

## Managing Perennial Stock Plants

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### INTRODUCTION

At the New Town Station production nursery we had a history of spasmodic over and under production. I was your classic hit and miss plant propagator. Firstly, I took too many cuttings from some plants because I knew they would strike easily and, therefore, I would have the numbers to sell; or I sowed too many perennial seeds just because they were cheap and they germinated quite easily. Unplanned I was hoping the market would somehow absorb the surplus. However, in most cases it would not, so my surplus heap got larger and larger.

The plants that the market did want I often could not supply because I did not take enough cuttings at the right time and/or I did not have access to enough propagation material. Basically I seemed to be operating without much of a plan. I also had the plants ready for sale either too early or too late for the market place. My timing was off! Therefore, my stock management had to improve so that I had enough cutting material and at the right time. We achieved this by selecting healthy mother-stock plants and planting them either in the ground or in a specific size pot best suited to generating the maximum amount of cutting material.

### FINDING THE BALANCE TO MAKE A PROFIT

Propagating costs money. Untimely plant propagation wastes money, so good preparation is essential. This preparation starts at the stock plant stage. What we need to know first is:

- 1) The peak selling time of the plant to be grown.
- 2) The growing time needed for the plant to be ready for sale.
- 3) The propagation time of the plant being grown.
- 4) What mother stock will be required.
- 5) How long it takes to build up the mother stock.

I call these stages the mother-stock cycle.

I have to know when vegetative growth will occur and how many cuttings I am going to get per plant. This will determine how many mother-stock plants I will need next season to achieve production demand. Building up the mother stock is the primary consideration when planning what you are going to grow for the next seasons market.

### METHODS USED FOR MOTHER STOCK HOLDING

**200-ml Pots.** These pots are squat pots and are all a specific colour, either purple or light blue, so all staff know that these plants are for propagation only. Plants that produce a large number of tip cuttings and/or a large number of small divisions are put into these pots, e.g., *Thymus*, *Diascia*, small leaf *Campanula* sp., and *Saxifraga*. Mother stock in these pots is renewed annually.

**350-ml Pots.** These pots are black in colour and are multi-planted with three or more stock plants. These stock plants are hand watered because overhead watering can be detrimental to some species. The potting, trimming, and propagation dates

are recorded. With correct timing, hygiene, and optimum conditions we have bingo, 100% strike rate. After striking and hardening off, the plants are potted, and in 8 to 10 weeks are ready for sale. Types of plants planted into these pots are: *Verbena*, *Scaevola*, *Antirrhinum*, and *Nemesia*.

**In-Ground Stock Beds.** These are made out of treated pine 40 × 1800 × 15 cm deep. The boxes sit on the ground. This provides free drainage and easy removal if the plant is trialed and does not meet our growing criteria. Mushroom compost is added to the soil and dolomite lime is added to adjust the pH according to the specific needs of the species to be planted.

These are generally planted out with 12 or more evenly spaced plants per box. At planting 12 month slow-release fertiliser (15N-3.9P-9.1K) and water-storing granules are incorporated. Regular watering is given until we can see that the plants have taken and started actively growing. The beds are then top dressed with Dynamic Lifter™ at the rate of 70 g per plant. The beds are also mulched with a fine pinebark mulch to help retain moisture in the soil and also suppress weeds.

At first we experimented with overhead watering which proved a complete disaster. It made the paths very boggy and was causing run-off problems. Now we hand water and have better control over the individual plants specific water requirements.

The beds are always hand weeded and the paths are sprayed with a glyphosate herbicide to control the weeds. By looking after these beds we are assured of healthy cuttings and very good plant divisions. Examples of species successfully propagated by this method are: *Arctotis*, *Scabiosa*, *Leucanthemum ×superbum* [syn. *Chrysanthemum maximum*], *alpine strawberry* (*Potentilla* × *Fragaria*), and perennial *Viola*.

**Tube Stock or Plug Sheets.** Once you have your initial stock production under way, these are the best source of cutting material. We achieve one to two cuttings off each plug and also get to trim the plug sheets at the same time.

