Propagation Under the Pines

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For the past ten years, we have done most of our summer propagation under a loblolly pine overstory. Initially we did this due to the lack of a better area. However, our success through years of refinement has kept us from looking for a better system.

We use Lerio 18- x 18-in. flats, which hold 64/flat of the #425 peat pots—a round, 2 1/4-in diameter, 3-in. deep pot. I like the Lerio flat because an employee is 62% more efficient when he moves it than he is when he moves a 10- x 20-in flat

Old flats are not sterilized, and we project a minimum of four years of use out of new ones. With this in mind, the high cost of the flat is easier to digest. Disregarding the time value of money, it's less than 1/2 ¢ per unit per year.

The propagation medium we use is four parts pine bark, two parts horticultural-grade perlite, one part peatmoss. The pine bark is not screened and is the same as is used in container production Because of the high fertility levels maintained in the containers, we do not incorporate any fertilizer in the propagation mix. Without fertilizer in the propagation mix, we are producing market-standard one-gal plants in one year and 3-gal plants in two years. Furthermore, some of the faster-growing liners are pushed to yield 2- and 3-gal material in just one season. This is all done without adding any supplemental heat at anytime to the liners

We use a slightly different propagation medium when rooting plants such as photinia. This medium is pine bark, sand and peat moss (6:1·1, v/v/v).

As the flats are filled, they are put into place and watered. The mist heads are nothing more than Rainbird sprinklers that are also used in production. A four foot piece of saran cloth is placed around the area to keep the wind from desiccating the cuttings.

We begin to take our broad-leaved cuttings around the first of July. Cuttings approximately 4-in. long are removed from the container plants, and banded together in bundles. Once banded, succulent terminals are snipped from the cuttings using hand clippers. Soft terminals are removed since they wilt first and would be more subject to disease entry

Except for Japanese hollies and a few other small-leaved, easy-to-root plants, most cuttings, including azaleas, are stripped of their lower leaves to improve rooting. However, this practice has been partially eliminated with the increased use of liquid hormones.

Once the cuttings are bundled in the field, they are brought into the cooler pine propagation area where they will be dipped in a Benlate fungicide solution The crew leader dips the cuttings while the team is still in the field taking additional cuttings Cuttings are drained before dipping in hormone. All Japanese hollies are dipped in a 5,000-ppm K-IBA solution. Chinese and Foster hollies and photinia are given a three-second dip in a 10,000 ppm K-IBA solution

Over the years, azaleas have been primarily rooted using Hormodin #1. However, this summer we had excellent results using a concentration of approximately 1320 ppm K-IBA on unstripped azalea cuttings. This concentration is made by

dissolving 5 g of the hormone in one gallon of water. Once treated, all cuttings are stuck two per peat pot. Workers are paid between one and 1 1/2 ¢ per cutting depending on the plant and the amount of cutting prepared and performed.

Crew leaders monitor the water requirements of the plants during their daily work routine. All propagation zones are connected to solenoid valves, which are connected to automatic irrigation control boxes for further management efficiency. The 5/32-in. nozzle that comes in the sprinkler sometimes is replaced with a 1/8-in. nozzle if two plants with differing water requirements are placed in the area or if a plant is being hardened next to one that is freshly stuck Except for monitoring the daily water needs of the plants, the game is now over.

The biggest and maybe only complaint I would have with our system is that all flats must be moved in the fall for overwintering if they are not to be lined out immediately. The cost to do this is minimal. On the positive side, however, our propagation survival rate using this method last year was 94% rooting survival of Chinese hollies, 97% of Japanese hollies and 99.7% of evergreen azaleas. That's right, 99,700 azaleas rooting out of every 100,000 planted. We lost fewer than 5 total flats out of more than 1500. In addition to these plants, spirea, euonymus, forsythia, crape myrtle, cotoneaster and barberry are rooted this way. Once your liners are in their overwintering structure and you anticipate temperatures in the single digits, cover your liners with a poly blanket.

