

FIELD PRODUCTION OF LINERS FOR CONTAINERS

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Our cuttings are rooted in a 100 x 15 ft. glass greenhouse. There are benches on both sides, leaving a wide center path so that a little carrier can go through for quicker handling of the flats. Under the bench are 4 two-inch pipes for hot water heat. On top are plastic heating cables six inches apart; these are protected by 1/4-inch strips, four inches apart. These strips also permit the heat to be more evenly distributed; they also contribute to better drainage.

Our entire production of cuttings is rooted in what we call "deep flats"; they are 12" by 18" and 3 1/2 inches deep. The bottom of the flat consists of four pieces so we have five openings where water can drain through.

Our rooting mix is a light one, 50% coarse sand, 30% yellow bulk peat and 20% coarse perlite. When the flats are filled with this mix, we then soak them in Panodrench, a mercury-base material (2 teaspoons per 3 gallons of water). In addition, all the cuttings are dipped in a Captan solution (6 tablespoons per gallon). For the large cuttings we insert 120 per flat. Junipers are wounded, but not the Thujas. Both kinds are dipped into Seradix No. 3, which is an IBA powder, 0.8%. It takes 4 to 6 weeks to root these cuttings using bottom heat at approximately 70° F, with a good water soak every four to six days, depending on weather conditions. We try to keep the tops as dry as possible and, therefore, do not use our mist systems in winter. Summer cuttings are treated in the same way generally except we use more peat in the mix and use our intermittent mist system. Our mist installation is somewhat different from those I have seen in other greenhouses. The main pipe, 1/4 inch copper, runs on the back of the bench and the feeder pipes, 1/2 inch copper, are gradually bent up so that the mist nozzles are in the middle of the bench about one foot above the cuttings. With this system we have no continual dripping on the plant which occurs if the main line is right above the cuttings; we also eliminate stand-up riser pipes which are always in the way when the flats are moved.

After the cuttings start to root (that is, when we see the first root through the flat bottom) we move them to a finishing-off house. Here they start receiving mild feeding with a fish oil fertilizer (2-5-5) and a little Epsom salt (magnesium sulfate) to keep them growing.

In the meantime the growing fields are prepared as follows: They are plowed twice, disced once, then three tons of lime, in the form calcium carbonate, per acre are spread over the fields; this is rototilled in about six inches, then we add 200 lbs. of magnesium sulfate, 100 lbs. of potassium sulfate and

400 lbs. of 11-4-8 fertilizer per acre. This again is rototilled. After 14 days we harrow the land, so it is a little packed; otherwise it is too soft for the planting machine. As soon as we are ready to plant, a long (850 ft.) line is set out over the field. We use a double prism to make sure that we work at right angles. Under the tractor is a bar, which sticks out on the side and attached to this bar is a steel bar, which points down. This last one is movable and is put right above the line. The tractor, plus planting machine, is set precisely in line with this plant line and while the machine moves, this little bar is kept exactly above the line. This system works so well, that when we checked, after having planted 8 beds, we were not even one tenth of an inch off on a field 850 ft. long. The planting machine has handles on each corner to control the right depth of the planting wheel. We made side platforms to carry enough flats of stock to plant 850 ft. One man walks with the machine to determine if the wheels are giving the proper depth; he also supplies the girls with planting stock so we do not have to stop all the time. Empty flats are put on the roof of the machine. The planting machine is covered on all sides for protection against sun and wind. It takes us $\frac{1}{2}$ hour to plant 3300 rooted cuttings and it takes another $\frac{1}{2}$ hour to bring the machine back, straighten up plants, fill in an odd plant which was missed and switch over the plant line. So in 8 hours we plant approximately 25,000 plants. At the end of the day we put sprinklers over the new beds and give them six hours of water so they really get a good soaking. We irrigate these liners every 8 days, depending upon weather conditions.

After about 14 days we start cultivating with a steering control cultivator. One man sits on the back, right above the plants and by steering a little both ways, keeps the cultivator blades from pulling out the plants. Providing this is done regularly, so the weeds are kept small, this machine does a perfect weeding job on our high organic soil. Three weeks after planting, we treat the planting with Casoron at 6 pounds of actual material per acre. Except for certain weeds as sour grass and clover, we have good to excellent weed control. The advantage of Casoron above Simazine is that with Casoron we can keep on cultivating lightly.

During irrigation we apply about 5 pounds of Epsom salt through the line as we have a magnesium deficiency in our soils. We do not side-dress the first season. In late fall we spray Simazine over all our evergreens to keep any weed seeds from germinating during the winter. In April and May of the second year the beds are side-dressed with a fertilizer attachment on the cultivator. We use 400 pounds per acre of 12-4-8 with trace elements added. In May the fields are sprayed with copper sulfate to control twig blight and other fungi. Our sprayer is a simple pump on the tractor power take-off with two 45-gallon drums on a platform attached to the three-

point hitch. On the platform a boom is attached which covers three beds. We spray a Diazanon-Tedion mixture if we suspect aphids and red spider are present. In June we start pruning the junipers heavily for the first time. In August we go through the beds again for a light pinching to secure good, dense, two-year liners of the 10 to 18 inch sizes. In winter we do our digging with a heavy, undercut, type digger, the sort which is extensively used in forestry nurseries. It is a blade which is moved by the power take-off and the plants are lifted out of the soil by bent-up steel bars.

Plants so propagated are excellent for putting in large containers for growing as specimen trees.

MODERATOR MAIRE: Thank you, Walter. Now Mr. Lloyd Smith of Pitt Meadows, B. C. will speak to us on container production of large trees. Mr. Smith:

CONTAINER PRODUCTION OF LARGE TREES

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In this discussion of large trees, we shall be referring to trees of two-inch caliper and larger. Smaller trees are easily handled bare-root in the dormant season and we are all familiar with container-grown trees in sizes from 5 to 15 gallon. The successful moving of very large trees, either bare-root or balled and burlaped, during the dormant season, has been done for many years, so that we are not entering a new field. The increasing demand for large trees available for landscape development at all seasons of the year, prompted me to include large container-grown trees in my operation.

Perhaps, "Establishing Large Trees In Containers," would be a better title, as most of our large trees are field-grown first. However, as nursery stock planted in containers and grown for one or more seasons qualifies as "container-grown", our title may still be applicable.

Our containers are constructed from one-inch rough cedar lumber, metal-banded collapsible boxes. Loose bottoms drop in and are supported by cleats fastened to the bottom of the side pieces, and by the taper of the box. We find one-inch lumber adequate for boxes up to 36 inches in diameter. For larger boxes we use two-inch lumber. For a few very large trees we have used four-inch decking. Collapsible boxes are easily stored and quickly assembled as used. Special tools for tightening the bands are readily available.

Containers must be large enough for good root development. The rule-of-thumb we have been using is a one-foot diameter container for each inch diameter of tree.

2" — 2½" cal. tree	24" box
2½" — 3" cal. tree	30" box
3" — 3½" cal. tree	36" box