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The Recycling of Propagation Materials

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INTRODUCTION

The reuse of certain products or byproducts in manufacturing is not new. The nature of various horticultural production methods culminates with materials passing through the manufacturing scheme once. This type of operational setup can, and will continue to add costs to production, and can impact upon the desired net income of an operation. This qualitative look at what our firm does to stream line production costs may be applicable to your company.

No one wants to spend more on getting a product into a customer's hands than necessary. Added costs impact upon prequoted prices, affect bids, and upset bankers. How then do you keep costs down yet produce a marketable plant product? For myself, I have settled upon a propagation method which allows me to reuse various components over and over again.

The 1-gal plastic pot inventory, Lerio Mfg., is at about 5500 units. There are about 2500 to 3000 pots in production at any one time. An almost equal number of various bandpots, Anderson Mfg., are also in the mix as well. Bandpot prices, for a 6-inch bandpot, are at about 13¢ per unit, priced per thousand. If you would use more, say 25 to 50 thousand, the price would drop several pennies. You of course must factor in a shipping cost, but this is a one time charge, which is reasonable when sending a truck load, versus a few boxes via UPS. In fact, the majority of our 4- and 6-inch bandpots and 1-gal containers have been in continuous use for over 5 years.

Plants are shifted from plug trays into bandpots, and in some cases, later finished in 1-gal containers. In most cases, plants go from plugs into bandpots, and are later sold, or installed as a "bandpot" 1 gal. The consideration here is that over 85% of what is grown is used in house. We are "barerooting" the majority of the plants grown. These for the most part are installed into landscapes, when the resale plants go out, some are knocked out of their pots. Those that are not, go to people who know to return the pots for which they get a credit. The pots come back, are cleaned and reused.

The potting mix, when recovered from the bareroot process, can be used again either as remix, or after an extended time, as soil incorporation on residential landscape projects. The bark and bark mix are usable (reusable), for anywhere from 18 to 24 months before degradation, or total composting, depending upon your definition.

Current local bulk soiless-mix prices, pine-bark based, are at about \$34 to \$49 $yard^{-3}$. A bagged mixed product, pine-bark based, is running around \$5.50 per 3.0 ft^3 bag, with about 4.5 yards, 42 bags, worth of product per pallet. That costs out to \$245.70 per pallet, \$52.61 per yd^3, and \$1.95 per ft^3. Pine-bark-based mixes have several pluses in their favor. They hold back nitrogen, have natural tendencies to suppress soil pathogens, and are adaptable to a wide range of crops. Obviously, product cost can be expensive, and recycling some of this product can hold the budget in line. We have been using Spinout™ a root growth regulator for about 1-1/2 years. It is either incorporated by applying it to the inside of containers, or used as an underlayment under bottomless pots and trays via its being applied to a sheet of fabric to line flats. These sheets are being reused for several production cycles. They are being retreated as needed with Spinout™, and used again as a pad under or in flats.

The thing to consider is that with any manufacturing system the outlay for equipment or materials can incur significant upfront costs. Of course, you can build these prices into your product cost, some you will recover now, and others will have to be recouped over long term. With a returning element in the manufacturing cycle, subsequent production has a fixed hardware cost. This stabilizes price, and as long as other factors are equal, a better profit margin could be expected. Accurate forecasting of crop numbers with regards to amounts of potting mix, space, growing time, and other factors need to be addressed in order to have a handle on how much of a profit return is to be expected.

Buying materials that are more durable, in other words that will last longer, allow for multiple production cycle, or multi-year use. Blow-molded trays and inserts are lighter, cheaper, and cost less than heavier plastics. However, they may not be suited to last more than one season. The down side here is that they enter the waste stream sooner than a reusable product.

The obvious question to ask is, is it worth the time and cost to reuse products? Is your operation set up to reclaim materials from around your nursery? What do you do if you have a multiple site operation? Recycle at each site, have a central processing location, don't bother at all? There are many factors to consider, your operation may not be recycle friendly anyway. In some cases, large production flat or liner-tray operations may not lend themselves to recycling propagation materials. Liners or seedlings are stuck directly into flats, and are finished and sold in their propagation container, thus lowering the handling and transplanting costs. The cost is of course passed on, along with the container, which may not return to your facility. It may end up at the project site or in the garbage.

With my operation, growing space is limited. Bandpots are used to get plants to a certain size, and then they either go out into installations, or they must be shifted into larger pots. These larger containers then take up more room, which limits the number of plants that can be accommodated. So I have tried to schedule propagation to coincide with installations and sales. As plants go out, the open space can be filled with another crop of cuttings, seedlings, or divisions for another production cycle. Currently, there are three production runs during the year's growing season. I also

have an overwintering facility that is ventilated and heated. This structure is covered with a permanent material to get maximum use for many years to come. This allows for winter propagation, protection of stock plants, as well as the saleable inventory. The overwintering structure lets me get the jump on the spring growing season by several weeks, or up to a couple of months. Indeed, after visiting several colleagues' operations, I have begun to grow plants under cover 365 days a year.

Profit is important to any business, especially the net profit margin. Yet as you may know, operating costs, budget overruns, and general waste can drain away money, and leave you floundering. Some simple procedures have helped me to keep a handle on costs, improve production techniques, and of course be profitable. I hope that this presentation can be of use to you, and your company as well.