to explain it to you today. Although I have used other methods and know of other methods which are used, my intent is not to compare different philosophies or practices but to discuss our procedure and explain why it works for us.

Ridge Manor Nurseries is located in Madison, Ohio nestled against the southeastern shore of Lake Erie. While we do suffer from an abundant amount of snowfall annually, the loamy, sandy soils and buffering affect of the lake in spring and fall make for ideal growing conditions for conifers. All of our cutting wood is collected from our own field or container stock and each cutting is hand-made. Because we believe there is no sense taking or sticking a bad cutting we use no combines or band saws to collect or make our cuttings. Cuttings are made individually with hand clippers. Cutting length is 6 to 8 in. depending on the plant being propagated. Sides and tops are trimmed with side branches being trimmed off rather than torn to eliminate putting down and picking up clippers. Cuttings are then adjusted so that all the ends are even and given a 5-sec quick dip. Our hormone is 2500 ppm KIBA. It is purchased in the crystalline form (100% IBA) and dissolved in distilled water. Cuttings are then bundled in flats, approximately 750 to 1000 per flat, and taken out to be stuck in sand benches. Beds 4 ft wide with a 1-ft walkway are constructed on the ground using treated 1 in. × 8 in. lumber. These beds are filled with brown concrete sand, leveled with a board, and watered in.

We stick these cuttings in December and January knowing they will not begin rooting until late May or June, because we do not have time in May or June to stick all our conifers. We essentially keep them in cold storage until warmer weather. There is no mist system used and a heater only keeps the ambient temperature at 35F. Cuttings are stuck 1 in. apart within rows which are 1 in. apart. In a 4000 ft² house we are able to fit 250,000 cuttings. In late June, once rooting has begun, the poly is replaced with 50% shade. Cuttings are hand misted every day and watered every other day.

By the end of the second winter all cuttings have developed a strong secondary root system and are ready for bed planting. It is this secondary root system which is the basis to our whole program. Greenhouse propagated cuttings which are produced in 6 months using mist and bottom heat usually have a large number of primary, brittle roots. These cuttings, when bedded out, tend to make little or no top growth the first year because they are producing a secondary root system.

Rooted cuttings are bedded out in five row beds on a 12 in. × 12 in. spacing. Each cutting is stomped to insure it is straight and securely in the ground. This and our healthy cuttings reduce transplant loss and improve growth. After 1 year of growth

in the beds the rooted cuttings of *Thuja* and *Juniperus* are 6 to 10 in. in diameter.

After 2 years they are 12 to 15 in. and ready for field planting. Our *Taxus* are left in the beds for 3 years and are harvested as 10- to 12-in. plants. This eliminates the need to field plant them and makes them an even more efficient crop.

In conclusion, we feel that the keys to this program are our being able to produce a very inexpensive rooted cutting by using no mist and no extra heat, and having a rooted cutting with a secondary root system in place. This allows us to gain an extra year of growth on most plants and, therefore, harvest sooner.

RALPH SHUGERT: Mike what are your rooting percentages on *Juniperus*, *Thuja*, and *Taxus*? What about transplant losses or transplant shock?

MICHAEL BYERS: On *Juniperus* and *Thuja* the rooting percentages are never less than 90%. *Taxus* are around 80%. We have transplant losses in wet areas of the fields sometimes but no transplant shock.