

Southern Magnolia Propagation and Production

Dan Batson

GreenForest Nursery, 1478 Old Hwy. 26, Perkinston, Mississippi 39573

INTRODUCTION

Rooting southern magnolia (*Magnolia grandiflora*) has proven difficult for most propagators and relatively easy for a few. Important factors are humidity and heat [100% relative humidity and propagation temperature of 38C (100F)]. However, the key is proper watering by a very attentive propagator. At GreenForest Nursery, we propagate 'Little Gem', 'Red Robbins', 'D.D. Blanchard', 'Claudia Wanamaker', 'Green Giant', and have recently added 'Bracken's Brown Beauty'.

Seasonal Timing for Optimal Rooting. Optimum time for rooting *M. grandiflora* cuttings seems to be late summer to early fall in southern Mississippi. Late enough in summer for cuttings to harden-off (no new leaf emergence), and early enough in the fall to maintain a high enough temperature in the greenhouse for the promotion of callus and root initiation.

Sticking cuttings in mid-summer (July in southern Mississippi) has also led to successful rooting. Advantages of propagating in mid-summer include having an earlier start, which means much better root development before fall, and continued root liner production during the winter, thus allowing for spring sales of liners. A disadvantage of propagating in mid-summer includes the selection of cutting wood, since many of the cuttings are too tender. Controlling heat during summertime in the propagation house can also be challenging. While venting the propagation greenhouse helps reduce the higher temperature load, it adversely lowers the higher relative humidity required for rooting.

Another acceptable propagation period is during early spring (late February to early March in southern Mississippi). Cuttings should be taken from the previous fall's new growth. Cuttings should be callused, with root initiation begun as greenhouse temperatures rise to 38C (100F) in the spring. Our biggest disadvantage in spring propagation is that we are very busy shipping and doing other nursery activities.

Collection and Preparation of Cuttings. Cuttings are taken as early in the morning as possible. They are taken to a cool area and kept damp. The preferred cutting wood is small in diameter [0.6 cm (¼ inch)] with a green outer layer that is beginning to lose its pubescence. Leaves are removed from the cuttings so that only two mature leaves remain. The cuttings are cut to a length of 12.7 cm (5 inches), submersed in a fungicide mixture of 1.5 kg Alliette per 832 liters of water (1.5 lb 100 gal⁻¹), and left until removed for preparation. Cuttings are wounded on two sides, about 5.1 to 7.6 cm (2 to 3 inches) along the cutting base with a potato peeler. The cuttings are then given a 5-sec quick-dip of auxin. We prefer K-IBA at 2500 ppm, however, since this is not commercially available, we use Dip 'N Grow, which is diluted down to the same concentration. From there the cuttings are taken directly to the greenhouse and stuck 7.6 cm (3 inches) deep one in each liner pot.

Propagation Medium. The medium we use is a fine grade of locally available pine bark mixed with approximately 5% sand. This mix has a 26% water holding capacity and is very well drained. The pH generally runs around 5 and no amendments are added.

Greenhouses. Greenhouses are 7.9 × 29.2 m (26 × 96 ft) quonset-style frames covered with 4-mil white poly or clear poly sprayed with Kool Ray for a 50% reduction of light. The floor area is shaped into a crown using the natural soil. A 7.6- to 10-cm (3- to 4-inch) layer of a sandy gravel mix is then placed in the greenhouse for drainage. The sand is then covered with a black ground-cover cloth.

Irrigation. Spray heads used are from Senninger Irrigation, Inc. We use the Super Spray bodies with #6 gold nozzle and a convex spray pad. The most important aspects of irrigation are good coverage, water particle size, and timing. Good coverage is achieved by correctly sizing pipe, water volume, and water pressure with the spray heads of choice. Particle size is reduced by the right spray head or mist nozzle and high water pressure. Timing of water is, in my opinion, the most important factor in rooting magnolias. This is accomplished by having the correct person for the job. Our basic strategy is beginning with a 1-sec on and 1-min off cycle, while we are sticking the cuttings. Thereafter, we will increase the off time by 1 min until 5 min is reached. From this point variations in water cycles are determined by moisture content on the leaves, stems, in the medium, and of course by daily weather patterns. The trick seems to be 100% relative humidity, or as close to 100%. This requires keeping the foliage and stems damp, while only keeping media slightly moist with good air porosity. In 1 week, there is a slight separation of cambium area to pith wood. Callusing can be seen in about 2 weeks. At this time, the off interval of the time clock will be increased gradually to promote white healthy callus growth. This schedule is maintained for an additional 6 to 8 weeks. When rooting begins, a process of drenching and drying-out is initiated utilizing liquid solutions of 20N-20P-20K fertilizer. At the point roots are becoming visible, cuttings are slightly stressed by altering the irrigation and fertilizer levels. This partial stress seems to stimulate root initiation. After the majority of cuttings have some root initiation, light amounts of a granular 3-month formulation of slow-release fertilizer is applied. As rooting continues more light applications of the granular fertilizer are applied until soluble salts range around 1 dS m⁻¹. Once this is accomplished, typical growing methods of proper temperature and watering is maintained for further root development.

Container Production. *Magnolia grandiflora* is easily produced once a few unique cultural requirements are reached in the growing program. GreenForest Nursery produces 56-, 95-, and 170-liter (15-, 25-, 45-gal) containerized *M. grandiflora*. Fifteen- and 25-gal pots are filled with medium and set can to can under overhead irrigation. When quart liners are ready (usually early June), holes are dibbled in each pot and slow-release fertilizer is placed in the bottom of each hole (50 g per container). After planting, trees are held in this area between 12 and 16 months. During this time, tip pruning and staking are done for uniform branching and a central leader. Each cultivar has different requirements. For example, the blooming habits of 'Little Gem' and 'Claudia Wanamaker' require diligent pruning for a central leader, while 'D.D. Blanchard' has to be watched for excessive central leader

growth with no branching. When spacing is required for the final growth before sales, drip irrigation is preferred to overhead irrigation with pot-in-pot being our favored production system. The 56-liter (15-gal) containerized plants are spaced on a 0.9 m × 1.2 m (3 ft × 4 ft) design, 95-liter (25-gal) containers are spaced on 1.4 m × 1.4 m (4.5 ft × 4.5 ft) centers, both with four rows per bed. Larger 179-liter (45-gal) plants are spaced on 1.5 m × 1.8 m (5 ft × 6 ft) centers with two rows per bed. During the final growth stage, specimen trees of 'Little Gem' and other cultivars are produced by properly watering, fertilizing, tip pruning, and disbudding the containerized plants.

Other cultural requirements, somewhat unique to *M. grandiflora*, are the control of stem borers with pesticide applications of Lindane, while Turcam is used to control soft scale.

Granular applications of Dursban are placed in a ring against the base of the tree trunk in late February to control magnolia root crown borer. This seems to deter the entrance of the magnolia root crown borer in March or April.

SUMMARY

There are no magic tricks to the rooting of *M. grandiflora* cultivars. Finding the right person that understands its unique mist irrigation requirements, and who will be attentive enough to observe and react to changing propagation conditions is of the utmost importance.