

## ***Magnolia grandiflora* Cutting Production<sup>®</sup>**

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I am going to talk to you this afternoon on our experiences with cutting production of *Magnolia grandiflora* cultivars from stock plant management, cutting making, and care and potting on through to the saleable liner.

We produce mainly *M. grandiflora* 'D.D. Blanchard' and 'Little Gem', with smaller quantities of 'Ferruginea', 'Mainstreet', 'Russet', 'Saint Mary', and 'Samuel Sommer'. The success rate ranges from 55% for 'Russet' to 86% for 'Little Gem'.

Firstly I'll discuss stock plant care and maintenance. Before planting we do soil tests and add required fertilisers while ground preparation is being done. Black polythene mulch beds are formed and the young stockplants are planted out from 1-L pots for ease of handling. They are planted 1 m apart and 2 m between rows. This is fairly high density but it works well with our pruning methods.

Once they are established we work on a 3-year cycle for pruning to maintain their juvenility. Pruning is undertaken in late winter, when every third plant is cut back to a height of 60–80 cm. This leaves very little foliage on the plant, but after 4–6 weeks, depending on its age, young shoots appear on the stems. These shoots will grow up to 100 cm in a season. Minimal cutting material is produced on these plants that year, as most growths tend to be too thick and fleshy for good cutting material (Fig. 1).

In the second year, these growths are given a light prune to 120 cm and that year they produce good quality cuttings.



**Figure 1.** An example of hard pruning in the stockbed.

The third year the plants are pruned back to 120 cm high and 80 cm wide and this is the year when the maximum cuttings are produced.

This means that a third of the stockplants don't produce many cuttings, but the advantage is that they will overall produce good quality ones for many years. Our oldest *M. grandiflora* stockplants are around 10 years old and have many years left in them yet.

This also assists in keeping pest and diseases down as sprays penetrate better with smaller plants and cuttings are also easier and quicker to collect.

Evergreen *Magnolia* cultivars are relatively disease- and pest-free, with the main insect pests being brown scale and mealy bugs. To keep these under control we aim to oil spray the stockplants twice a year, once in early winter then a second in spring. The stock plants are also sprayed monthly with a general fungicide and insecticide spray during the growing season. In the propagation house spraying is done fortnightly and in the liner area monthly. The liners are also oil sprayed when the stockplants are sprayed.

Weed control is mainly achieved with Samurai™ (360 g·L<sup>-1</sup> glyphosate), with Buster® (200 g·L<sup>-1</sup> glufosinate-ammonium, Bayer CropScience) used when clover is present. If required, the pre-emergent herbicides Gesatop® 500FW (500 g·L<sup>-1</sup> simazine, Syngenta Group Company), or Sharpshooter (500 g·L<sup>-1</sup> oryzalin) are applied in spring and autumn. Hand weeding is done around the base of the plants every 2 months initially, reducing as the stockplants become established.

We take our cuttings once the current season's growth has matured and the growth tip terminated. This is usually in May for us in Taranaki, but does vary a little depending on the season and for different regions around New Zealand.

We make a 3-leaved tip cutting, reducing the leaf length to approximately 8 cm long to minimise transpiration and for ease of setting the cutting. The cuttings are 8–12 cm long with a calliper of 6–8 mm (Fig. 2). Thinner cuttings, although they will root tend to produce a weaker plant and cuttings larger than 10 mm tend not to produce roots as readily and are more difficult to set.

Where possible it is important to ensure that the tip of the cutting has a leaf bud and not a flower bud as this can produce a plant that needs staking to form a straight leader by training up a side shoot. However this can be sometimes difficult with *M. 'Little Gem'* as one of its attributes is that it flowers at a young age, so sometimes there is no option but to use cuttings with flower buds to attain numbers required.

Nodal cuttings are made and given a single wound 25 mm long and dipped in 5,000 ppm IBA. They are then set in a 54-plug tray in a mix consisting of graded bark, peat, and 2–4 mm pumice (5 : 3 : 2, by volume), pH adjusted, and 1.2 kg slow-release fertiliser added per 1,000 L.

They are then placed in the propagation house with under floor heating maintained at 18–20 °C, intermittent mist controlled by a light meter, and venting set around 22 °C.

They take around 16 weeks to root depending on cultivar. It is important to keep an eye on house conditions as too much humidity can cause *Botrytis* in the growing tips. These tips will then rot and the resulting plant will require staking to train up a new leader.

Hygiene is also important here, removing any leaf drop, fungus infections, and the like. We pick over our houses weekly to keep this to a minimum. The rooted cut-



**Figure 2.** A cutting showing the preferred leaf area, length, and calliper.

tings are potted into a mix consisting of bark and 2–4 mm pumice (4 : 1, v/v) with slow-release fertiliser at  $4 \text{ kg} \cdot \text{m}^{-3}$  and pH adjusted. They are put in the crop cover to re-establish in their 12.5-cm pot and remain there for 10–12 weeks when they are shifted to the outside area. Here they are grown on for a further 10–12 weeks then they are ready for sale as a 15- to 25-cm liner, depending on the variety.

Why use a 12.5-cm pot for growing on instead of a 7-cm tube, you may ask. We have found that the larger pot gives the roots and top space to develop producing a stockier plant with a better calliper than the smaller tube. I feel this more than offsets the extra freight costs involved with the larger pot.

In conclusion the main points for successful cutting production of *M. grandiflora* cultivars are:

- Keep stock plants juvenile.
- Take ripe cuttings, those too soft tend to rot.
- Maintain good hygiene.