

culture behavior (putative TP+). The presence of intermediate cultural phenotypes suggests that partial conversion of TP- to TP+ may occur during adventitious events. Plants grown from putative TP+ and putative TP- cultures produced significantly different leaf and shoot morphology. This morphology was statistically identical to control plants derived from TP+ and TP- stock plants and cultures initiated from their shoots.

Many growers are concerned that micropropagation cannot produce plants free of TP. Our work shows that phenotypically normal rhododendron can be produced via micropropagation. We have not observed TP+ tissues arising from axillary multiplication from nonadventitious shoot tips. Stable, "normal" cultures can be maintained by: (1) vigilant removal of basal callus and adventitious meristem masses, (2) use of low cytokinin levels to maintain slow-to-moderate multiplication rates, and (3) production of shoots through axillary multiplication from nonadventitious shoot tips.

Utilizing Band Pots For Herbaceous Plant Production

Michael Kolaczewski

Flora and Fauna Horticultural and Biological Consultants, 324 Silver Street, Elgin, Illinois 60123

Purpose. Band-pot technology is not new to plant propagators. Indeed, this type of container, originally known as milk carton blanks or pots, has been in use for many years with several variations of different types of materials. This presentation shows the utilization of this container to grow herbaceous plants and the subsequent uses for this band-pot-grown product.

Why Use Band pots. I looked at using band pots after considering several factors.

- 1) Presently, most of the mail order nurseries sell their perennials, bare root. Customers receive their plant material via mail or UPS. They then either pot it up or plant it into their gardens. People in most cases pay full retail prices for a bare-root plant.
- 2) In general, most perennial crops are 8 to 12 weeks in production duration after transplanting seedlings or rooted cuttings. It is possible to grow plants in band pots and bring them to marketability several times during 1 year or season.
- 3) The reutilization of containers can effect lower production costs. This of course means that you could gain a better profit margin, if all aspects of production remained fixed or the same.
- 4) You could in effect plant a "smaller" container on a project, yet still get "1 gallon" results after reasonable period of time.

What I am trying to do with my company is grow a reasonably priced plant for a retail client, yet keep my costs as low as possible. Considering that mail order companies sell bare-root materials for full retail prices, or in some cases better than, I tried to incorporate this concept into a price and product formulation for local clientele. Since my present production location is limited in size, I had to get the most material grown in a limited space—about 1 acre. Field growing plants and then bare root storage was out of the question. So I decided to begin growing seedlings or divisions, depending on size, and cuttings in a smaller, yet marketable container. The bottomless band pot seemed to fit the bill. They come in a range of sizes, allow

for more or less normal root growth, and can be held in flats for easier movement. Their size allows for more plant per square foot than conventional 1-gal containers.

Band Pots. I have used the Anderson Die and Manufacturing band-pot products for several years in conjunction with seedlings and cuttings of woody plants. I decided upon several different sizes of band pots for perennial growing. I use the 3-5/8 in. × 3-5/8 in. × 6 in., 3-9/16 in. × 3-9/16 in. × 4-1/4 in., and the new 2-3/4 in. × 2-3/4 in. × 2-1/2 in. pots in my system. I coupled this with the present mode of seeding propagation, the Growing Systems Groove Tube tray, and several plug trays. The end result, of course, is to achieve a uniform product from start to finish. The one weak link here, is that the seeds are manually sown into the trays. Obviously I am looking at either semi- or fully automated seed-sowing and production.

Advantages and Disadvantages. I looked at the advantages and disadvantages of this system and have condensed the main points as follows. This will help you to decide if such a system will work for you. It is important to remember that at present, over 90% of what I grow is used “in house”, and we recycle over 95% of the band pots, after sale or installation, back into propagation and production.

Disadvantages.

- Individual pots versus flats.
- Filling separate bands can take longer than whole flat trays.
- Individual pots can require more handling.
- Bandpots may not work with an automated filling or potting system.
- Size disparity of band may not appeal to customer.
- Product “comes to market” sooner in a smaller container, may require special handling, or shifting up if not sold in a reasonable time period.

Advantages.

- Less space used by band pots, greater product density per square foot.
- Quicker rooting of plugs into bands versus larger container.
- Less likelihood of root disease, and “wet bottoms”.
- The dollar value of this container could be the same as a larger pot, if this concept is marketed properly.
- This system allows for custom propagation. A client could utilize a smaller size container on larger projects, i.e., corporate jobs, highway projects, or large subdivision work.
- Band pot could be bid at a more competitive price than the standard 1-gal pot.
- When educated, a consumer, either wholesale or retail, could be returning bands after installing plants, and therefore reduce future production costs.

The next step will be to further evaluate different species for growing adaptability, shipping logistics of this container, a dormant plant versus a growing plant, and a more precise price comparison of various container production costs.

With the nursery and landscaping field seemingly becoming more competitive, any edge that you can develop over the competition could be significant. I hope this presentation has given you food for thought, and perhaps you may be able to utilize some of these techniques in your own operation.