

Cutting Propagation of *Magnolia Grandiflora*

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Summary

In Northwest Florida (Zone 8B), propagation of *Magnolia grandiflora* with semi-hardwood cuttings is done from 15 August to 30 November (first frost), depending on the cultivar. Soil mix and flats are drenched with the fungicide, Subdue[®], before sticking. Cuttings are 10-15 cm (4-6 in.) in length, with bottom 1-2 leaves removed. Cuttings are scored 2.5 cm (1-in.) on one side, then quick-dipped for 30-sec in 10,000 ppm indolebutyric acid with potassium salt (K-IBA). ‘Brackens Brown Beauty’ is also treated with 500 ppm naphthaleneacetic acid (NAA). Avoiding over-watering cuttings is critical. Foliar application of Peters[®] N-P-K is applied to cuttings at low rates after callus develops. After adventitious roots appear, cuttings are drenched with the fungicide, Safari[®]. Rooting success rates of cultivars are as follows: ‘Claudia Wannamaker’ 95-100%, ‘DD Blanchard’ 95-100%, ‘Kay Parris’ 80-95%, ‘Bracken’s Brown Beauty’ 70-85%, ‘Little Gem’ 60-95%, ‘Opal Beach’ 80-90%, and ‘Seagrove’ 80-95%.

STOCK PLANT MAINTENANCE

Propagation of *Magnolia grandiflora* with semi-hardwood cuttings in Northwest Florida (Zone 8B) begins with proper stock plant maintenance (Fig. 1). Most producers grow stock blocks to generate cutting material; some use production plants, while others use a combination of both. At Panhandle Growers, the in-ground field production plants serve as stock (Fig. 1). Stock plants should be growing vigorously, free from insects and diseases and fully hydrated at the time of the cuttings.

CONDITION OF THE CUTTING WOOD

This is perhaps the most important ingredient in success. Timing is everything. Semi-hardwood cuttings from the final growth flush are best. Stick dates are dictated by the timing of the stock plants moving toward winter dormancy. The average dates for optimal cuttings from field production in Northwest Florida (Zone 8b) are as follows: ‘Bracken’s Brown Beauty’ - Aug 15-Sept 7, ‘D.D. Blanchard’ - Aug 20-Sept 15, ‘Kay Parris’ - Aug 30-Sept 15, ‘Claudia Wannamaker’ - Sept 1-15, and ‘Little Gem’ - Sept 1-Nov 30 (first frost).

Poorer results have occurred with cuttings taken later in the season from field plants that received late shape pruning and plants grown in containers. Late season rooting percentages can be increased with bottom heat.

CUTTING PREPARATION

Cuttings are taken early in the day, typically before 10am, bagged, hydrated with ice and placed in the shade. Cuttings are processed and stuck within one hour. Cuttings are 10-15 cm (4-6 in.) in length with 4 to 6 leaf nodes taken. The cutting base is cut at a slight angle with sharp, sterilized pruners. Larger diameter cuttings are preferred. The color of the foliage helps to determine condition of the wood. Cuttings with terminal growth buds are preferred.

PROPAGATION MEDIA

Various propagation mixes and media have been used. At Panhandle Growers, Inc. (PGI) we use 60% aged fine particle pine bark and 40% perlite. A minor element package is added as is dolomitic pelletized lime to bring the pH to 6.5. No N-P-K fertilizer is added to the mix. Propagation is done in multi-celled flats (Fig. 2). Each propagation flat contains 18 square cups, which are 9 cm (3.5-in.). They are filled and pre-staged on the benches. Soil mix and flats are drenched with the fungicide, Subdue®, before sticking. It is important to start with a clean, dry house.

PREPARATION OF THE HARD-WOOD CUTTINGS

The bottom 1 or 2 leaves are removed from cuttings. Cuttings are scored 2.5 cm (1-in.) on one side, then quick-dipped for 30-sec in 10,000 ppm indolebutyric acid with potassium salt (K-IBA). ‘Brackens Brown Beauty’ is also treated with 500 ppm naphthaleneacetic acid (NAA). Cuttings are stuck no more than 2.5 cm (1-in.) deep in the media.

WATER MANAGEMENT

Water management is critical for success. Many propagators over-water magnolia cuttings.

The irrigation clock settings are as follows:

- Start time 9am (early season) Stop time 3:30 pm
- Program 1: 10 second duration with 5-minute delay (1 week)
- Program 2: 15 second duration with 10-minute delay (1 week)
- Program 3: 30 second duration with 25-minute delay (1 week)
- Program 4: 60 second duration with 1 hour delay (1 week)

Weather and callous development dictate change in program. After 4 to 6 weeks, cuttings are watered manually through the mist lines or spot watered as needed (Fig. 3).

LONG TERM CARE

Foliar application of Peters® N-P-K at low rates is applied to cuttings after callus develops. Every 3-4 weeks cuttings are drenched with a low rate of N-P-K through the winter months. After adventitious roots appear, cuttings are drenched with the fungicide, Safari® (Fig. 4). This treatment is done late in the day to reduce environmental impacts. Typically, no other fungicides or insecticides are needed.

Practicing cleanliness is essential by keeping the floors clean of fallen leaves, weeds, and loose soil mix. The propagation houses are walked weekly to remove any fallen leaves – and keep clean. Once rooted, the propagation house is kept cool. Nighttime temperatures are allowed to drop to 2°C (35°F) with no damage. Exhaust fans start at 29°C (85°F).

MOVING OUT ROOTED LINERS

At the last chance of freezing temperatures (typically mid-April) the flats are moved to a 30% shade house and given a low rate of slow release 17-5-11 N-P-K with minors (Fig. 5). Liners are graded and shifted to a Rootmaker® 3-gal containers by mid-May (Fig. 6). Most cultivars will be suitable for shifting to a larger container or for field planting by November, except for ‘Little Gem’ (Fig. 7).

CULTIVAR ROOTING SUCCESS

Rooting success rates of cultivars are as follows: ‘Claudia Wannamaker’ 95-100%, ‘DD Blanchard’ 95-100%, ‘Kay Parris’ 80-95%, ‘Bracken’s Brown Beauty’ 70-85%, ‘Little Gem’ 60-95%, ‘Opal Beach’ 80-90%, and ‘Seagrove’ 80-95%.



Figure 1. Cutting propagation of select *Magnolia grandiflora* cultivars. (left) Classic white aromatic magnolia bloom, (center) stock blocks from which semi-hardwood cuttings will be taken, and (right) a finished, field-grown *M. grandiflora* being prepped for harvest as a balled & burlap, tree.



Figure 2. Hard-wood cutting propagation of select *Magnolia grandiflora* cultivars under intermittent mist. Each cutting is stuck in an individual cell of a multi-cell propagation flat.



Figure 3. Rooting of *Magnolia grandiflora* cuttings under intermittent mist.



Figure 4. Adventitious rooting of *Magnolia grandiflora* stem cuttings from (left) a single adventitious root (arrow) to (middle, right) multiple roots along the stem cuttings.



Figure 5. (left) Rooted *Magnolia grandiflora* liners, and (right) boxed rooted liners ready for shipment.



Figure 6. Containerized liner production of rooted *Magnolia grandiflora* produced from cuttings.



Figure 7. (left) Field production of rooted *Magnolia grandiflora* produced species from cuttings; (right) mechanized field digging system for balled & burlapped (B&B) *M. grandiflora*.