### HOW MANY STOCK PLANTS DO I NEED?

- 1) The actual number of plants required for sale must be known and the number of cuttings achievable per stock plant. From here work back to calculate the number of stock plants that will be needed to give you the number of cuttings required.
- 2) Approximate propagation success rate must be known and an allowance made for poor strike rate.
- 3) What size pot will the end product be sold in? In some cases the plants can make-up faster in a pot by multi-planting, say three to a pot, e.g., *Verbena*. This would mean triple the amount of cuttings and therefore stock plants required.
- 4) What time of the year will you get the optimum number of cuttings? For example, for dwarf *Polygala* a higher number of suitable cuttings can be made from the spring growth as compared to autumn growth.
- 5) It is also important to know which method of mother-stock production best suits each plant species.

## MANIPULATING PERENNIAL STOCK PLANTS

This is done by placing potted stock plants either under shade or under plastic to make the plant elongate and produce lots of very soft tip cuttings. We use this method on *Dianthus* hybrids. We can also manipulate our stock plants by adding additional nitrogen to ensure more soft tip growth and, sometimes, nonflowering growth. Regular cutting back will also stimulate new growth, and hence potential cutting material. Controlling the soil moisture content, either in the ground or in a pot, is vitally important. Irregular watering creates stress on the plants and as a result the quality of the stock plant deteriorates. The number of cuttings from the stock plant also decreases with water stress and the strike rate of the plant decreases. So not only does the plant suffer from stress but also the propagator! Monitoring insect pests and diseases is important and must be done regularly as these can dramatically and adversely affect strike rates.

## HOW OFTEN SHOULD STOCK PLANTS BE RENEWED?

This is probably a plant propagators most neglected job. Stock plants should be renewed regularly. Always keep your old stock plant until your cuttings have struck. Remember:

- 1) It was cloned and originally selected by you for a reason.
- 2) It can act as a back up if the strike rate is poor.
- 3) It might make a good display tub for some hungry retailer.
- 4) It is important to replace some of the field-grown stock plants with fresh plants.

## WHICH PLANT BECOMES A PERENNIAL STOCK PLANT?

- 1) The first plant to flower, or the last for an extended season.
- 2) The plant that shows hybrid vigour above other plants in a crop.
- 3) The plant that may be showing a different biological characteristic such as a larger flower or a smaller leaf.

## METHODS OF PROPAGATION USED FOR PERENNIAL PLANTS

**Soft Tips and Stem Cuttings.** At our production nursery most perennials are propagated by soft tip cuttings. These are inserted into soft plastic, 128-cell trays filled with a mix of Copra peat and perlite (2 : 8, v/v) and Osmocote mini™ (16N-03.5P-9.1K) fertiliser added. If the cuttings are taken from clean healthy vigorous stock plants no rooting hormone is used. If this is not the case, a Soft Wood No.1 powder is used.

**Division.** Our perennials are divided when the plants are not in active growth. By dividing plants we can achieve a larger plant much faster. Our spring-flowering plants are usually divided after flowering or in mid autumn. Our autumn-flowering plants are usually divided in spring. Summer-flowering plants such as *Geranium* and *Aster* can be divided in spring or autumn. The divisions are inserted into rigid 48-cell plug trays with a mixture of Copra peat and perlite (2 : 8, v/v), or they can be tubed up directly into 75-ml tubes.

**Use of Tissue Culture in Stock Plant Renewal.** This technique is absolutely essential for some perennial species to ensure virus free plants, e.g., regularly used

for *Scabiosa* and *Arctotis*. Tissue culture ensures a good strike rate and healthy plant growth.

**Seed.** Most seed used in our perennial plant production is brought from reputable seed houses. Our remaining seed requirements are met by our in-ground stock beds and sown fresh, e.g., *Dicentra* and we are experimenting with *Agapanthus*.

**Root Cutting.** This technique is still very experimental at our nursery, however, root cuttings of *Rehmannia* have been 100% successful.

## CONCLUSION

In conclusion, the four essential ingredients to maintain healthy perennial mother-stock plants are:

**Good Record Keeping.** This is very important, especially the growing cycle of the plants you are propagating and the number of cuttings you are achieving from your stock plants.

**Educated Observation.** An old plant propagator once told me, “walk around with your eyes open and you will never stop learning”.

**Willingness to Experiment.** Without experimentation we will never discover new methods.

**Training Staff.** It is important that staff are encouraged to keep records, be trained to observe, and strongly encouraged to experiment. Most importantly the boss must set the right example.