Now let's look at this from a cost standpoint. Assume the Lerio flat costs $1.10 and has a projected four-year life Since this style of peat pot is not pre-punched with a drainage hole, holes must be made in the bottom of the pots Our labor cost to punch holes, fill the flat, and double stick the cuttings is approximately 4 1/2 ¢ of which 3¢ is to stick two cuttings. The peat pot costs around 3 7/10 ¢. Our direct cost is already 8 1/2 ¢ excluding the media cost and the cost to move the flat. I don't know about you, but to me that may be too much money. Or is it? Whatever your answer is, most of our dime is gone. Don't forget we're not heating this liner, and the overhead associated with a mist system or propagation facility is not there Neither are the accompanying headaches such as clogged nozzles and electrical problems.

Knowing that our system worked, we tried experimenting this summer with some additional ways to refine it and more importantly some ways to do it for less Realizing we could not reach our desired goal under the pines, we cleaned out some production houses, herbicided them and decided to propagate directly in these houses.

Feeling that our per unit cost was too much using the #425 pot, we looked for a new peat pot that was similar in size, especially in depth, which I feel is very important for producing a good-quality liner. My reason for liking peat pots is that you start with a new sterile rooting environment annually without sterilizing or cleaning individual pots We found a new peat pot that was pre-punched and, luckily, ready to load into a 10- x 20-in. tray We bought enough to stick two houses of azaleas. In one house we used a liquid hormone on unstripped cuttings. Because the peat pots were pre-punched and much easier to fill, we were able to cut the per unit labor cost to 2 3/10 ¢. Since the new peat pots (#220) cost around 2 3/10 ¢ and the one-year tray is 6/10 ¢ per unit, the per unit cost was reduced to around 5 ¢.

I still felt we had problems with this system. One, I felt we could to it for less; two, we were using only 58% of the actual floor space; and three, we wanted to go back to the Lerio tray to improve efficiency.

Tackling these three problems became easier with one trip to MANTS. It was there I found out that Lerio had come out with a plastic insert the same size as their #225 cup or #425 peat pot. By propagating in this insert, we were able to reduce our total cost to between 3 1/2 - 4 1/2 ¢ per cell. In addition, flats were put down in a fashion that they would not have to be moved from the time they were filled until they were lined out. We now used 74% of the house. A 20 x 96 ft house will hold over 40,000 2 1/4-in. liners.

Our system uses no mechanization, and we are now producing two cuttings where one was being produced before. In addition, it appears at the present that our success rate may be just as good as it was under the pines. If so, expansion only requires the emptying of a growing house and a piece of shade cloth. Until we are sure of the house system though, Lerio flats and the #225 plastic inserts may have a home under the pines at Saunders Bros. With our success rate and a cost of less than a nickel, would you change?

I would like to touch on a second propagation system that we have found to be equally effective at our nursery. This system is nothing more than using old railroad ties to form the exterior walls of raised propagation beds. We stick boxwood cuttings in the bed from July through March as time allows. In addition, dwarf Alberta spruce cuttings are stuck in late summer, and they root well Plants rooted using this system can be left in the beds until time permits for their planting out. This system worked extremely well with slow-growing plants such as *Euonymus alata* 'Compacta' that shouldn't be occupying valuable production space The medium consists of two parts coarse sand to one part peatmoss Like the previously mentioned system, water is regulated from centrally located irrigation control boxes using Rainbird 20A overhead sprinklers. Shade cloth is left on the house the entire year. The success rate is very good. If space is one of your worries, consider this. In two houses that are a combined 2400 sq ft, we stuck almost 164,000 cuttings. That's 68 cuttings per square foot of total house space, or one cutting every 2 1/10 in.

These two systems that I have discussed today may not be the right way to propagate plants, they are, however, our way.

What does it cost you to propagate your plants? If you don't know now, think about it during your leisure time this fall and next spring. That's exactly what I'll be doing.