

The final part of our production process is the selecting of the plants for despatch. We always aim to provide plants which have been carefully graded, so that our customers will be able to produce an even batch of container plants.

Looking to the future, I have been keeping a close watch on developments in the micropropagation field. I have considered the setting up of a small unit but have now decided that the way forward for us is to take micropropagated plants from an existing unit and establish them in small pots — a process which we should have the right techniques to do successfully. During the next 6 to 12 months we shall be gaining some experience in this field so that we will be in a position to take advantage of future developments.

Finally, I would like to comment on the position of the liner producer in the industry today. It seems to me that the future is very promising, certainly where more difficult plants are concerned. A container grower wishing to produce 200 saleable plants of a species such as *Magnolia grandiflora* may need to start with twice as many cuttings to enable him to produce a well graded batch of plants for potting on. The liner producer, on the other hand, will be able to give the attention to detail which is required to obtain 90% of the plants suitable for potting on. This same argument applies to many plants and I believe that, for economic reasons, the trend should be to more specialisation of production, with liner producers and container growers concentrating on what they are able to do well.

DIRECT ROOTING OF DORMANT CUTTINGS

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For many years we have used the procedure of taking cuttings and sticking them directly in a pot filled with growing medium. The cuttings then root and continue to develop into mature liners without interruption until harvest.

The basic system of direct rooting and procedures for handling cuttings is explained in detail by Sidney B. Meadows (1) in a paper presented to the IPPS Southern Region in 1981.

Usually cuttings are made during the summer months using multiple cuttings per pot. Nicely-rooted liners are ready in September and on occasion we get a fall flush of growth. Liners are overwintered in unheated poly-houses until March, at which time unit heaters are installed to protect the new spring flush of growth. Planting into #2 or #3 cans starts after the first full moon in April, which is traditionally the last frost date in our area. Plants are grown can-tight for one year, then spaced and marketed beginning in June until they are all sold.

We observed on many occasions that plants developing from a liner that had received a fall flush of growth were consistently larger. Since we sell by plant size and grade it was to our benefit to try and take advantage of this observed increase in growth. In addition, we have noticed that the first spring growth made by field plants is the strongest and best top growth we have all year. Something good is stored in the plant just waiting to explode in the spring.

Our first attempt for increased growth in our liners is outlined in our paper, "Cold Storage Treatment of Cuttings" (2), presented at the IPPS Southern Region meeting in 1980.

The following procedure has been used for the past two years with excellent results on a wide range of broadleaf and coniferous evergreen plants.

One propagation mix that works well for us is:

5 parts pine bark

1 part peat moss

3 parts horticultural perlite (coarse)

8 lb./cu. yd. Osmocote (18-6-12)

1 lb./cu. yd. Micromax (slow-release micronutrient)

These are blended together in a 6 cu yd cement mixer until well mixed then screened. A plastic 18 × 18 in. tray is filled with square 3-in. pots. This unit of 36 pots is run through a tray filler and then set on ground beds of #5 crushed stone in a poly-house.

Mist is supplied by rotary type nozzles, either a Buckner #1124-4 at a spacing of 9 × 16 ft or a Ross #244 spaced at 15 × 20 ft. Both nozzles have proved satisfactory but not perfect — too much water during propagation and too little during liner growth period — but they provide a happy medium that we can manage.

Cuttings should be made before the second week of April, which is prior to growth in the field. We try to start as soon as the propagation house become available. Cuttings are cut, dipped in an IBA solution, and stuck. The cuttings are not stripped of their lower leaves.

When we first tried this procedure we did not know what to expect — 1) root then grow? 2) grow then root? 3) die? 4) root then not grow? 5) have poor growth? etc. I am convinced that the physiological condition of the cutting at the time of making can be the cause of all of these expected results. If top growth of the plant has started when the cutting is collected then, in general, we get results less than desired, i.e. rooting is very slow and weak and top growth is poor.

The ideal cutting has good caliper and is taken before new leaves form. This cutting will root without hesitation and then produce in short order a very strong top flush of growth. Subsequent growth cycles are regular during the summer following propagation. One word of caution — to maintain quality and prevent leggy plants, attention must be given to pruning. So far this summer we have tipped our liners four times.

We believe that a decided advantage has been gained by taking early cuttings. This procedure will be a standard practice in future propagation procedures for most broadleaf plant material we produce.

LITERATURE CITED

1. Meadows, Sidney B. 1981. Developments in direct rooting. *Proc. Inter. Plant Prop. Soc.* 31:655-658.
2. Parkerson, Charles H. 1980. Cold storage pretreatment of cuttings. *Proc. Inter. Plant Prop. Soc.* 30:483-484.